ICMA
International Capital Market Association

Time to act

ICMA's 3rd study into the state and evolution of the European investment grade corporate bond secondary market

An initiative of the ICMA Secondary Market Practices Committee

March 2020

About the SMPC

The ICMA Secondary Market Practices Committee is an open forum for sell-side and buy-side ICMA member firms active in the international, cross-border secondary bond markets. Through open dialogue and engagement, as well as through its subsidiary working groups and work-streams, it seeks to be the representative body of the international, cross-border secondary bond markets: addressing practical issues directly relevant to market practitioners; standardising market best practice; disseminating relevant market information; and promoting the best interests of efficient and liquid markets.

More information about the SMPC can be found on the ICMA website:
http://www.icmagroup.org/About-ICMA/icma-councils-and-committees/icma-secondary-market-practices-committee/

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Amundi; Arcelor Mittal; Astrazenaca; AXA-IM; Bank of America Merrill Lynch; Barclays; BlackRock; BNP Paribas Asset Management; BP; Citi; Commerzbank; Eon; Euronext; Goldman Sachs; Groupama AM; ING; Insight Investment; MarketAxess; Neptune; Santander; Société Générale; T.Rowe Price; Tradeweb; UBS Bond Port; Union Invest; Westpac

ICMA would further like to thank the individuals and firms that participated in the online buy-side and sell-side surveys, the results of which are presented in this report.

Finally, ICMA is very grateful to the various data providers who generously allowed the use or reproduction of market data in this report: Bloomberg, DataLend, ETFGI, ICE Data Services, ISDA, Tradeweb, and Trax (a subsidiary of MarketAxess). All data is reproduced with kind permission and subject to the copyright of the data providers.

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Executive Summary

Three years since the last ICMA study of the European investment grade secondary corporate bond market, and two years since the European Commission's Expert Group reports, this study sets out to answer three key questions with respect to the European investment grade corporate bond secondary market: (i) What is the current state and expected course for market liquidity? (ii) How is the structure of the market evolving? (iii)What are the expectations for future market developments?

The research underlying the study employs a triangulation approach focused on both quantitative and qualitative data. It utilizes three main sources of data: (i) market data provided by trading venues and data providers; (ii) surveys of market participants; and (iii) interviews with market participants.

Secondary market liquidity

The survey results suggest that, overall, secondary market liquidity has continued to deteriorate since the 2016 study, with sell-side firms observing the decline more acutely. The interviews, however, indicate a more complicated picture with liquidity bifurcated by trade size. Liquidity for smaller trade sizes is broadly considered to be adequate. This may partly be explained by a move to more automated pricing by market-makers, largely focused on smaller sizes and more frequently traded ISINs, as well as more willingness to allocate balance sheet to 'service trades' rather than 'risk trades'. Block trades, however, appear to create the biggest challenge for buy-sides. Here the dealer-client relationship still matters; perhaps more than ever before. Splitting larger trades into smaller order sizes will not help and in most cases will be counterproductive.

While the surveys and interviews strongly suggest that liquidity conditions in the European corporate bond secondary market are becoming more challenging, this is part of a bigger story of changing dynamics and evolving market structure. While the capacity of dealers to provide liquidity is becoming more constrained and increasingly selective, asset managers are looking to new approaches for sourcing liquidity, either becoming more sophisticated in their interaction with market-makers, or through diversifying their use of trading venues and protocols.

Evolving market structure

The survey responses suggest that with the exception of the growth of the corporate bond ETF market, sell-side firms see little in the way of positive contributors to liquidity over the past three years, while selecting increased regulatory capital and liquidity costs, the CSPP, MiFID II/R, the state of the credit repo and securities lending market, and general macro-economic and geopolitical uncertainty as the main adverse influencers. Buy-side firms also identify capital and liquidity costs as the single biggest determinant in the decrement of market liquidity, followed by the CSPP, credit repo conditions, and economic and political uncertainty.

Market, and even security, selection by dealers is becoming more prominent, particularly among firms outside of the global bulge bracket, with a focus on segment or sector specialization, playing to their strengths, and the objective of increased position turnover and inventory velocity. If dealers feel that they cannot trade out of a position quickly, they will price to miss.

From the buy-side perspective, behaviour is increasingly being driven by three critical questions: (i) who is likely to show the most competitive price for a particular bond? (ii) who might be axed with an opposite interest? (iii) who is going to step up to the plate for a significant order? For less liquid bonds and larger sizes, knowing which dealer or dealers to go to is therefore paramount in the investment decision process. Accordingly, buy-sides are increasingly relying on counterparty analytics, monitoring hit and quote rates of dealers across sectors and credits, as well as observing market reaction in response to a request.

Participants report that the use of trading venues and e-trading protocols to execute trades has continued to increase over the past years. Selective or multiple RFQ continues to dominate, consistent with the dealer-centric structure of the market, and whereby clients solicit quotes from specific dealers. Compared with three years ago, however, there appears to be more interest in, and uptake of, alternative protocols to source liquidity. In particular, a number of buy-side firms report more use of all-to-all protocols, such as RFQ-to-all.

Direct connectivity (or 'direct access trading'), whereby dealer banks stream axes or prices directly to their clients, appears to be gaining more interest among participants, which also supports more automated bilateral order execution, such as 'click-to trade'.

Perhaps the most eye-catching trend with respect to e-trading since the last study is the increased reliance on automation in the trading process, both for buy-sides and sell-sides. Sophisticated 'rules-based', or even algorithmic, automated processes to manage and direct orders to venues or counterparts are commonplace in equity markets and have been widely used by asset managers for many years. As technology becomes more advanced, their adoption in the fixed income space has become more prevalent, albeit mainly in the more liquid, homogenized, sovereign bond segment. Increasingly, however, interviewees and survey respondents suggest that this is beginning to impact the IG credit space.

While sell-side 'auto-quoting' is now relatively well established for more liquid sovereign bond markets, it would seem that this is still relatively nascent in the credit space and remains very much limited to smaller ticket sizes.

Underpinning advances in automation is the availability of and access to extensive, reliable data. While the quantum and quality of pre- and post-trade market data provided by commercial vendors continues to evolve, proprietary data is also being viewed as a highly valuable resource.

While a number of interviewees express little optimism that the European corporate bond markets will see improved public pre- or post-trade transparency any time soon, some suggest that there seems to be a growing desire from the authorities for a consolidated tape for bond markets in Europe, and a recognition that the MiFID II/R transparency regime is a missed opportunity.

Another notable development since the previous study is the continued growth of the corporate bond ETF market, and the spillover impacts this appears to be having on underlying bond market activity. Growth in corporate bond ETFs has accelerated in Europe which brings with it new flows in the underlying bond market, as well as new players.

The adoption of portfolio trading in the European corporate bond markets is a relatively new initiative but features prominently in many of the interviews. Buy-side participants suggest that there is potential value in portfolio trading, primarily from the perspective of immediacy and knowing that it is possible to execute an entire portfolio in one transaction.

The general view of interviewees is that the first round of the ECB's Corporate Sector Purchase Programme (CSPP) did not lead to the evaporation of liquidity or dislocations in eligible bonds that some had anticipated. Respondents are largely complimentary of the ECB's management of the purchases, which suggests a concerted attempt not to disrupt the market or undermine liquidity.

What becomes clear from the interviews with corporate issuers and syndicate desks is that despite any declines in secondary market liquidity conditions, the primary market remains resolutely robust. Issuers nonetheless remain concerned about the health of the secondary market.

Future market developments

In terms of factors expected to undermine market liquidity and efficiency further, market and prudential regulation are discussed the most, in particular the anticipated increased capital costs which will be borne by market-makers with the introduction of more punitive capital requirements under the FRTB, as well as the introduction of the highly controversial CSDR mandatory buy-in regime. General macro-economic and geopolitical uncertainties also feature high on the list of market concerns.

There is a burgeoning focus on the capture, analysis, and deployment of firms' proprietary order and trading related data, not only to support the optimization of investment or trading decisions, but also to facilitate the automation of the trading workflow. There is a lambent alertness among both sell- and buy-sides that this will be the focal point for market development over the next few years, generating greater efficiencies for low-touch (liquid) trading, while providing enhanced intelligence to support the high-touch (illiquid), alpha generating sub-set of trading activity. In the case of the former, machine learning (ML) will inevitably play an increasing role, creating a more established human-digital partnership to fill the traditional trading seat. For a number of interviewees' firms this is not just informed speculation, but rather a strategic priority and a major investment of resources.

When it comes to positive market developments, the potential for data management, automation, and the introduction of new liquidity providers, particularly through the growth of the ETF market, are where participants pin their hopes.

Conclusion

If there is one recommendation arising from the study, it is that policymakers, regulators, and market participants should re-focus on the conclusions and recommendations of the European Commission's Expert Group on Corporate Bond Markets, particularly with a view to developing Europe's corporate bond markets. With respect to safeguarding secondary market liquidity, reviewing the relevant provisions of FRTB and the CSDR mandatory buy-in regime remain an imperative.

Contents

Introduction

Why this report

In July 2016, ICMA published its second study into the state and evolution of the European investment grade corporate bond secondary market. In its research, ICMA had set out to explore how the market was developing since its previous 2014 study, how liquidity and market efficiency were being impacted by the confluence of monetary policy and the implementation of prudential and market regulation, and the implications for the market and market stakeholders.[1]

The report, based on both quantitative analysis and qualitative feedback from market participants, made a number of recommendations intended to improve the long-term efficiency and functioning of the European corporate bond markets. These included capital relief for market-making, attempting to revitalize the single-name credit default swap (SN-CDS) market, and reviewing and re-assessing potentially harmful regulation (specifically citing MiFID II/R pre-trade transparency obligations and CSDR mandatory buy-ins). The paper further suggested bringing all market stakeholders together to review the existing market structure and to achieve consensus on developing private and public initiatives to maintain and grow a healthy and vibrant pan-European corporate bond market.

In November 2016, the European Commission, having reached a similar conclusion on the importance of bringing stakeholders together in the interest of developing efficient and resilient European bond markets, launched its Expert Group on Corporate Bond Markets (see Annex 3). In November 2017, the Expert Group published its findings, along with 20 recommendations, pursuing six objectives: (i) making issuance easier for companies; (ii) increasing access and options for investors; (iii) ensuring the efficiency of intermediation and trading activities; (iv) fostering the development of new forms of trading and improving the post-trade environment; (v) ensuring an appropriate level of information and transparency; and (vi) improving the supervisory and policy framework.

With respect to ensuring efficiency of intermediation and supporting secondary market liquidity, the Expert Group's key recommendations were a review of the capital and liquidity requirements for market-makers, and to consider carefully the impacts of the CSDR mandatory buy-in provisions. While the Group supported the emphasis of regulation on the safety and soundness of the financial system, it also recognized the need to ensure that market-making is not disincentivized to the extent that the reduction in market liquidity raises the overall risk profile for the financial system and the economy as a whole.

Three years on since the publication of the ICMA study, and two years since the European Commission's Expert Group reports, ICMA felt that it was important to review how the European corporate bond market was evolving, whether the challenges previously identified were still pertinent or if the market faced new obstacles, and to what extent the recommendations made previously are still relevant. In particular, this report sets out to answer three key questions with respect to the European investment grade corporate bond secondary market:

- **What is the current state and expected course for market liquidity?**
- **How is the structure of the market evolving?**
- **What are the expectations for future market developments?**

1 A summary of ICMA's extensive work related to the European credit markets, undertaken since 2014, can be found in Annex 2

Structure of the report

The report is organized in terms of the three questions it sets out to answer. Chapter 1 focuses on market liquidity and how this has evolved since ICMA's 2016 report. Chapter 2 describes the various dynamics that are driving the performance and structure of the market. Chapter 3 looks at participant expectations for future market developments and the forces and initiatives that are likely to shape it. The Conclusion attempts to pull together the key findings of the study and, where relevant, to present possible policy recommendations. The annexes are intended to provide additional context to the study.

As well as synthesizing in-depth stakeholder interviews, the report utilizes extensively market data and participant survey responses to help illustrate and provide context to the narrative.

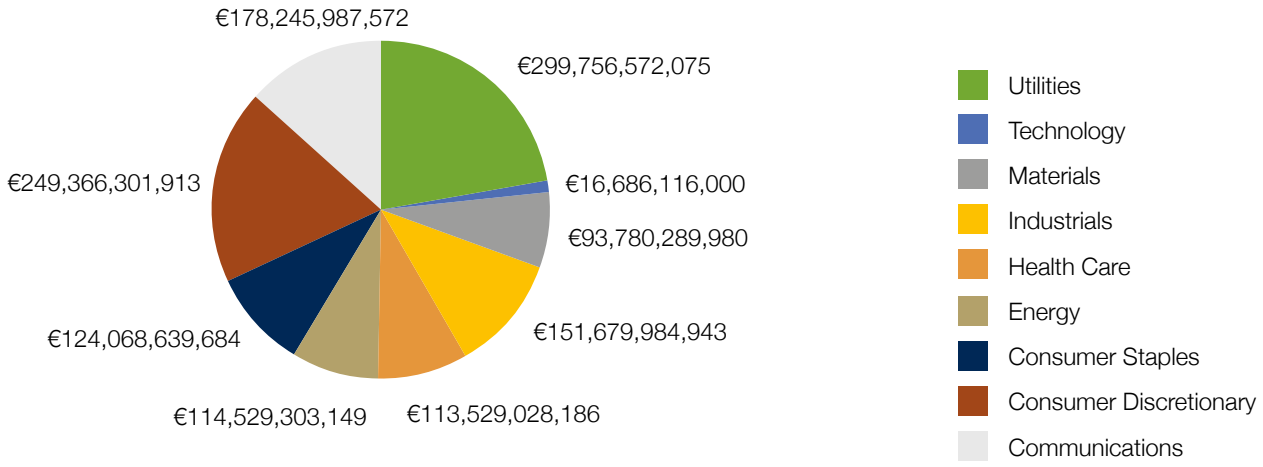
Scope and methodology

Scope

The study focuses on the secondary market for European investment grade corporate bonds. For the purpose of the research this is defined as publicly issued bonds by non-financial and financial corporate entities that are incorporated in European Economic Area (EEA), and issued in an EEA currency.[2] Investment grade is defined by a long-term rating from at least one of the main rating agencies of BBB or better.

In terms of market size, these criteria define a universe of outstanding bonds (nominal value equivalent) of roughly €1.3tn for non-financial corporates (NFCs) and roughly €2.3tn financial investment grade (FIG) corporates. Figures 1 and 2 illustrate the size of the respective segments by sector.

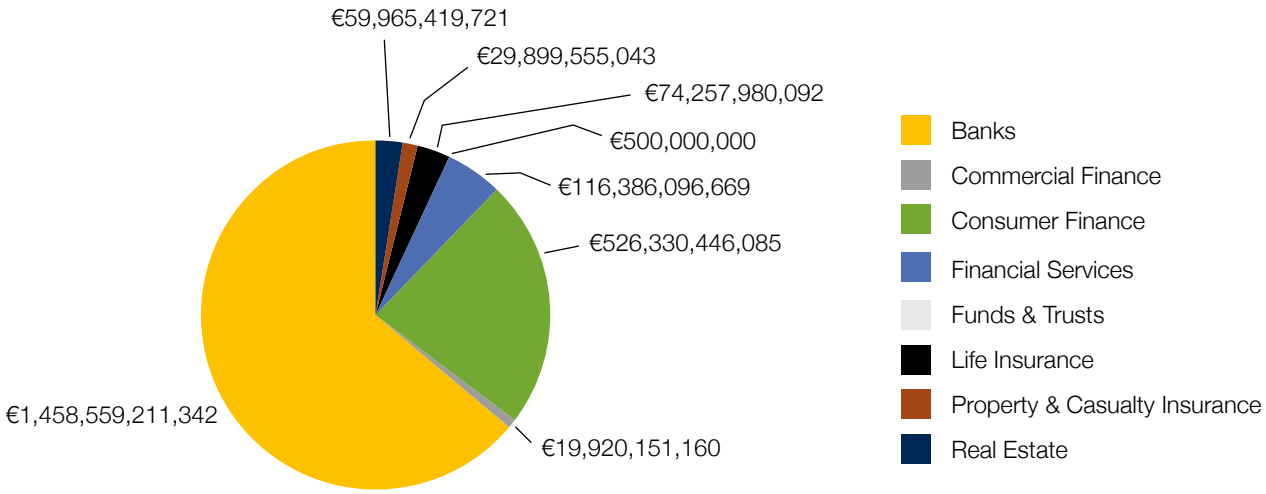
Figure 1: Nominal value of outstanding European IG non-financial corporate bond market
EEA IG NFCs: outstandings by sector
Total: €1.341tn



Source: ICMA analysis using Bloomberg data (August 2019)

2 This also includes Switzerland/Swiss Francs

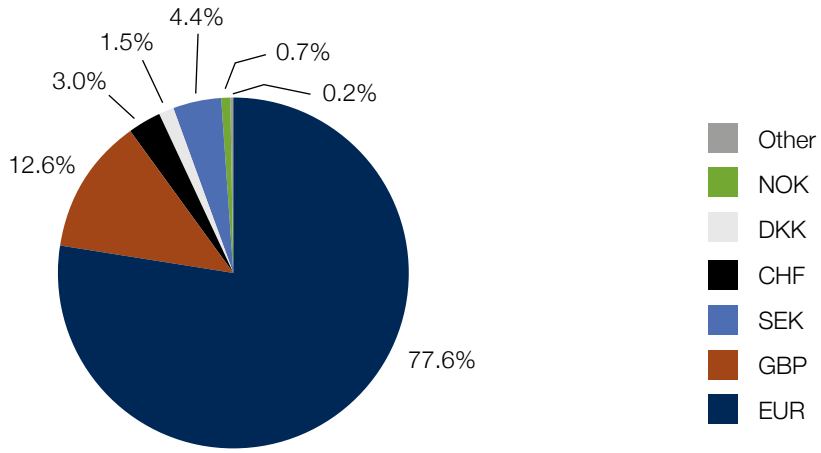
Figure 2: Nominal value of outstanding European IG financial corporate bond market
EEA FIGs: outstandings by sector
Total: €2.286tn



Source: ICMA analysis using Bloomberg data (August 2019)

Figure 3 illustrates the break-down by currency of issuance, which is predominantly EUR (almost 78%), followed by GBP (almost 13%).

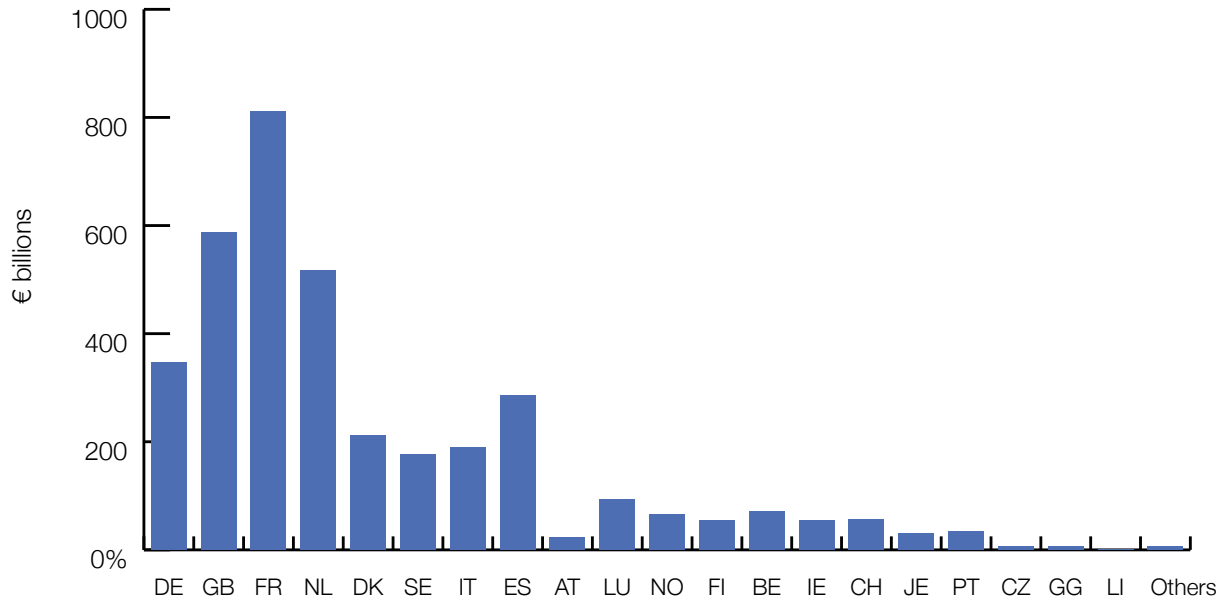
Figure 3: European IG corporate bond market by currency
EEA IG corporates: outstandings by currency



Source: ICMA analysis using Bloomberg data (August 2019)

Figure 4 illustrates European IG corporate bond outstandings (nominal value equivalent) by issuer country of incorporation. France, United Kingdom, Germany, and the Netherlands dominate in terms of incorporated country of issuance.

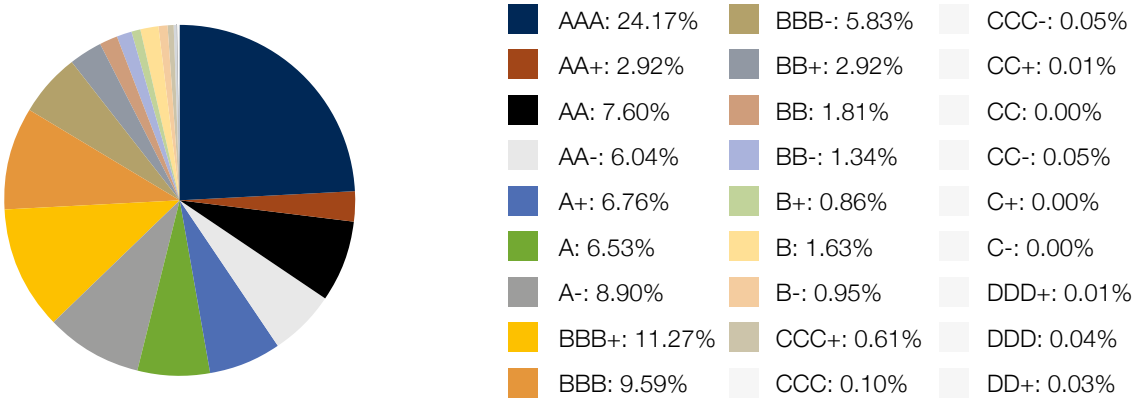
Figure 4: European IG corporate bond market by issuer country of incorporation
EEA IG Corporate outstandings by country of incorproation



Source: ICMA analysis using Bloomberg data (August 2019)

Figure 5 illustrates the distribution of credit ratings[3] across the entirety of the outstanding European corporate bond market.[4] It can be seen that IG dominates the European corporate bond space, with 84% of nominal value having a credit rating of BBB or higher (and 35% with a rating of AA or better).

Figure 5: European corporate bond market by credit rating
European Corporate Bonds Outstandings by Rating



Source: ICMA analysis using Bloomberg data (August 2019)

3 Using Bloomberg composite ratings
4 This does not include bonds without a rating

In analyzing the European IG corporate bond market, it is also important to investigate developments and dynamics in critical auxiliary markets, in particular the repo and securities lending markets for European corporate bonds (the credit repo market), the European IG single-name credit default swap (SN-CDS) market, and the corporate bond exchange traded fund (ETF) market. In the various interviews, contributors also make reference to other IG credit markets (such as the US and Asia), as well as the European high yield market. Thus, the report does touch on a number of other related markets and asset classes.

Methodology

The research underlying the study employs a triangulation approach focused on both quantitative and qualitative data. The research utilizes three main sources of data:

(i) Market data provided by trading venues and data providers
(ii) Surveys of market participants
(iii) Interviews with market participants

Market data

Various market-related data have been provided or permissioned by Bloomberg, DataLend, ETFGI, ICE Data Services, Trax (a subsidiary of Market Axess), Tradeweb, and the Depository Trust & Clearing Corporation (DTCC) Transaction Information Warehouse (TIW) courtesy of the International Swaps and Derivatives Association (ISDA). These data cover European IG bond markets, as well as ETFs, SN and Index CDS, and securities lending.

Surveys

The online surveys are targeted and tailored to both sell-side and buy-side participants. All responses are anonymized and aggregated. The questions focus on five specific areas: (i) market liquidity over the past three years (since the previous study); (ii) policy and regulation; (iii) factors impacting market liquidity; (iv) trends in electronic trading (e-trading) and automation; and (v) expected future developments related to market structure and liquidity. 23 firms responded to the surveys: 12 sell-side and 11 buy-side.

Interviews

The researchers conducted a series of bilateral interviews with market participants, including sell-side and buy-side traders, credit repo and securities lending traders, corporate issuers, bank syndicate desks, trading venues and technology providers. Interviews were conducted either in person or by phone, lasting around 45 to 60 minutes, and were largely semi-structured. 26 different firms participated in the interviews (in some cases multiple individuals within the same firm contributed, representing different business areas or functions). The qualitative input from the interviews is anonymized and synthesized in this report and, where relevant, an attempt is made to reflect different perspectives.

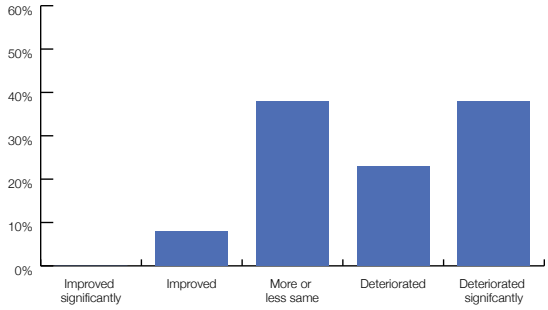
Chapter 1: Secondary market liquidity

ICMA defines secondary market liquidity as ***the ability to execute buy or sell orders, when you want, in the size you want, without causing a significant impact on the market price***.

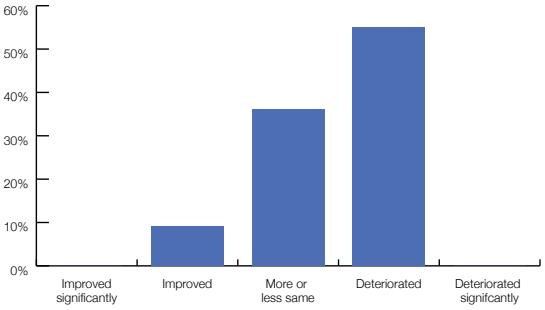
The results of the survey suggest that, overall, secondary market liquidity has continued to deteriorate since the 2016 study, with sell-side firms observing the decline more acutely.

Survey Q: overall market liquidity the past three years?

Sell-side



Buy-side

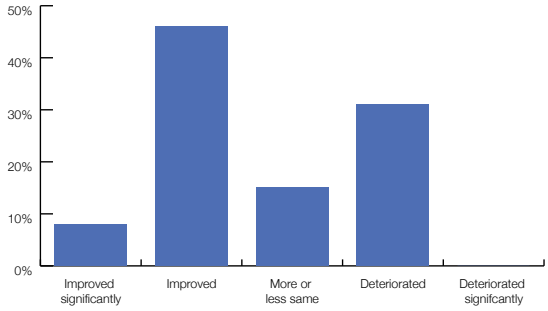


Size matters

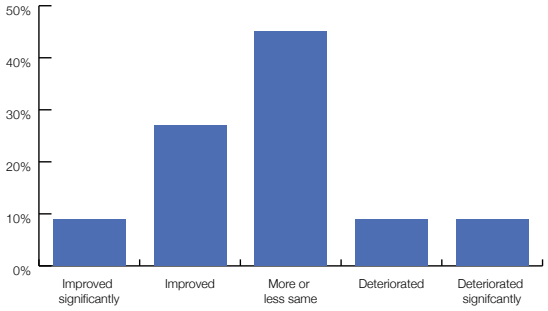
The interviews, however, suggest that while liquidity conditions remain challenged, the picture is more complicated. Liquidity, for instance, appears to be bifurcated by trade size. Liquidity for smaller ('odd-lot') trade sizes (generally considered to be no more that €1mm equivalent nominal value) is broadly considered to be adequate. This may partly be explained by a move to more automated pricing by market-makers, largely focused on smaller sizes, as well as more willingness to allocate balance sheet to 'service trades' rather than 'risk trades'. This is also reflected in the survey results, where the general view between both sell- and buy-sides is that liquidity has at least remained constant, if not improved, for smaller transaction sizes.

Survey Q: secondary market liquidity for smaller transactions (≤€1mm)?

Sell-side



Buy-side

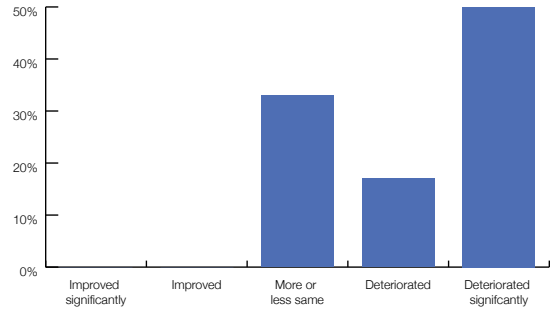


It is when it comes to larger, more substantive trades (greater than €1mm nominal size or equivalent) , and particularly 'block' size (here taken to be upward of €10mm nominal size or equivalent), that participants and survey respondents suggest that liquidity has become more challenged. This appears to be where market-makers are feeling the pain of increased capital and liquidity costs and balance sheet contraction. While buy-sides suggest that they can still 'get done', it is taking a lot more work and time, and a greater degree of creativity. Some respondents note that dealers are becoming more selective as to the positions they take on their trading books, with a view to recycling their risk quickly. Dealer inventory velocity now trumps capacity. If market-makers feel that they cannot trade out of the position relatively easily and speedily, they are inclined to price defensively or simply pass on quoting.

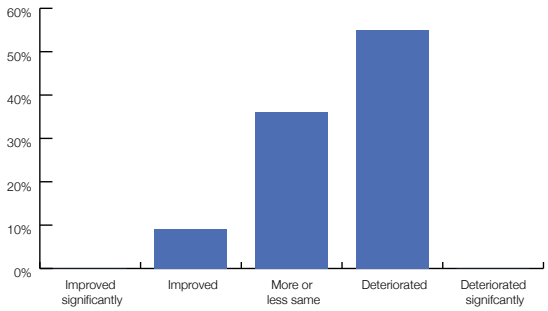
Buy-sides explain that for larger sized trades – which, traditionally, would have been considered standard market size – the market has essentially become axe-driven rather than price-driven. In many, if not most, cases the ability to execute an order is largely contingent on the ability to find a market-maker with a matching, opposing position or order, either in the same bond or one that is potentially substitutable. A number of buy-side traders suggest that from a pre-trade transparency perspective, visibility of reliable sell-side axes is more important than that of market quotes.

Survey Q: secondary market liquidity for larger transactions (>€1mm≤€5mm)?

Sell-side



Buy-side

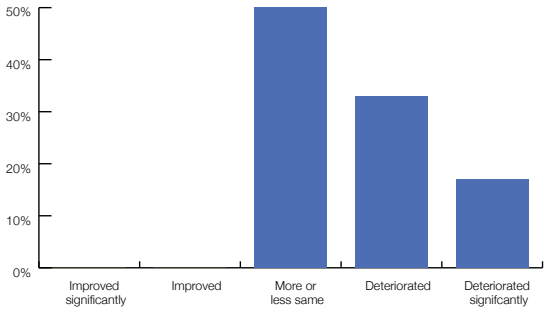


Block trades appear to create the biggest challenge for buy-sides. Here the dealer-client relationship still matters; perhaps more than ever before. While smaller orders are generally channeled through multiple request for quotes (RFQs), or matched against dealer axes, larger trades require more careful management and negotiation, and rely far more on the market-maker's willingness and capacity to take risk and allocate scarce balance sheet. Here, immediacy and market impact are paramount in the best execution consideration, as information leakage can be costly to both dealer and client. While interviewees suggest that these trades can still get done, they are becoming more exacting; which is also reflected in the survey results.

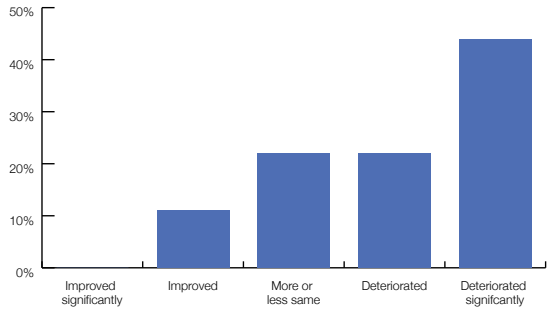
Interestingly, the survey responses suggest that buy-sides are more concerned about block trade liquidly than sell-sides. This could be a reflection of the fact that the onus is very much on the buy-side firm to identify the counterparty most likely (and able) to step up to the plate.

Survey Q: secondary market liquidity for block trade transactions (≥€10mm)?

Sell-side

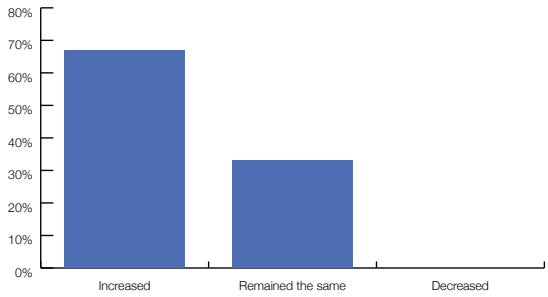


Buy-side

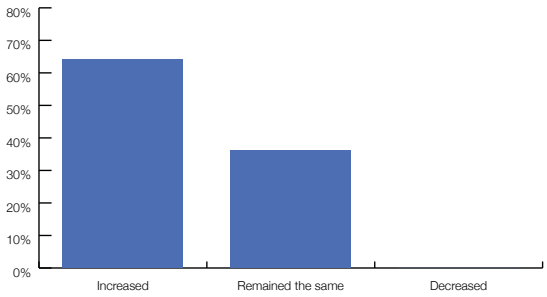


Survey Q: time taken to execute block trade orders (≥€10mm)?

Sell-side



Buy-side



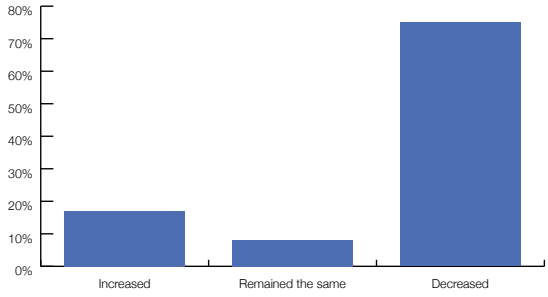
Are trade sizes getting smaller?

While liquidity conditions appear to be far more accommodating for smaller trade sizes, there seems to be little evidence that average ticket sizes are becoming smaller. If this were the case, this would most likely be evident in trades executed on venues. However, data from Tradeweb (see Figures 6 and 7), suggest that trade size distribution has remained relatively unchanged since 2016. Interestingly the survey data appears split on the subject, with buy-side respondents seemingly corroborating the Tradeweb data, while sell-sides are more inclined to feel that ticket sizes have decreased. This could be explained by the increase in open trading protocols, connecting buy-sides to a greater number of sell-sides, and predominantly used for smaller lots.

For more standard sized orders, buy-sides are broadly against the idea of 'slicing' trades for corporate bonds in the same way execution management systems (EMS) automatically do in more liquid equity markets. Essentially this does not work for less liquid asset types, such as credit, where the probability of finding multiple matching buyers and sellers is remote, and where market depth is thin and price sensitivity high.

Survey Q: average ticket size?

Sell-side



Buy-side

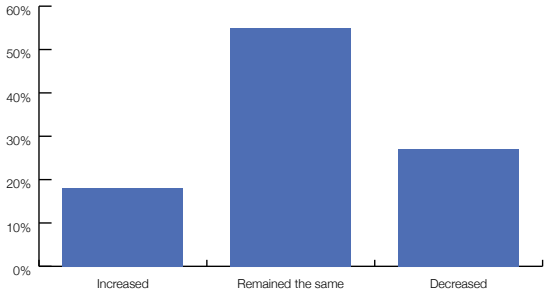
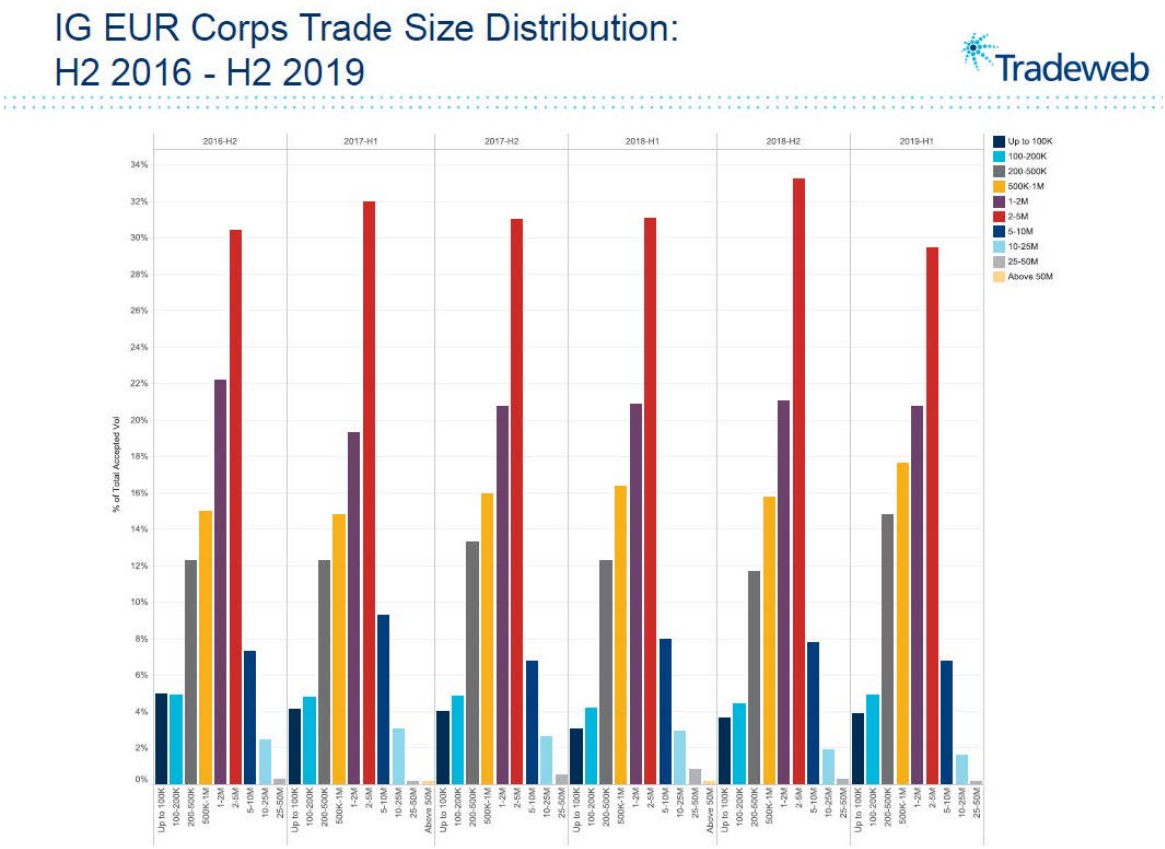
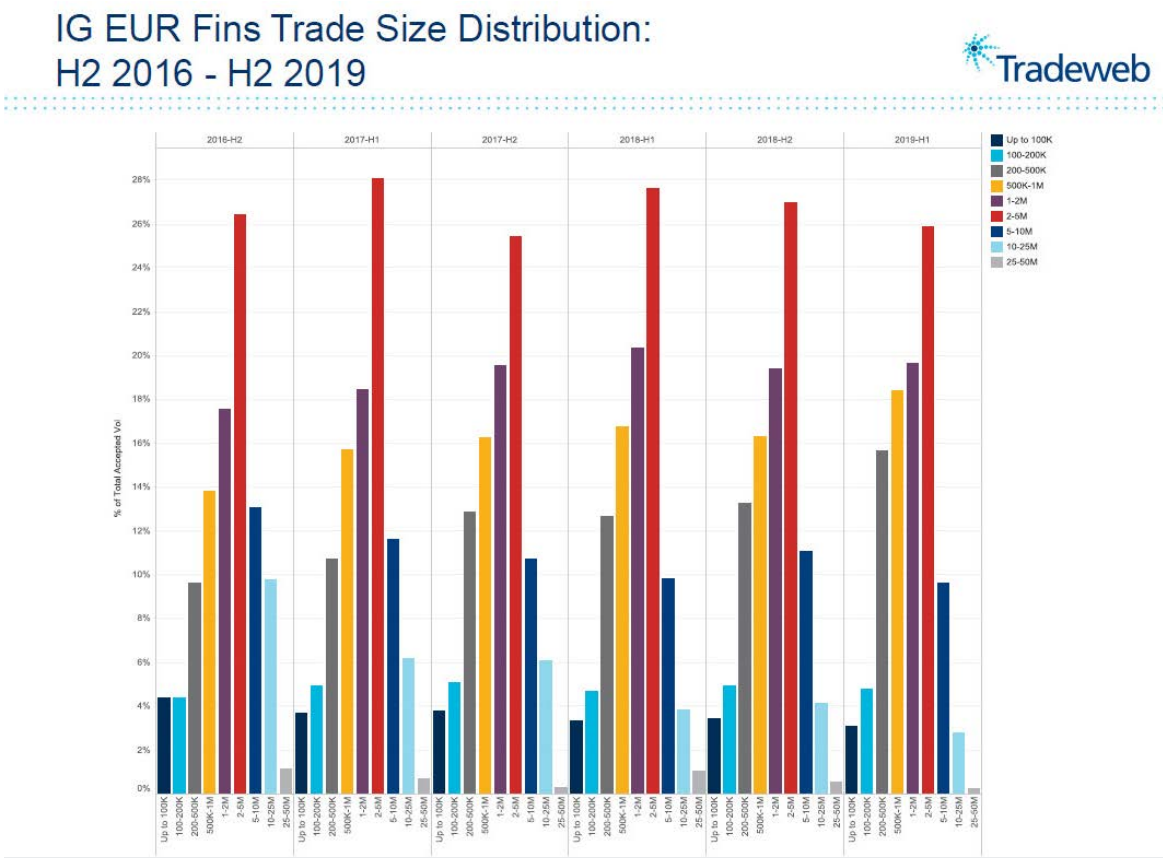


Figure 6: Trade size distribution for EUR IG NFCs (Tradeweb)



Source: Tradeweb

Figure 7: Trade size distribution for EUR FIGs (Tradeweb)

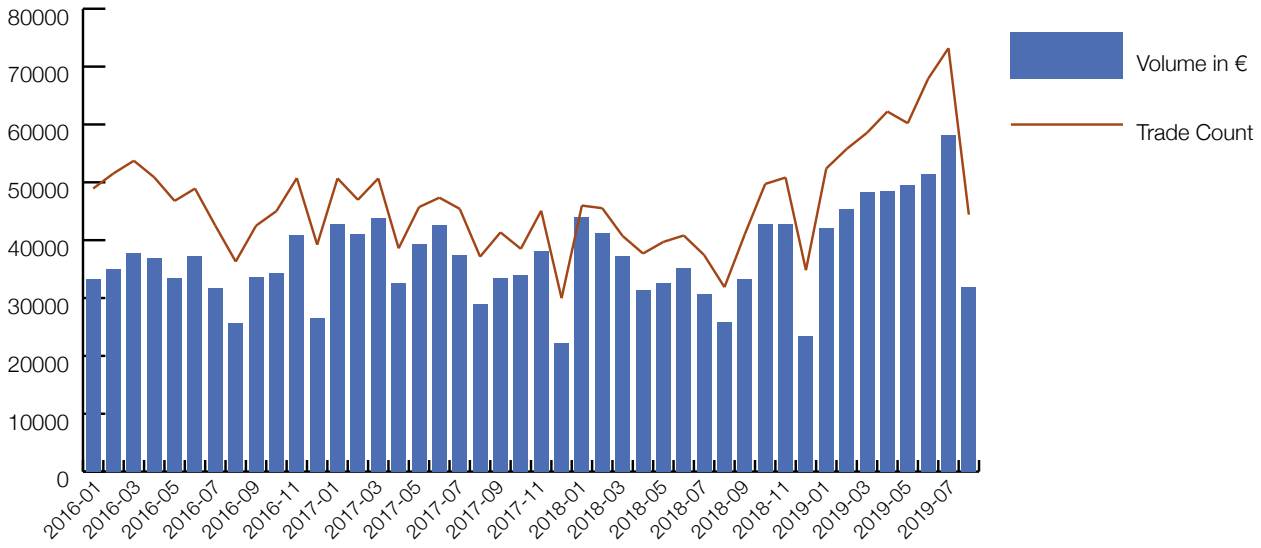


Source: Tradeweb

Business as usual

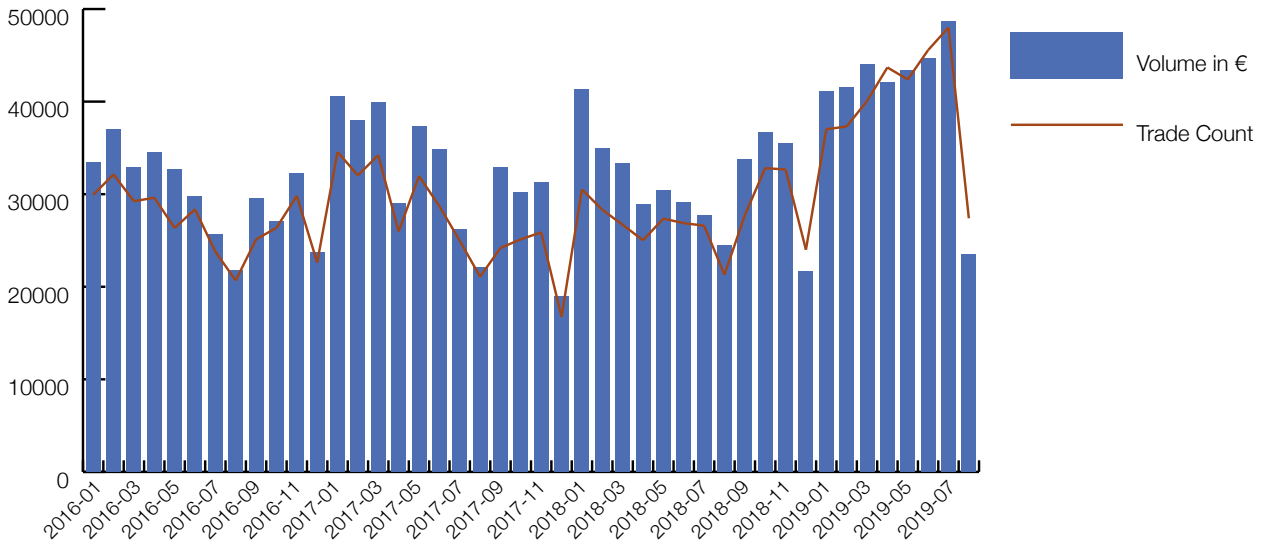
While market liquidity, more broadly, is reported to have continued to decline over the past three years, trading volumes in IG corporate bonds, at least for the euro denominated segment, appear to have remained fairly consistent. Data from Trax (a subsidiary of MarketAxess), showing both volumes and trade count, point to an increase in activity through to the first half of 2019 (see Figures 8 and 9). Interestingly this uptick seems to follow the end of the ECB's Corporate Sector Purchase Programme (CSPP) in December 2018.

Figure 8: Trading volumes and trade count for EUR NFCs (Trax)



Source: ICMA analysis using Trax data

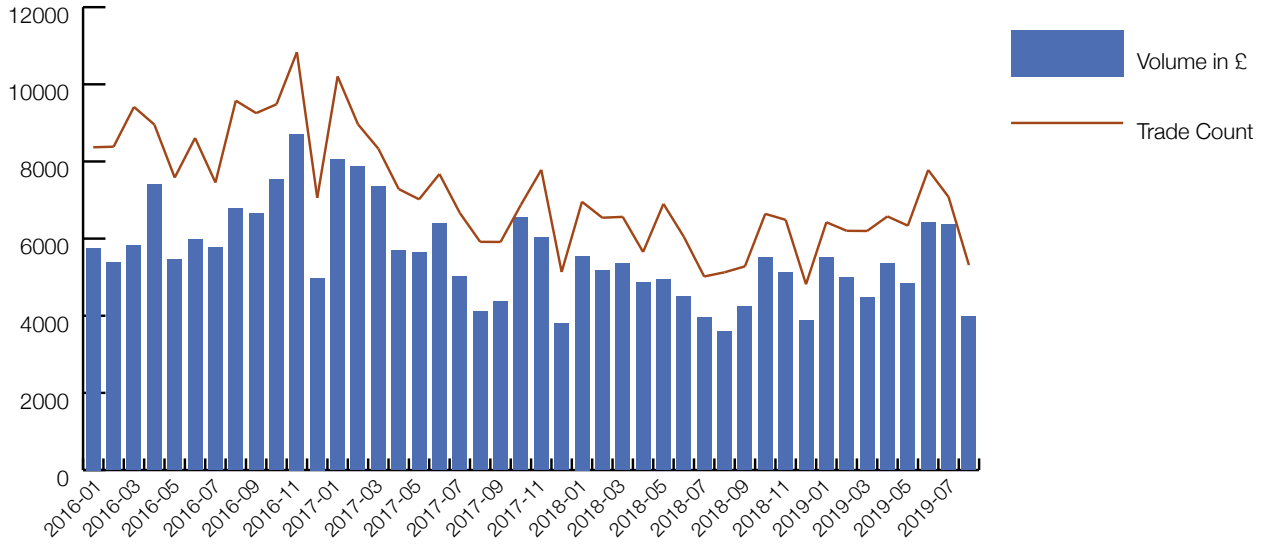
Figure 9: Trading volumes and trade count for EUR FIG (Trax)



Source: ICMA analysis using Trax data

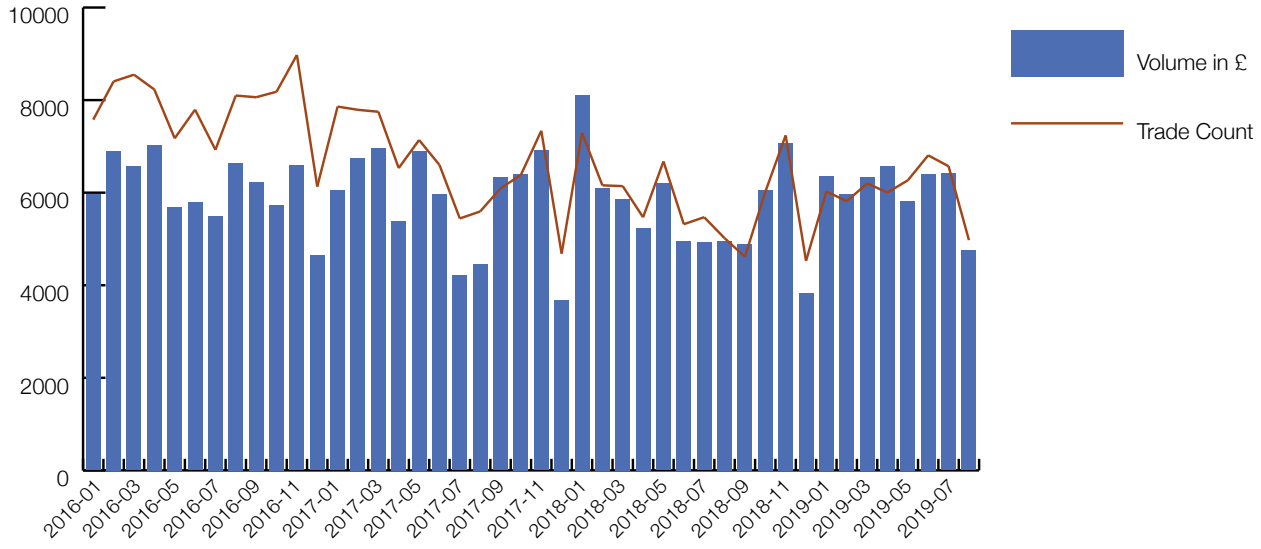
Trax trade data for GBP corporates, however, suggest fairly consistent levels for financials, but a decline in trading activity for non-financial corporates from the start of 2017 (see Figures 10 and 11).

Figure 10: Trading volumes and trade count for GBP NFCs (Trax)



Source: ICMA analysis using Trax data

Figure 11: Trading volumes and trade count for GBP FIG (Trax)



Source: ICMA analysis using Trax data

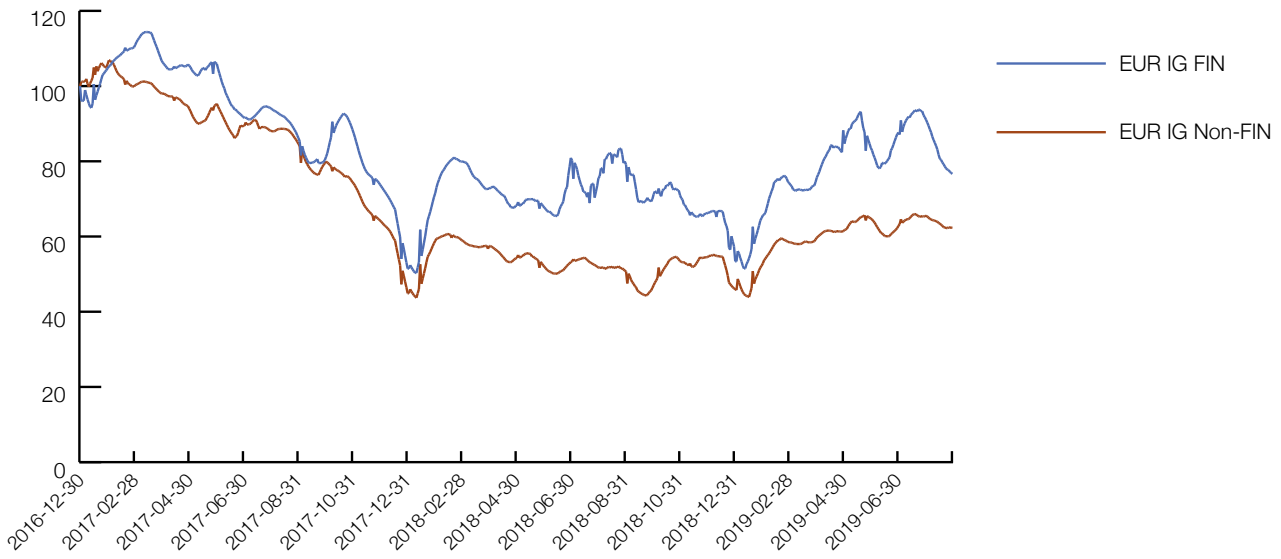
Liquidity indicators

In recent years, a number of data providers have produced security level 'liquidity scoring', based on a range of data points and analytics that are widely used to define and measure liquidity (such as trading volumes and count, market depth, price sensitivity, age since issuance, duration, and issue size). For the ICMA 2016 report, ICE Data Services, in response to a request from ICMA, aggregated liquidity scores across a range of corporate bonds to create time series indices to track overall liquidity conditions across USD, EUR, and GBP IG and HY markets. These are updated and published on a quarterly basis in the ICMA Quarterly Report5 and on the ICMA website.[6]

For this report, ICE Data Services has produced liquidity trackers for the EUR IG NFC and FIG segments from the end of 2016. This analysis tracks the change in ICE Data Service's Projected Trading Volume Capacity (PTVC) estimates for a representative sample of EUR IG Financial and Non-Financial corporate bonds from December 2016 to August 2019. The PTVC represents a forward-looking projection of daily trading volume capacity for a security and reflects both the individual security's historical trading activity as well as the incremental capacity estimated by incorporating factors deemed to influence future trading activity.

This is illustrated in Figure 12 and shows a marked decline in liquidity conditions for both financial and non-financial corporates over the course of 2017, followed by relatively rangebound conditions during 2018, with improvements for both segments since the start of 2019. However, both indicators remain firmly below their base levels of end-2016, consistent with anecdotal evidence.

Figure 12: ICE Data Services EUR IG corporate bond market liquidity tracker™
ICE Data Services Corporate Bond Market Liquidity Tracker™

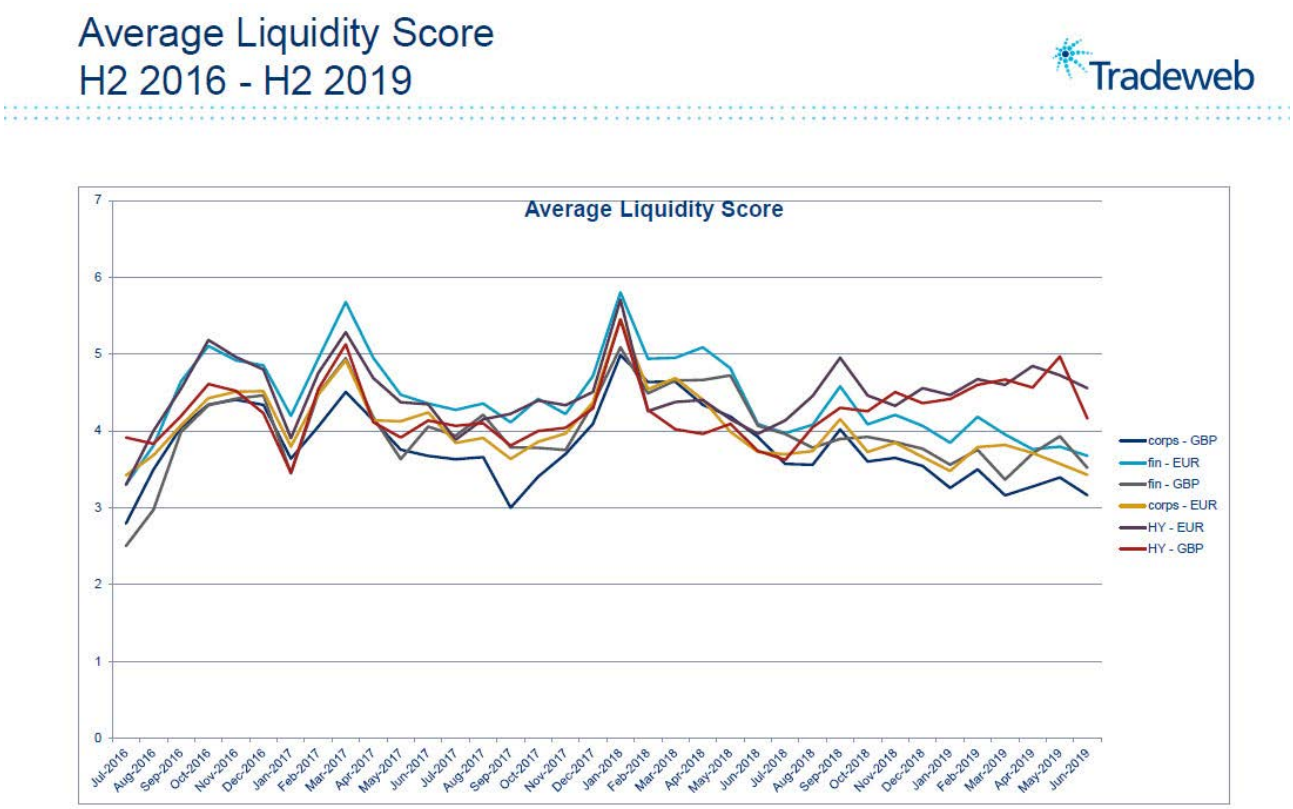


Source: ICMA analysis using ICE Data Services data

Tradeweb has produced a similar market time series indicator, however this is based on the average liquidity scores for securities in the underlying segments, rather than creating a base index. This is illustrated in Figure 13 and suggests that despite some volatility since the second half of 2016 average liquidity scores for both EUR and GBP IG credit (financials and non-financials) are largely unchanged (with some small improvement in High Yield).

5 https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/Regulatory-Policy-Newsletter/
6 https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/Secondary-Markets/market-liquidity/ice-data-services-corporate-bond-liquidity-tracker/

Figure 13: Tradeweb average liquidity scores



Source: Tradeweb

Declining or changing?

While the surveys and interviews strongly suggest that liquidity conditions in the European corporate bond secondary market are becoming more challenging, this is part of a bigger story of changing dynamics and evolving market structure. While the capacity of dealers to provide liquidity is becoming more constrained and increasingly selective, asset managers are looking to new approaches for sourcing liquidity, either becoming more sophisticated in their interaction with market-makers, or through diversifying their use of trading venues and protocols. Regulation, for better or worse, is also helping to reshape the market, while continued, highly accommodative monetary policy plays its role, too. Increased automation, widening connectivity, and the harnessing of data are seen as potentially empowering both sell-side and buy-side participants in their efforts to get trades done. Meanwhile, the emergence of new entrants in the trading landscape, particularly through the growth of the corporate bond ETF market, are providing alternative sources of liquidity to be tapped.

These diverse dynamics are explored in more detail in the next chapter.

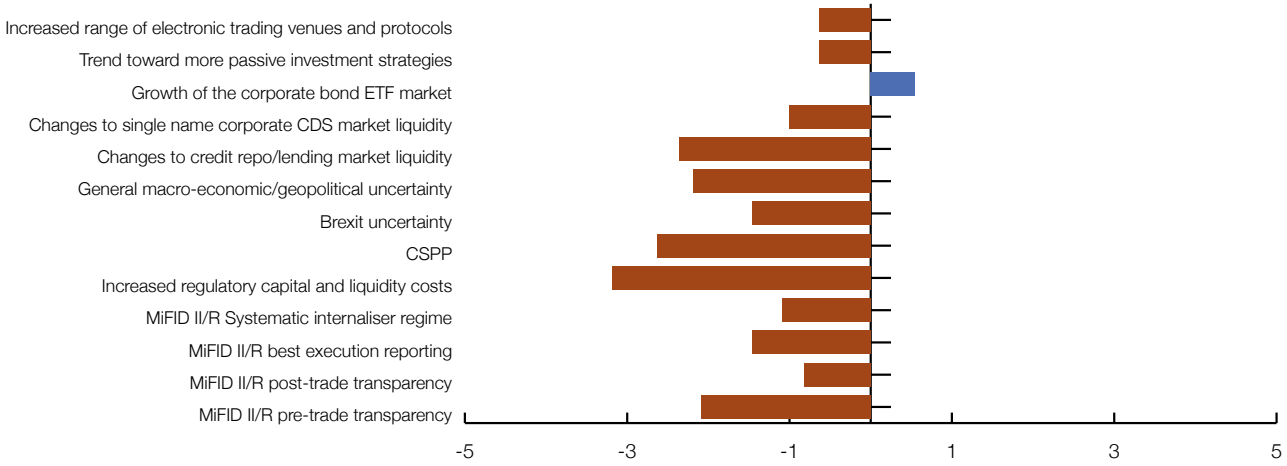
Chapter 2: Evolving market structure

Overview

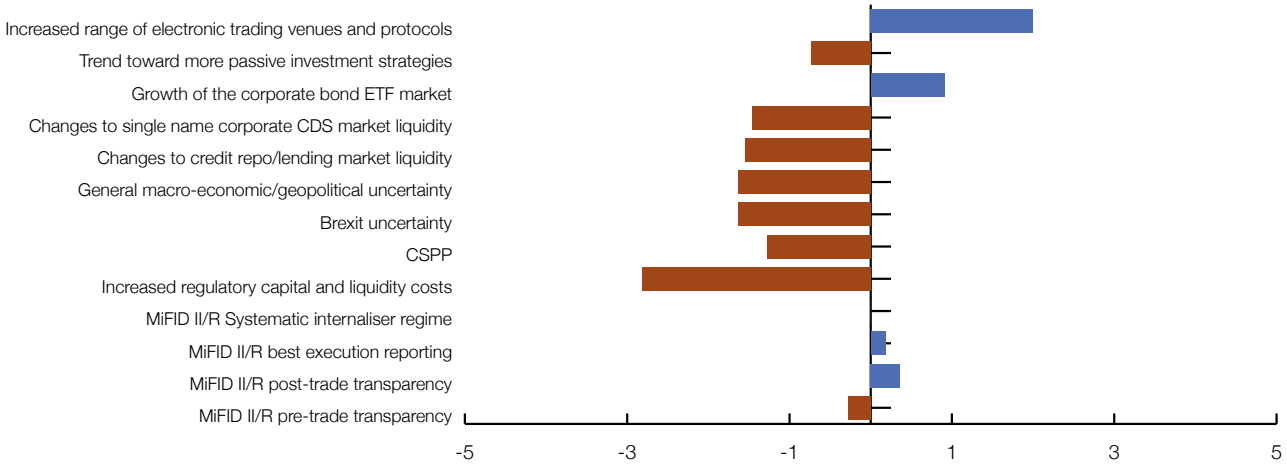
The survey responses suggest that with the exception of the growth of the corporate bond ETF market, sell-side firms see little in the way of positive contributors to liquidity over the past three years, while selecting increased regulatory capital and liquidity costs, the CSPP, MiFID II/R (in particular pre-trade transparency, but also best execution reporting, post-trade transparency, and the systematic internaliser regime), the state of the credit repo and securities lending market, and general macro-economic and geopolitical uncertainty (including Brexit) as the main adverse influencers. The increase in the availability of electronic trading venues and protocols are also viewed as a negative; possibly seen as fragmenting the already limited liquidity pool.

Survey Q: How do you rate the impacts on liquidity of various factors (where -5 is very negative, +5 is very positive, and 0 is neutral)?

Sell-side
Impacts on liquidity



Buy-side
Impacts on liquidity



Buy-side firms also identify capital and liquidity costs as the single biggest determinant in the decrement of market liquidity, followed by the CSPP, credit repo, and economic and political uncertainty. However, they are far more sanguine when it comes to e-trading, equally positive as the sell-side on the growth of ETFs, and less negative to neutral when it comes to MiFID II/R.

Also recognized by both constituencies as having a dampening effect on liquidity is the state of the corporate SN-CDS market, as well as the trend toward more passive investment strategies, which is very much tied to the extremely low interest rate environment (another factor flagged in the interviews). It is interesting to note, however, that while the increased adoption of passive investment strategies is viewed as a negative for liquidly, respondents seem much more ebullient about the growth of the corporate bond ETF market.

The interviews explore these observations in more depth, revealing a number of key factors and evolving forces that are helping to transform the structure and dynamic of the market. These include the changing relationship between the sell-side and buy-side, the impact of MiFID II/R, the wider use of e-trading, the development of new automated processes and the enhanced use of data, the push for transparency, and the legacy of the CSPP. The evolution of the primary, credit repo, SN-CDS, and corporate ETF markets also play a pivotal role.

The evolving dealer-client relationship

The traditional paradigm for liquidity provision in the corporate bond market has been the dealer-to-client ('D2C') model, where dealers make markets (bids or offers, as required) in response to requests from asset managers and investors, regardless of whether they hold a matching position or not (in most cases they will not). Thus dealers will look to employ the bank's balance sheet to take a long or short position against the client's order, hedging their interest rate risk (through the government bond or swaps market), possibly their credit risk (using the CDS market), and using the repo market to finance the position. They will then look to unwind their position at a later time, ideally for a profit, effectively monetizing the bid-ask spread (which will reflect costs, such as balance sheet capital and liquidity costs, as well as hedging and funding costs, and, most importantly, the price volatility of the underlying market).[7] The ability to bypass dealers and find firms with directly opposing axes (the 'coincidence of wants'), while possible, is generally remote, given the vast diversity of individual corporate bond ISINs and the lack of frequency with which most of them trade. Market-makers, in theory, not only furnish investors with executable prices, they also provide immediacy.

As capital and liquidity costs have ratcheted higher in recent years, so the balance sheet available to dealers to support market-making has diminished significantly.[8] While discussed in the previous ICMA reports, the interviews confirm that this ongoing trend of shrinking dealer capacity continues to drive dealer behaviour and the dynamics of liquidity provision. This includes counterparty selection and a narrowing of the franchise, driven by an assessment of the overall value (i.e. profitability) of the client relationship ('the wallet'). In some cases, it is explained, market-making in credit is viewed as a client service that is effectively subsidized by more lucrative businesses and product lines (such as derivatives, prime brokerage, or clearing).

Market, and even security, selection by dealers is also becoming more prominent, particularly among firms outside of the global bulge bracket, with a focus on segment or sector specialization, playing to their strengths, and the objective of increased position turnover and inventory velocity. If dealers feel that they cannot trade out of a position quickly, they will price to miss.

From the buy-side perspective, behaviour is increasingly being driven by three critical questions: (i) who is likely to show the most competitive price for a particular bond? (ii) who might be axed with an opposite interest? (iii) who is going to step up to the plate for a significant order? For less liquid bonds and larger sizes, broadcasting an interest through multiple RFQs or in a lit order book is likely to be counterproductive. In these circumstances, information leakage will adversely move the market, leading to a potentially worse execution price for the client. Knowing which dealer or dealers to go to is therefore paramount in the investment decision process. Accordingly, buy-sides are increasingly relying on counterparty analytics, monitoring hit and quote rates of dealers across sectors and credits, as well as observing market reaction in response to a request.

Axes (i.e. the positions, interests, or client orders of dealers) are becoming an increasingly important part of the investment decision process, since these significantly increase the probability of a match, as well as an opportunity to 'get inside the bid-ask spread' (i.e. trade at a better price than that of a non-positioned market-maker). Traditionally, dealers have been reluctant to disseminate their axes widely (for fear or information leakage moving the market against them) and, where they did, this tended to be through salespeople sending lists on a Bloomberg message or emailed Excel spreadsheets. Increasingly dealers are sharing axes more widely among their franchise, with the process becoming more automated, either through trading venue functionality or via direct access connectivity. Knowing which bonds dealers are axed to sell or buy not only helps buy-side execution desks in identifying matching interests, but it

7 Bid-ask spreads are often used as a proxy for market liquidity. However, this is an imprecise and often misleading indicator since market 'liquidity' is only one component of the bid-ask spread, with volatility being the most significant.

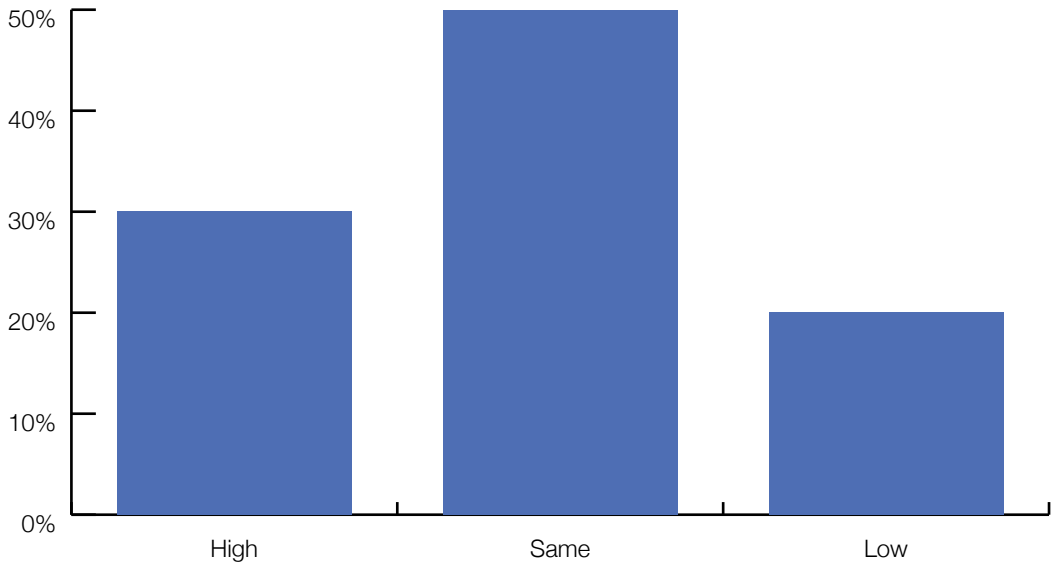
8 While there are no official data for dealer inventories or balance sheet usage in Europe, by way of comparison, US dealer inventories for corporate bonds are estimated to have reduced by more than 50% from the pre-crisis highs (Dick-Nielsen and Rossi, 2018).

also allows them to map liquidity, providing vital information on possible alternative investment options. For example, it may be difficult to find an offer in a specific ISIN, but a dealer may be axed to sell a bond of the same issuer, only with a slightly different maturity.[9]

This need for ever greater sophistication of buy-side execution desks is changing the relationship between portfolio managers and their execution desks. Traditionally, portfolio managers would select their trades, which would then be passed to the buy-side trader to work at best. A number of buy-side interviewees explained that the line between investment decisions and execution is becoming increasingly blurred as the two-way information flow between portfolio managers and traders becomes more essential and as the ability to source liquidity requires ever more intelligent analysis and a deeper understanding of the marketplace. As one buy-side framed it, 'Trading bonds is as much an art as it is a science'.

These considerations further complicate the concept of transaction cost analysis (TCA),[10] which is increasingly being adapted from the equity world to monitor 'best execution' outcomes by buy-sides transacting in fixed income. Given the vagaries and nuances of bond markets, as well as potential data gaps, established TCA models do not translate easily, although some participants report that TCA service providers are making good progress in developing bond-friendly metrics.

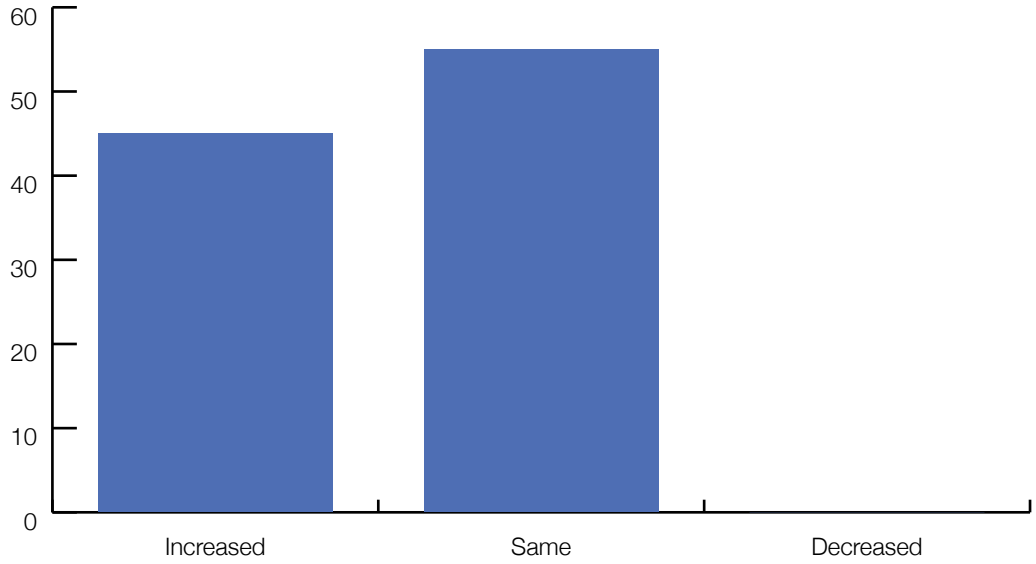
Survey Q [Sell-side only]: compared to 3 years ago, how would you describe usability of transaction cost analysis (TCA) for IG corporate bonds?
Usability of TCA



What also becomes more apparent through the interviews is an accentuation of the previously observed trend for greater bifurcation between smaller orders and more liquid bonds on one side, and larger trades and less liquid lines on the other. In the case of the former, which tend to have little or no market impact, minimizing time and effort (ideally by automating the order and execution flow) and finding the most competitive price (possibly through multiple RFQs or open trading protocols) are the priorities. In the case of the latter, getting the trade done with minimal market impact ('slippage') and information leakage is the objective. This is where the dealer-client relationship,[11] and a basis of mutual understanding and trust, are crucial, particularly in more challenged market conditions. This is very much the human aspect of corporate bond markets which appears to have become more important than any time previously.

9 This is sometimes referred to as 'fuzzy matching'.
10 TCA is essentially a process of analysis to determine whether transactions have been executed at favourable prices.
11 It was interesting to note than some of the sell-side interviewees referred to dealer-client 'partnerships'.

Survey Q [Sell-side only]: Over the past 3 years, how has the number of your broker-dealer relationships changed?
Dealer relationships



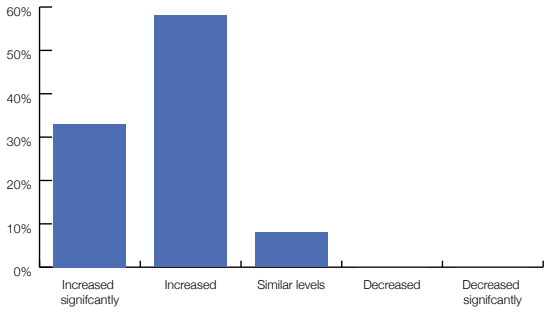
E-trading, automation, and data

Unsurprisingly, participants report that the use of trading venues and e-trading protocols to execute trades in the IG corporate bond secondary market has continued to increase over the past years. Some point to a fillip to e-trading adoption provided by the various reporting requirements of MiFID II/R, particularly among smaller firms, although many maintain that this is a continuation of a well-entrenched trend in the European credit markets that is primarily driven by a need for greater efficiencies in both pre- and post-trade processes.

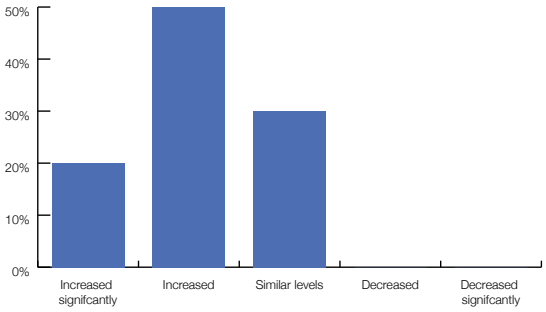
In terms of protocols being used, selective or multiple RFQ continues to dominate, consistent with the dealer-centric structure of the market, and whereby clients solicit quotes from specific dealers. RFQ is essentially an electronic form of the age-old practice of buy-sides calling their dealers for a price.

Survey Q: volumes traded electronically compared with 3 years ago?

Sell-side

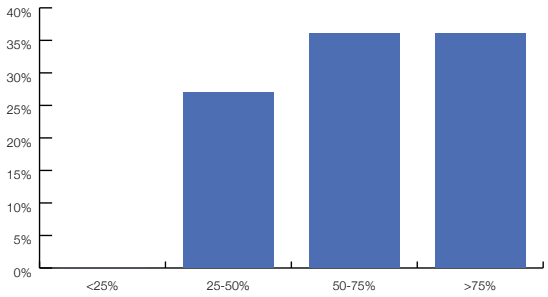


Buy-side

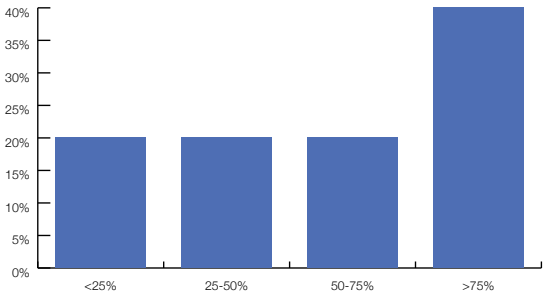


Survey Q: proportion of overall volumes traded electronically?

Sell-side

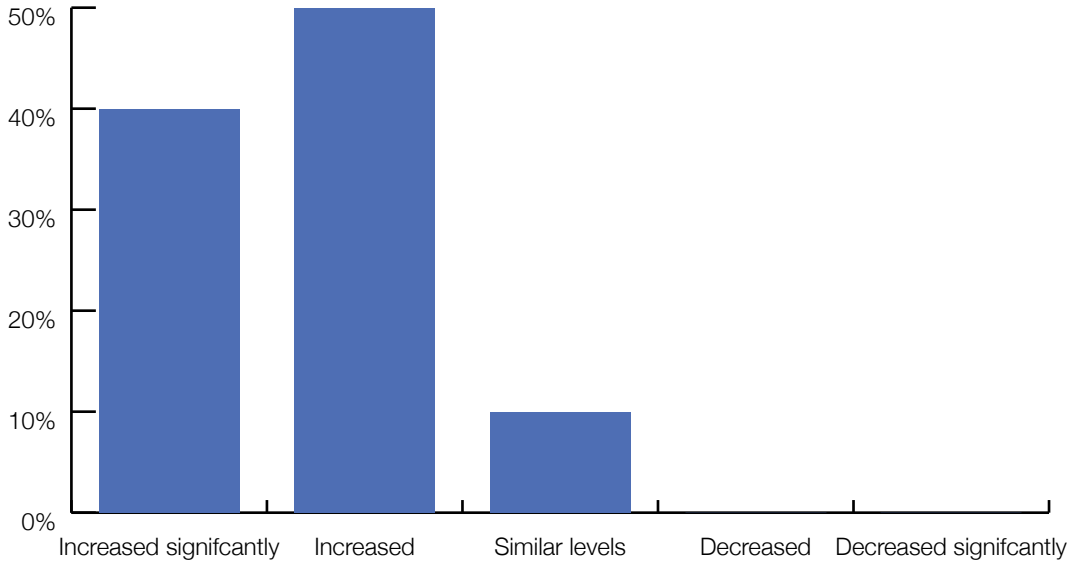


Buy-side



'Move-to-venue' transactions (often referred to as 'processed trades') also remain popular, whereby parties (again, invariably dealer and client) agree a transaction off-venue (say by messaging or phone), and then 'consummate' the trade on-venue, with all the associated benefits of automated reporting and post-trade processing. A number of venues support formalized functionality for this particular protocol, which has been largely driven by the advent of MiFID II/R.

Survey Q: use of 'move to venue' (or 'processed trade') protocols compared to 3 years ago?
Use of 'move to venue' protocols



Compared with three years ago, however, there appears to be more interest in, and uptake of, alternative protocols to source liquidity. In particular, a number of buy-side report more use of all-to-all protocols, such as RFQ-to-all (essentially soliciting all dealers on a venue simultaneously) or open trading (literally allowing all firms on a venue to connect anonymously to request quotes). As one respondent explained, it also allows buy-sides to become more proactive and essentially become price-makers, rather than price-takers. Sell-sides appear more mixed on the benefits of more open trading, with larger dealers preferring to limit their liquidity provision to selected clients. For some smaller, more local or niche market-makers, however, this is seen as providing access to accounts that would traditionally be beyond their franchise, and an opportunity to compete with their bulge-bracket peers on a more level pegging. The venues, who have seen open or RFQ-to-all protocols flourish in the US credit market, believe that momentum in Europe is only set to continue.

While open or RFQ-to-all protocols gain traction among buy-sides, as well as sell-sides, it is noted that underlying trade sizes tend to be relatively small, and ISINs more liquid. For larger, less liquid blocks, where information leakage can be detrimental, buy-side participants suggest that they are still hopeful that all-to-all, anonymized trading venues, or 'dark pools', (similar to those commonly used in equity markets) will become a more prominent and utilized liquidity source. Here the challenge is identified as being a lack of critical mass among users, despite a broad desire for greater

uptake. Similarly, buy-side interviewees would like to see more engagement with matching engines, or information networks, that automatically and anonymously scour users' trading blotters and inventory to find potential (or near potential) matching interests. As market-makers' balance sheets become ever more constrained, the view is that alternative means of trading larger sizes will become increasingly important.

Direct connectivity (or 'direct access trading'), whereby dealer banks stream axes or prices directly to their clients, appears to be gaining more interest among participants, which also supports more automated bilateral order execution, such as 'click-to trade'. Other protocols such as auctions, providing 'point in time liquidity' are used to a limited extent (mainly for cleaning up 'odd-lot' positions). Meanwhile there seems little hope of more exchange trading type protocols (i.e. a central limit order book, or CLOB) taking off any time soon. As a number of interviewees stressed, CLOBs simply are not suited for corporate bond markets, given the lack of market depth, infrequency of trading, and price sensitivity to information leakage.

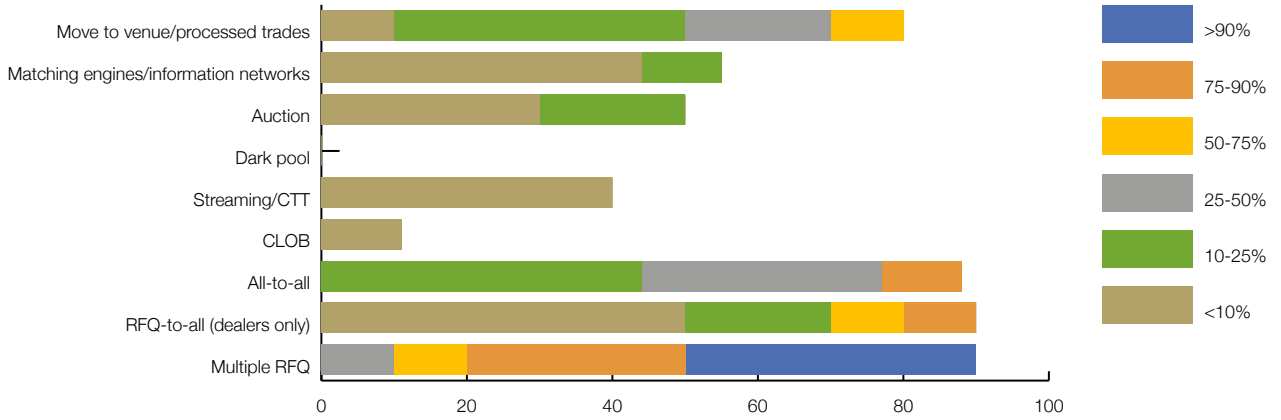
Perhaps the most eye-catching trend with respect to e-trading since the last study is the increased reliance on automation in the trading process, both for buy-sides and sell-sides. Sophisticated 'rules-based', or even algorithmic, automated processes to manage and direct orders to venues or counterparts are commonplace in equity markets and have been widely used by asset managers for many years. More recently, as technology becomes more advanced, their adoption in the fixed income space has become more prevalent, albeit mainly in the more liquid, homogenized, sovereign bond segment. Increasingly, however, interviewees and survey respondents suggest that this is beginning to impact the IG credit space.

The use of buy-side order management systems (OMS) has also increased in the recent years. OMS are essentially software applications which manage buy-side trade order flow, connecting the portfolio manager and execution desks internally, and then externally with various trading venues, direct counterparties, and data providers. OMS can either be an off-the-shelf vendor offering or proprietary software, and, depending on the degree of sophistication, can not only track orders, trading activity, and positions, but may also be capable of optimizing venue or counterparty selection, supporting order routing, as well as managing trade allocation, confirmation, and settlement instructions. Execution management systems (EMS) are software applications which focus more specifically on the real-time execution of an order, employing analytics to optimize trading decisions and providing streaming connectivity to multiple venues and counterparties, as well as providing post trade execution analysis. Increasingly, the distinction between OMS and EMS is becoming blurred as the functionality becomes more intertwined, and the processes more automated.

Buy-side interviewees and survey respondents indicate that their order flow in European IG credit is becoming increasingly more automated, albeit at the more liquid end of the spectrum and, again, mainly focused on smaller trade sizes. One respondent explained that this is very much an evolutionary process, incrementally adding new levels and parameters of complexity. For example, their OMS currently automatically routes orders below a certain size for RFQs. Where the quotes are within the acceptable range, these are 'auto-filled', and those that are not, which are generally the less liquid, more difficult issues, are re-routed to the buy-side trading desk to manage manually. The next step in evolving this process will be to introduce an algorithm to identify the difficult orders before they are sent automatically into the market, ensuring that these go to the trading desk first.

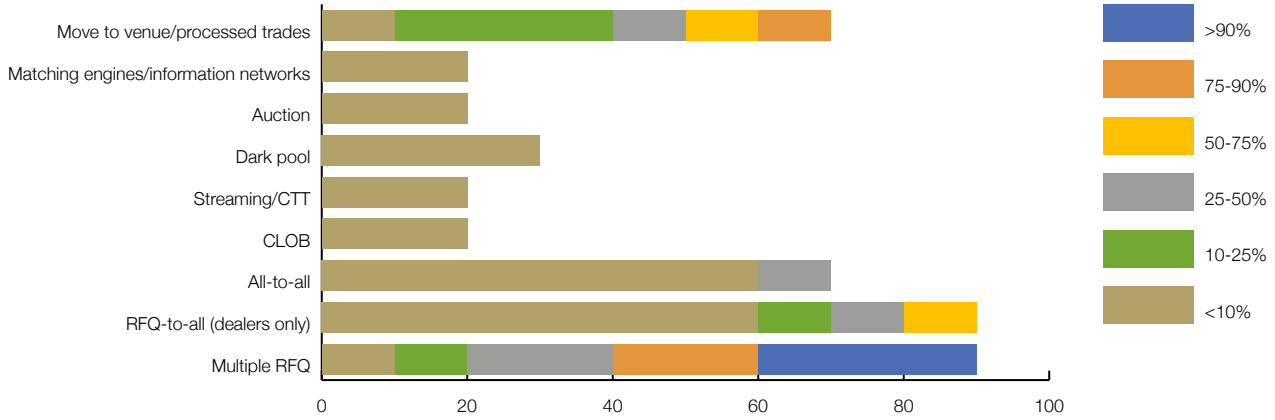
Survey Q: estimated proportion of electronic trading by protocol?

Sell-side - Use of trading protocols

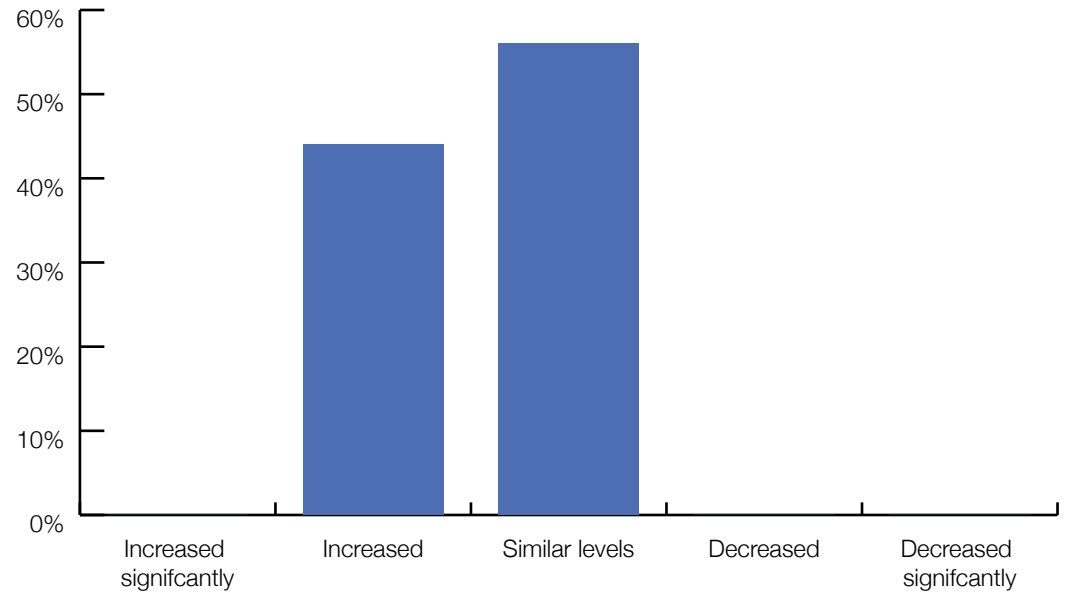


Survey Q: estimated proportion of electronic trading by protocol?

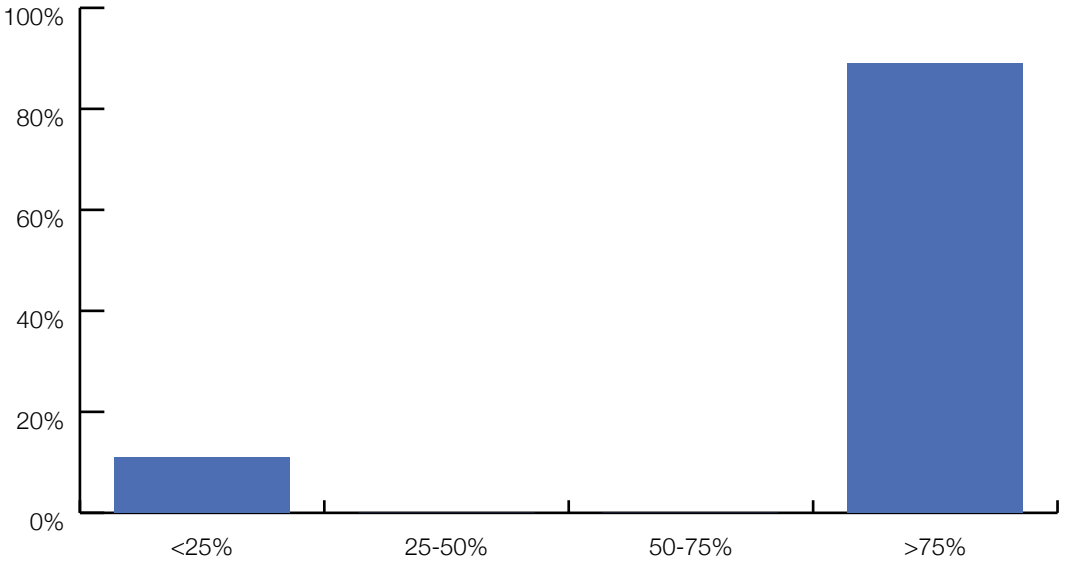
Buy-side- Use of trading protocols



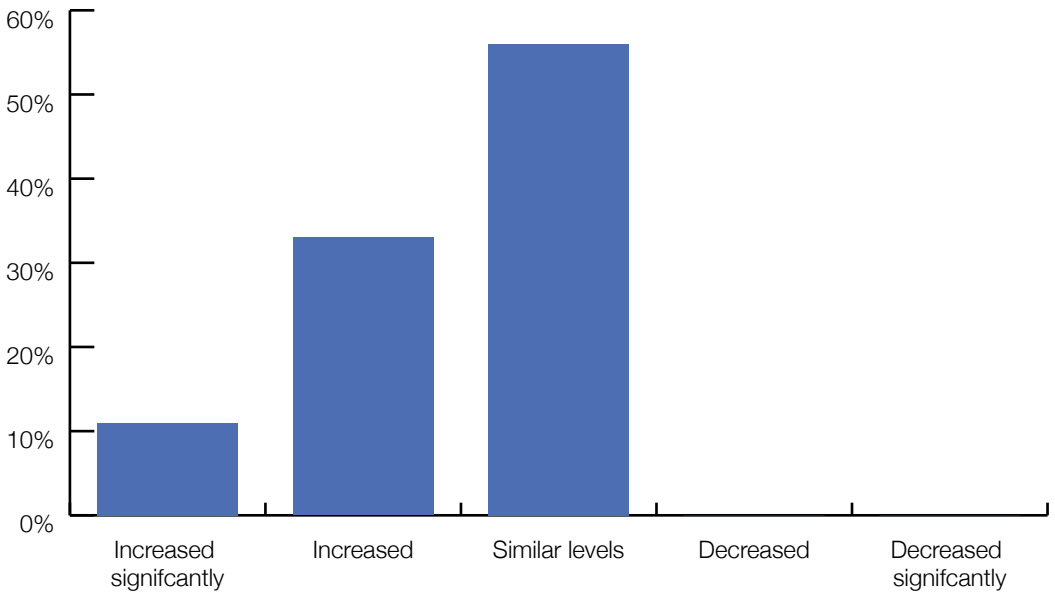
Survey Q: [buy-side] use of order management systems (OMS) for submitting orders electronically, compared with 3 years ago?
Use of OMS



Survey Q: [buy-side] proportion of orders submitted via an OMS?
Orders via OMS



Survey Q: [buy-side] use of rules-based, fully automated electronic execution ("auto-execution"), compared with 3 years ago?
Use of auto-execution

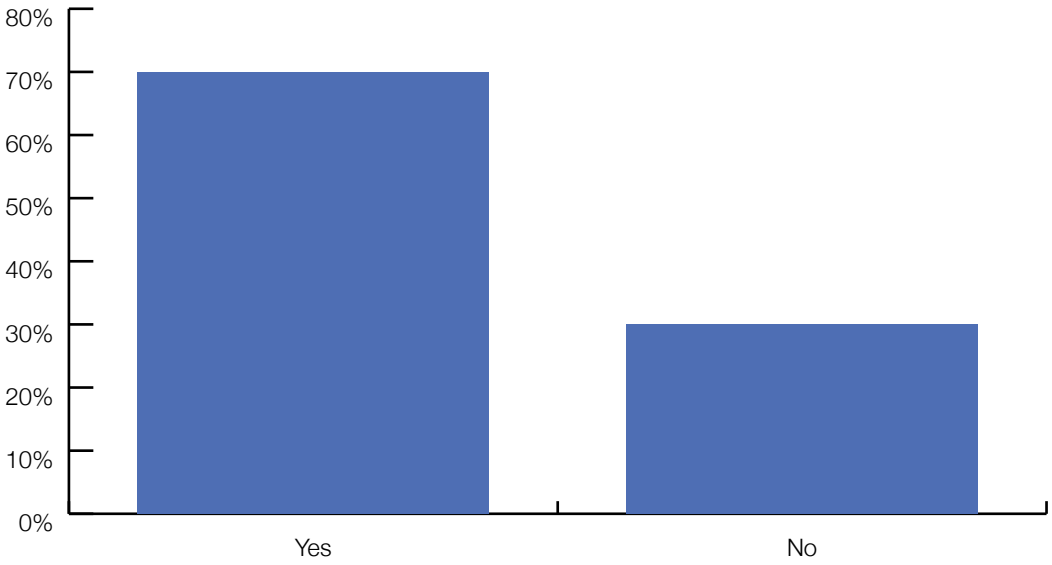


Similarly, sell-sides also report a continuing trend toward more automation in the IG credit market, and the increasing use of algorithms to quote prices, either in response to client RFQs, or on a streaming basis (continually updating two-way quotes, usually in response to a 'request for stream', or RFS); whether through a trading venue or directly to a client via direct access trading (DAT) functionality. Buy-side interviewees suggest that this is a welcomed development, providing actionable pre-trade transparency, and while sizes may be small, overlaying quotes from multiple dealers at least helps to build a picture of market depth and liquidity (constructing so called 'liquidity trees'). Some buy-sides report, however, that often there are differences between a dealer's auto-quoted price and the one you get if you call or message them, with the algorithmically generated price likely to be more defensive (i.e. worse).

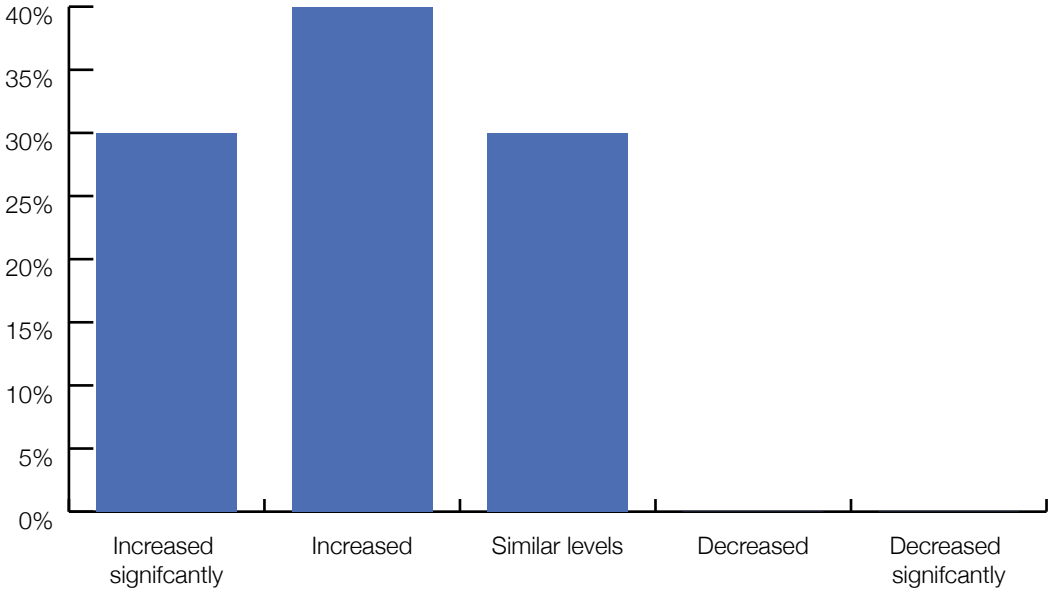
However, while 'auto-quoting' is now relatively well established for more liquid sovereign bond markets, it would seem that this is still relatively nascent in the credit space, and very much limited to smaller ticket sizes (usually for sizes smaller than €1mm nominal and, in many cases, much smaller). But respondents believe that as market-makers and asset managers become more confident in the technology, this is likely to accelerate, both in terms of ISIN coverage and ticket sizes.

Underpinning these advances in automation, as many respondents make very clear, is the availability of and access to extensive, reliable data. While the quantum and quality of pre- and post-trade market data provided by commercial vendors continues to evolve, proprietary data is also being viewed as a highly valuable resource. As some interviewees point out, there is a huge amount of information being generated through counterparty queries and interactions, which firms are becoming more focused on, and more adept at, capturing and leveraging as the basis for deeper automation. It is perhaps not surprising that several sell-side and buy-side participant report that it is now common practice to hire traders with data analytics or computer coding skills.

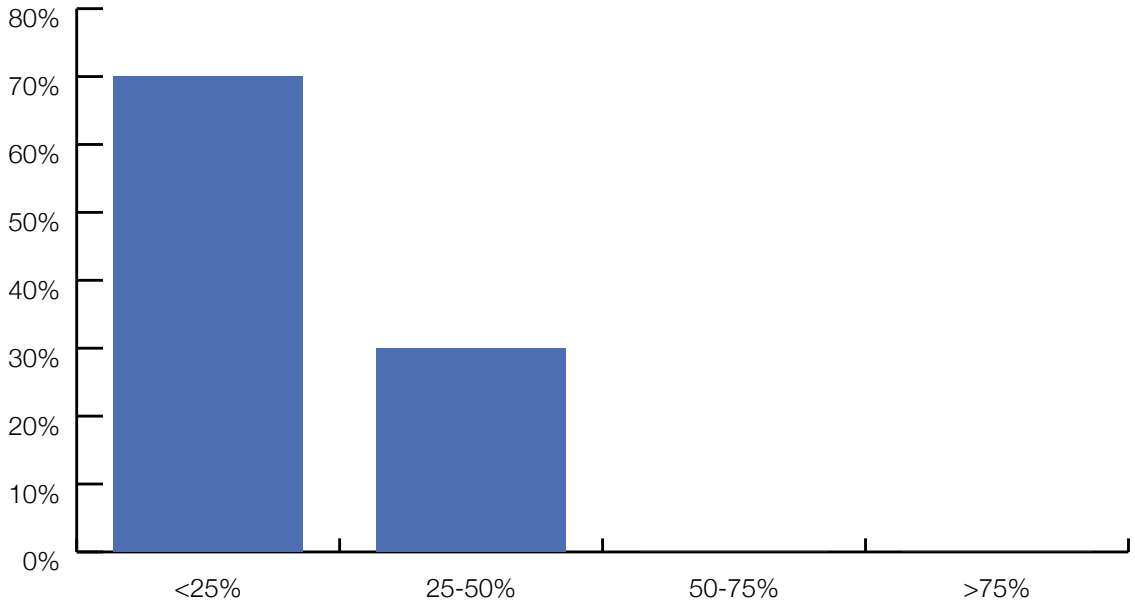
Survey Q: [sell-side] use of rules-based, fully automated quoting technology ("auto quoting") to respond to inquiries?
Auto-quoting



Survey Q: [sell-side] use of auto-quoting technology compared with 3 years ago?
Trends in auto-quoting



Survey Q: [sell-side] proportion of overall transactions involving auto-quoting technology?
Transactions involving auto-quoting



MiFID II/R

ICMA's 2016 report captured some of the mood of market participants as the introduction of MiFID II/R approached. The study noted that stakeholders seemed less anxious about many of the key requirements than previously, partly due to the welcomed announcement of a 12-month delay to facilitate preparedness, but also as a result of modifications to the post-trade transparency framework. In fact, a number of contributors to that study were looking forward to the potential for improved corporate bond market transparency.

Two years after the fact, any enthusiasm for the regulation seems to have evaporated, and many MiFID II/R requirements are routinely criticized. The failure to provide usable or accessible pre- and post-trade transparency data appears to the single biggest disappointment, with some suggesting that this has even hampered liquidity by creating greater fragmentation of visibility and access. Others are critical of the significant burden and lack of purpose of the best execution reporting obligations, as well as the negative effects of the new research arrangements on the availability of information on smaller corporate issuers, making their bonds more difficult to trade and so less liquid. But it is mostly the huge cost and administrative strain of implementation for very little tangible positive impact that seems to be the overarching assessment, in particular by sell-side respondents.

That said, interviewees, particularly on the buy-side, seem optimistic that the regulation will deliver benefits in the future and, if nothing else, that the post-trade data quality and usability will improve over time. Others note that it has helped move more trading (or, more precisely, execution) onto venues, which has led to improved overall efficiency. Meanwhile, two sell-side respondents point out that it has at least forced them to capture more data through the various reporting and record keeping requirements, and while this in itself may not add much value to their clients or the broader market, it has made them focus on how they can utilize this data to their own advantage.

Transparency

While the one great hope for MiFID II/R was improved bond market transparency, its failure to provide this seems to have prompted introspection and debate among market participants on the potential benefits of a greater degree of transparency in the European corporate bond market and how best this could be achieved. There is a near consensus view from interviewees that there is a need for a single 'consolidated tape' for corporate bond market price transparency in Europe, and some frustration that this was not fully appreciated by the regulators when designing MiFID II/R. The obvious point of reference for a functional consolidated tape for corporate bond markets is FINRA's Trade Reporting and Compliance Engine (TRACE)[12] in the US, which has existed since 2002. Not surprisingly, many participants cite this as the potential base model for the European market.

The discussions around market transparency, and the nature and potential benefits of a 'European TRACE', however, are quite varied and even disparate on some details. The first challenge to resolve is what information should be made available on a consolidated tape, and what is actually useful. It is noted that bond markets are very different to equities. For instance, knowing a bond's price on a particular day is comparatively useless in itself. Bonds, in particular corporate bonds, are valued relatively. Just seeing that a bond printed at a certain price (or even yield) does not reveal much information without knowing where the reference government bond or swaps yield was quoted at the same time. In other words, it is the credit spread which matters most, and not the price.

Then there is the question of the value of post-trade versus pre-trade data. Some participants believe that good post-trade data is essential to support their analytical models and the development of automated processes, while others argue that there is already decent availability of post-trade data (albeit at a cost) and that improved pre-trade transparency would be more useful from the perspective of informing price formation and order routing.

Another key point flagged in transparency discussions relates to what is the appropriate level of information disclosure before it becomes counterproductive. In a liquidity paradigm that relies on market-makers taking risk positions to service client needs, information leakage can be fatal. Avoiding the so called 'winners' curse' of liquidity provision leads the discussions into the minefield of reporting deferrals and waivers, and how much information about a transaction should be publicly disclosed and when. Some interviewees suggest that attempting to categorize individual securities as 'liquid' or 'illiquid' as a basis for different treatments is complex and likely to produce the wrong outcomes, with the MiFID II/R transparency regime being a case in point. They maintain that a simple and consistent approach would work best, with nominals, and possibly prints (i.e. actual trades), hidden for larger trade sizes.

While many interviewees point to TRACE as the holy grail of post-trade reporting for corporate bonds, a number suggest that it is not without its flaws. In particular it is noted that it has a tendency to 'anchor' prices, and that once a trade has printed dealers uniformly will quote around the last price, even if they are axed in a particular direction, leaving little opportunity for clients to 'get inside the spread'.[13]

A point also raised in the discussions is the more philosophical question of what a consolidated tape is intended to achieve, which ought to be central to its design. Some argue that many, larger firms do not need a consolidated tape as they already have sufficient transparency, either through their own flow or from vendor provided data. However, many smaller firms, both buy-side and sell-sides, may not have as much market colour, in which case a consolidated tape could help to reduce information asymmetry and create a more competitive playing field, which in turn could benefit end investors. A number of interviewees question the validity of the argument that increased transparency would help to bring retail investors into the market, positing that corporate bonds, as stand-alone investments, are wholly inappropriate for retail clients,[14] and that they should access the market through more fitting, portfolio-based investment vehicles such as mutual funds[15] or exchange traded funds (ETFs).[16]

While a number of interviewees express little optimism that the European corporate bond markets will see improved MiFID II/R public pre- or post-trade transparency any time soon, some suggest that there seems to be a growing desire from the authorities for a consolidated tape for bond markets in Europe, and a recognition that the MiFID II/R transparency regime is a missed opportunity that may need redressing in the near future. Hence it is possible that discussions around this topic are likely to intensify in the coming months and years.[17]

12 The Trade Reporting and Compliance Engine is the FINRA-developed vehicle that facilitates the mandatory reporting of over-the-counter secondary market transactions in eligible fixed income securities. All broker-dealers who are FINRA member firms have an obligation to report transactions in corporate bonds to TRACE under an SEC-approved set of rules. Beginning with only corporate bonds, TRACE-Eligible securities now include certain agency debt securities, securitized products (asset-backed securities), and U.S. Treasury securities.

13 In other words, dealers will show very similar bids and offers which reflect the last print on the tape, rather than reflecting their axes or interests.

14 One interviewee made the point that this argument is equally valid for retail investments in individual equities.

15 Known in the EU as Undertakings for the Collective Investment in Transferable Securities, or UCITS.

16 It is noted that there are arguments for greater direct retail participation in the European corporate bond market, however no such view was expressed in the interviews for this study.

17 ICMA member views on the need and potential for a European consolidated tape for fixed income are outlined in ICMA's response to ESMA's July 2019

ETFs

Another notable development since the previous study is the continued growth of the corporate bond ETF market, and the spillover impacts this appears to be having on underlying bond market activity. Growth in corporate bond ETFs has accelerated in Europe which brings with it new flows in the underlying bond market, as well as new players. This is primarily driven by the creation and redemption process undertaken by authorized participants (APs): sell-side market-makers or buy-side trading desks that are approved by the ETF provider to manage the supply of the ETF.

When APs create an ETF unit, say to sell to an investor, they must deliver the underlying exposure to the ETF manager. Since ETFs are often based on hundreds, or even thousands, of underlying securities (usually the ETF is based on an established index), in a process known as 'optimization', the APs are only required to deliver the securities from a much smaller proxy basket;[18] usually the most liquid securities in the overall ETF wrapper. Thus, when APs sell (create) a new unit of an ETF, they must go into the market to buy the equivalent proxy basket of securities in order to deliver to the ETF manager. Similarly, when they are sold units of an ETF, they can either look to re-sell the ETF itself, or they could redeem it with the fund manager. In this case they will receive the equivalent proxy basket of securities which they will then sell. Through this process, APs can look to make returns based on the small differences between the price of the ETF and the net asset value (NAV) of the underlying securities.[19] Similarly, they will monitor the market to identify any discrepancies between an ETF's price and its NAV, and look to arbitrage this difference by taking opposite positions in the ETF and the proxy basket.

Interviewees confirm that the growth of the European corporate bond ETF market has driven significant new two-way flow in certain corporate bonds (those in the proxy baskets) by APs. While sizes in the underlying bonds tend to be small (often sub €1mm), activity tends to be frequent, and the pricing relatively aggressive (usually APs are looking to trade inside the bid-ask spread as speed of execution is the critical factor). Furthermore, the related market orders that enter the market off the back of ETF creations and redemptions are generally automated.

Buy-sides also report that ETFs provide a liquid replacement for trading underlying corporate bonds, and a readily accessible means to manage market exposure in the case of sudden fund inflows and outflows, or abrupt market moves. For them, corporate bond ETFs are another tool in the fund manager's toolbox, providing an alternative source of liquidity for managing their overall market risk.

Many interviewees, as well as survey respondents, seem confident that the European credit ETF market will continue to grow, and that this will help further to generate liquidity in certain underlying corporate bonds (albeit in more liquid bonds and with activity driven by smaller trade sizes). However, some express concern that the growth in corporate bond ETFs could potentially be destabilizing, given the disconnect between liquidity (and trading volumes) in the ETFs and that in the underlying bond market.[20] Their concern is that in a sharp downturn, liquidity conditions in the corporate bond market could not support a significant rush to redeem ETFs. In this scenario, APs may have to rely on the ability to recycle the ETFs in the secondary market, which could be challenging, particularly as prices and NAV differentials become dislocated, accelerating further any market moves. Others, however, counter this argument positing that ETFs are far more easily tradeable than the underlying market, particularly in volatile markets, and that an ETF price is a more accurate reflection of bond market values than the estimated NAV (which is likely to be based on stale or untradeable bond prices).

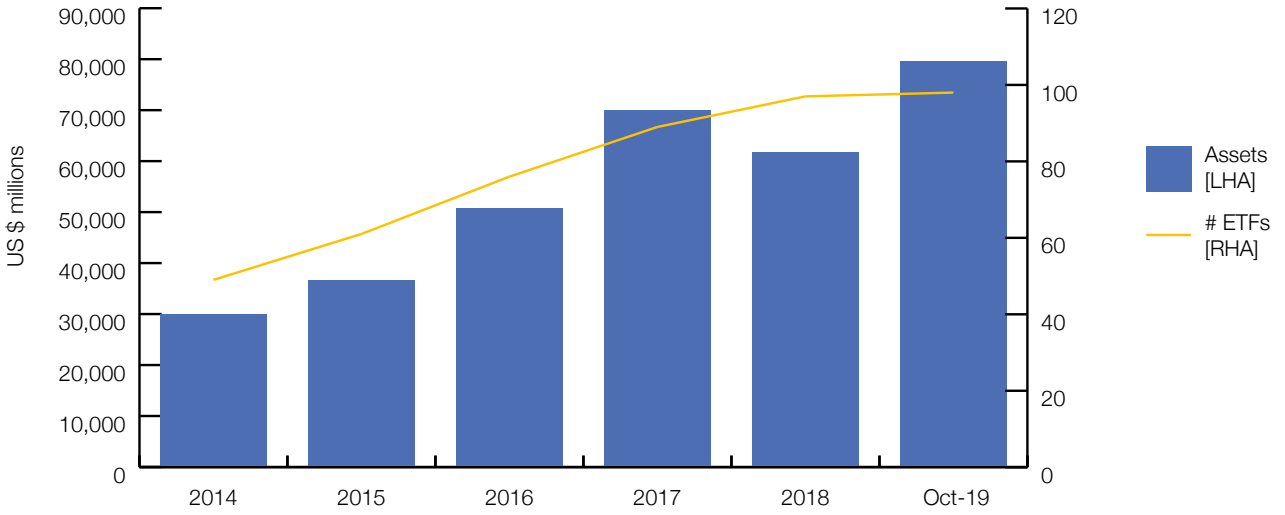
consultation on its MiFID II/R review report on the development in prices for pre- and post-trade data and on the consolidated tape for equity instruments.

18 This will usually be a sub-basket that is highly correlated (low tracking error) with the full basket underlying the ETF.

19 Essentially the aggregated market value of the underlying securities that constitute the ETF.

20 Trading volumes in the underlying securities in an ETF relative to the implied volumes of the ETF itself vary depending on the market but can be as low as 1%.

Figure 14: Growth in European corporate bond ETFs products
European Corporate Bond ETF products



Source: ICMA analysis using data provided by ETFGI, ETF/ETP Providers, and Bloomberg

Portfolio trading

The adoption of portfolio trading in the European corporate bond market is a relatively new initiative but features prominently in many of the interviews. The underlying premise is the ability for an investment firm to trade into or out of a basket of specified securities in one single transaction, with one counterparty. This is distinct from 'list trading', whereby firms make available a list of bonds in which they are interested in buying or selling, usually to multiple market-makers, with a view to transacting at the best price for each security on a line-by-line basis. In the case of portfolio trading, it is usually on an 'all-or-nothing' basis, with liquidity providers showing an overall bid or offer value for the entire portfolio.

A number of buy-side participants suggest that there is potential value in portfolio trading, primarily from the perspective of immediacy and knowing that it is possible to execute the entire portfolio in one transaction. While many of the underlying bonds may be relatively liquid, and therefore easy to establish competitive pricing from a range of market-makers, some are likely to be quite illiquid, and so more difficult to find quotes. Including these in a portfolio of more liquid names can help to draw pricing from otherwise reluctant dealers. Furthermore, portfolios can contain a significant number of individual bonds (sometimes hundreds of lines), and usually for small sizes, in which case obtaining a single, executable quote can be far more efficient than managing each individual line interest.

Interviewees suggest that many market-makers are happy to provide pricing on a portfolio basis, including the less liquid components. Furthermore, when it comes to showing offers in difficult bonds, many will provide 'near matches', recommending substitute bonds, such as the same issuer but a different maturity, either based on liquidity profile or dealer axes.

Some buy-sides, however, are more skeptical of portfolio trading, arguing that it is the buy-side trader's role to provide alpha and optimize best execution. Portfolio trading, they claim, effectively delegates this responsibility to the liquidity provider (who potentially also pockets any alpha). An additional challenge arising from portfolio trading is evidencing best execution. While the pricing of a portfolio is holistic, firms may be required to justify best execution at each individual line level to satisfy their internal compliance processes. Adjusting for immediacy, potential slippage (i.e. adverse price moves resulting from timing), or overall efficiency gains can be problematic.

Despite the potential pros and cons associated with portfolio trading, a number of buy-side interviewees view it as yet another useful tool in the liquidity toolbox. Participants report that portfolio trading for corporate bonds is establishing itself as a standardized protocol and that one trading venue was already planning to provide functionality to facilitate portfolio e-trading in Europe.[21] Enhanced automation of basket trading also helps to create efficiencies and immediacy in the creation and redemption processes related to ETF pricing and trading. One interviewee, however, suggested that the next step in the evolution of portfolio trading could be the design of algorithms which utilize list trading functionality and contingent logic to obtain the best quotes on a line-by-line basis before executing simultaneously with a broad range of

21 In November 2019, Tradeweb launched portfolio trading functionality for European credit bonds

counterparties. This could not only help to overcome the challenge of evidencing best execution but would potentially recapture some alpha.

Repo market

The credit repo market, which consists of both repo and securities lending activity in corporate bonds, is a fundamental ingredient in the creation of liquidity in the corporate bond market. As explained in ICMA's 2017 report,[22] corporate bond market-makers are reliant on a functioning credit repo market, both to fund any long positions which they take onto their books (mostly general collateral, or 'GC' financing) as well as to cover their short sales in order to make good on delivery (specifics financing). Since these financing costs are a key component of dealers' bid-ask spreads, as well as the ability to access financing markets being a prerequisite for liquidity provision, secondary corporate bond market liquidity and pricing are directly impacted by the relative functioning and liquidity conditions of the credit repo market.

That study concluded, at the time, that the European credit repo market appeared to work well, and that, for the most part, lender supply into the market was relatively good, particularly with respect to investment grade corporates. However, it was also noted in the study that the effects of the ECB's Corporate Sector Purchase Programme (CSPP) were starting to be felt (it had been running for almost a year at the time), and that repo rates and liquidity in eligible issues were becoming stretched, particularly where central bank purchases appeared to have left dealers short.[23]

The interviews with credit repo desks for this study suggest that since the end of the CSPP, in December 2018, spreads for corporate bond general collateral have remained compressed, while specials premia have collapsed. The tightness of GC spreads is a direct result of significant excess bank reserves and the surplus of liquidity. It is reported that ECB eligible IG corporate bond GC now trades flat to, or even one or two basis points through, EONIA,[24] whereas two years ago it traded around ten basis points over. This puts it close to the GC levels for eurozone periphery sovereign bonds. Meanwhile, high yield GC spreads have narrowed from around 30 to 35 basis points over EONIA, to ten to 15 basis points; largely driven by money market investors willing to broaden their risk appetite in the pursuit of any incremental return on their cash.

Participants report that the easing of specifics spreads is being driven by a combination of factors. One appears to be greater supply coming into lending pools, mainly from real money asset managers and investment funds. As it becomes more difficult to produce substantive returns on assets in a low rate, compressed credit spread environment, any incremental gains from lending securities become relatively meaningful. Another is the fact that there are fewer shorts, which ultimately drive demand for specifics. Again, this can partly be explained by tight spreads and low volatility (which make the cost of being short relatively more expensive), as well as a hangover of the CSPP, where the risks of running short positions in eligible bonds became acutely asymmetrical. Finally, there appears to have been a flood of new sell-side entrants into the credit repo intermediation space since the 2017 report. Historically, the European credit repo market has been dominated by a limited number of banks with extensive franchises, dedicated specialist traders, and a healthy balance sheet commitment to the product. Interviewees suggest that the market has now become 'over-broked', perhaps in an attempt by banks' repo desks to seek out higher margin business, and pricing overly aggressively in order to win market share. One repo trader lamented that this once highly specialized, and somewhat lucrative, market was becoming increasingly commoditized and that the current market structure was 'unsustainable'.

While premia for specifics are reported to have compressed from a 25 to 40 basis point range, two years ago, to around ten to 15 basis points today, certain ISINs still can and do 'go special', and the price gapping can be dramatic. Usually prompted by news or credit events, and in parallel with sharp widening in the underlying credit spread, it is not unusual for specific names to blow out to 400 to 600 basis points through GC and remain there for some time. Settlement fails and buy-ins often serve to compound this specialness.

A small decrease in balances and average fees following the end of the CSPP are illustrated in the DataLend data for European corporate bonds (See Figures 15 and 16).

22 ICMA (2017), The European Credit Repo Market: The cornerstone of corporate bond market liquidity
23 It was also noted that even where banks sold long positions, they tended to 'double cover' in the repo market to ensure that they made good on their delivery, given the zero tolerance of central banks for settlement fails.
24 The Euro Overnight Index Average (EONIA) is the one-day unsecured interbank interest rate in the eurozone.

Figure 15: European corporate debt on loan
Corporate Debt (Europe) On Loan (USD)

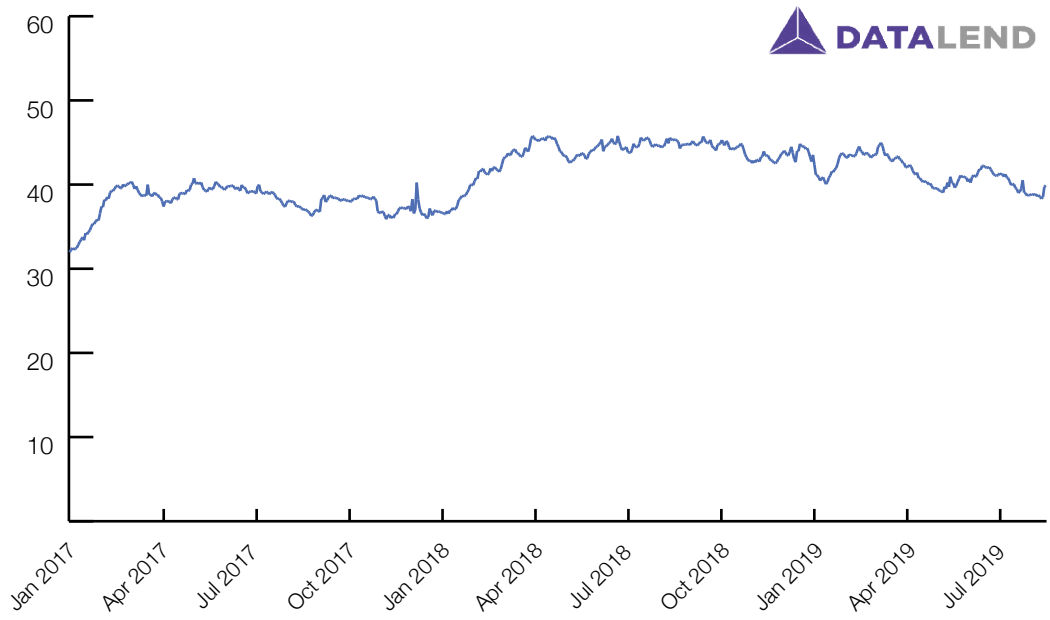


Figure 16: European corporate debt average fee (basis points)
Corporate Debt (Europe) Fee All (bps)

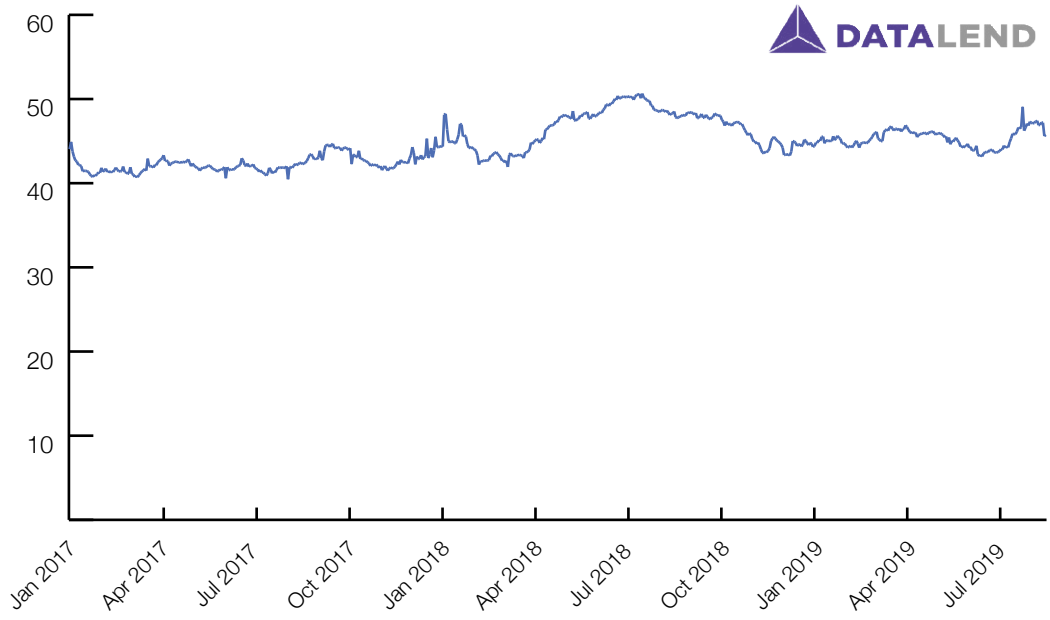
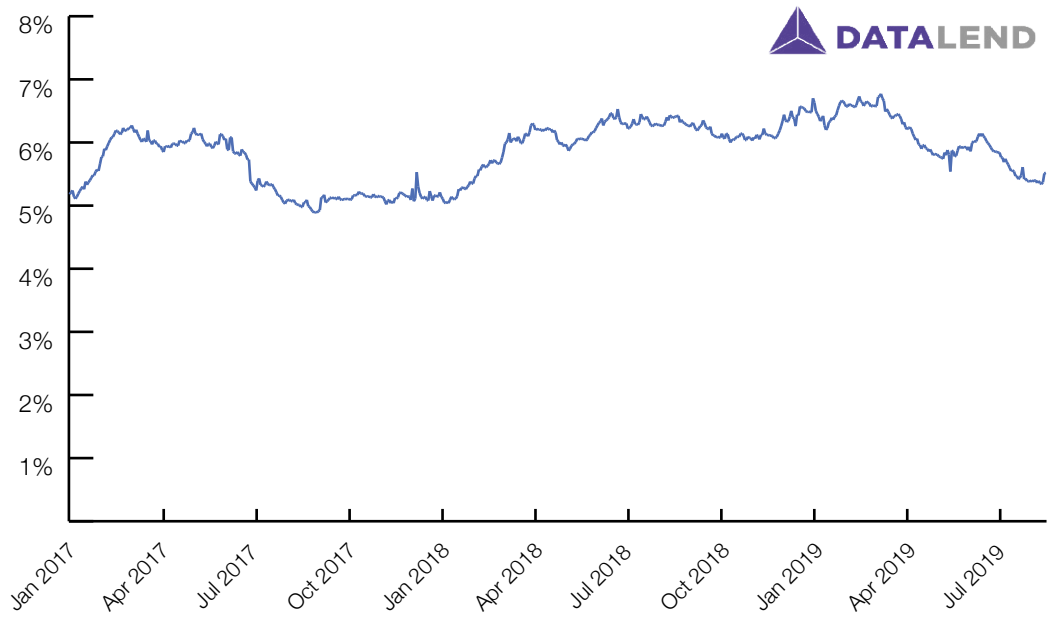


Figure 17: European corporate debt loan utilization
Corporate Debt (Europe) Utilization



Other key discussion points raised in the interviews include the specter of CSDR mandatory buy-ins (expected to be detrimental to market supply and intermediation – see next chapter) and the compelling need for automation. The credit repo market is largely a 'D2C' market, rather than interbank, is non-centrally cleared, and trades are invariably short-dated or on an open basis.[25] Reflecting the characteristics of the underlying bond market, general trading activity tends to encompass a significant number of unique ISINs, often in small size. Traditionally, trading, from negotiation to execution, has been a manually intensive process, and largely reliant on established electronic messaging (supplemented with the occasional phone call).

BondLend has been the pioneer of automation in the credit repo and securities lending space for a number of years, and more recently its 'Next Generation Technology' functionality has gone some way to bridge the gap between the more manual and automated processes of both lenders and banks. It would seem that other platforms have so far been slow to fill the void, and there appears to be a gaping need for more electronified protocols (such as RFQ, open trade management, and straight-through-processing). Interviewees suggest that this would not only create greater efficiencies and help to facilitate the automation of routine processes, but the move of trading onto venues or platforms could also provide a much-needed element of market transparency. While repo rates are largely counterparty specific, and not necessarily helpful as a point of reference in price formation, simply knowing what has traded, and in what volumes, can be a meaningful indicator of market depth and liquidity: something that will become ever more germane in the wake of CSDR mandatory buy-ins.

CDS and derivatives

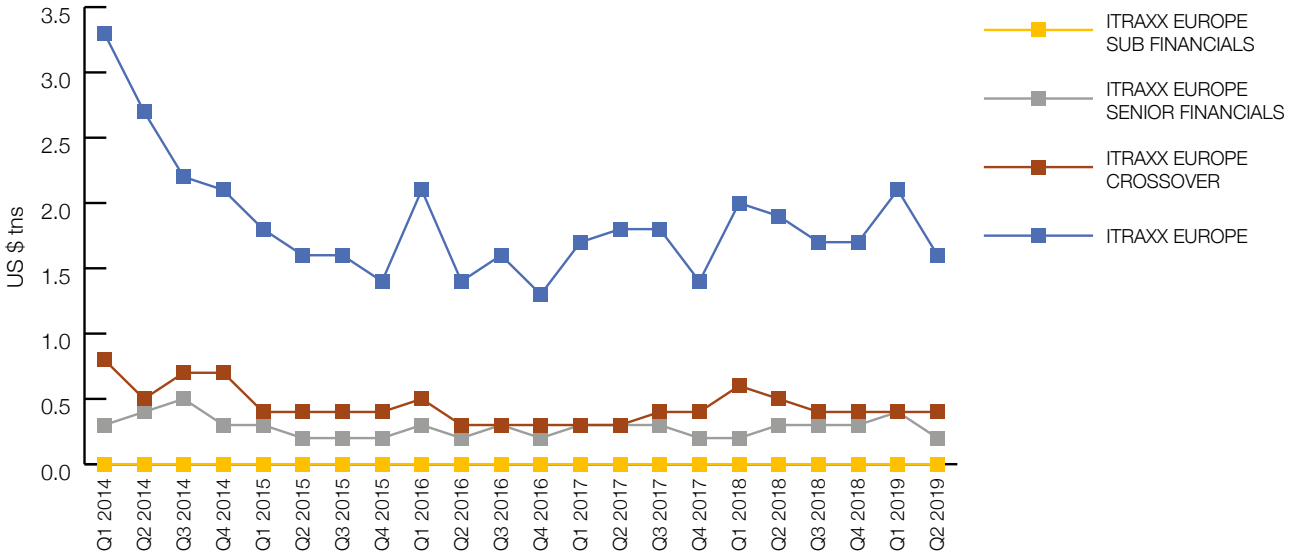
ICMA's 2018 study into the state and evolution of the European single name credit default swap (SN-CDS) market[26] highlighted a significant deterioration in liquidity since 2007-08, largely attributable to the retrenchment of dedicated market-makers. In turn, this was recognized as having a dampening effect on underlying corporate bond market liquidity, and the report recommended regulatory modifications to help revitalize the market, which were further supported by the European Commission's Expert Group on Corporate Bond Markets.

25 This means that bonds are borrowed and lent with no specified end-date, but either party has the right to close the transaction at any time with short-notice (usually one day). Parties also have the right to negotiate changes in the repo rate or lending fee while the trade is still open (called 're-rating'), or to return/recall part of the borrow.

26 The European Corporate Single Name Credit Default Swap Market: A study into the state and evolution of the European corporate SN-CDS market, ICMA, 2018

The interviews for this report suggest that CDS remains an important consideration for market participants, both as a useful hedging tool and an alternative source of liquidity. For the most part, asset managers utilize the CDS index market as a means to manage inflows and redemptions. Given the lack of liquidity in the underlying corporate bond markets, it is more efficient to match inflows and outflows with the equivalent positions in index CDS (such as the iTraxx main), which can be done relatively quickly and easily, and then look to substitute the CDS exposure by purchasing or selling underlying cash bonds over time, and as liquidity conditions for specific names become optimal. Interviewees explain that trading in or out of €500mm of the current index contract with minimal slippage is easy: trying to achieve the same in a portfolio of corporate bonds could take days or even weeks. It was further explained that managing the basis between the CDS and the bond portfolios provides opportunities to generate additional alpha.

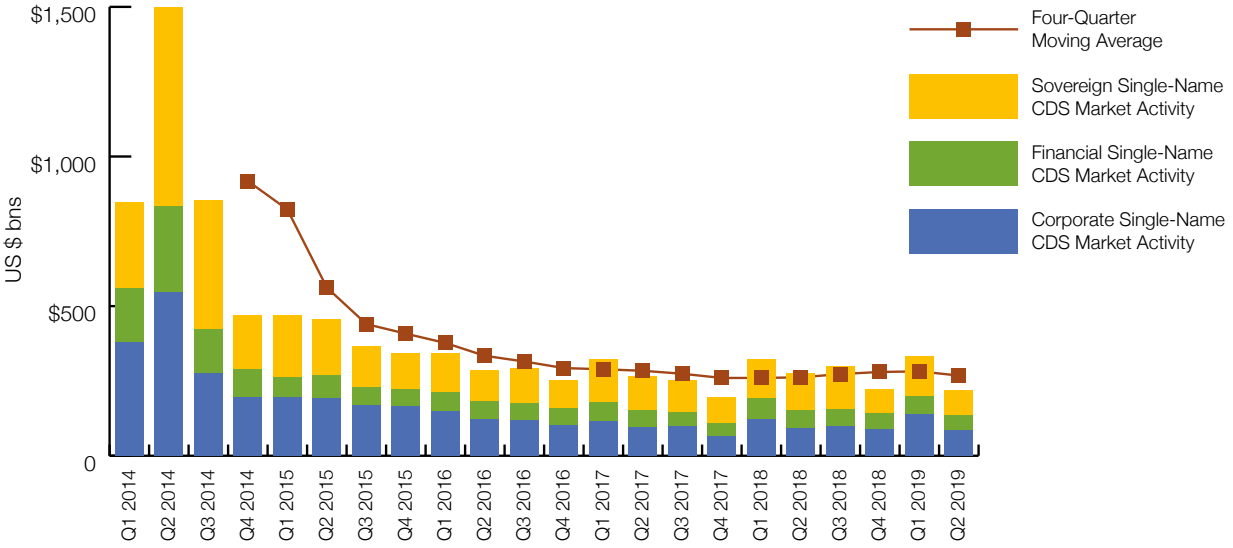
Figure 18: European Index CDS market activity (US$ trillions)



Source: ISDA analysis based on DTCC TIW data

Respondents lament, however, that while liquidity in the index market remains healthy, conditions in the single name market remain challenged. Participants explain that liquidity tends to be confined to around the 50-or-so most active names that are included in the on-the-run index, is mainly in the 5-year contracts, and mostly on a bilateral rather than centrally cleared basis. However, some point out that it is really the only hedging instrument available to manage specific credit risk, and so firms continue to use the market where they can. Furthermore, while liquidity in SN-CDS is poor, it can often be better than that in the underlying bonds.

Figure 19: European corporate single-name CDS market activity and transaction count (US$ billions)



Source: ISDA analysis based on DTCC TIW data

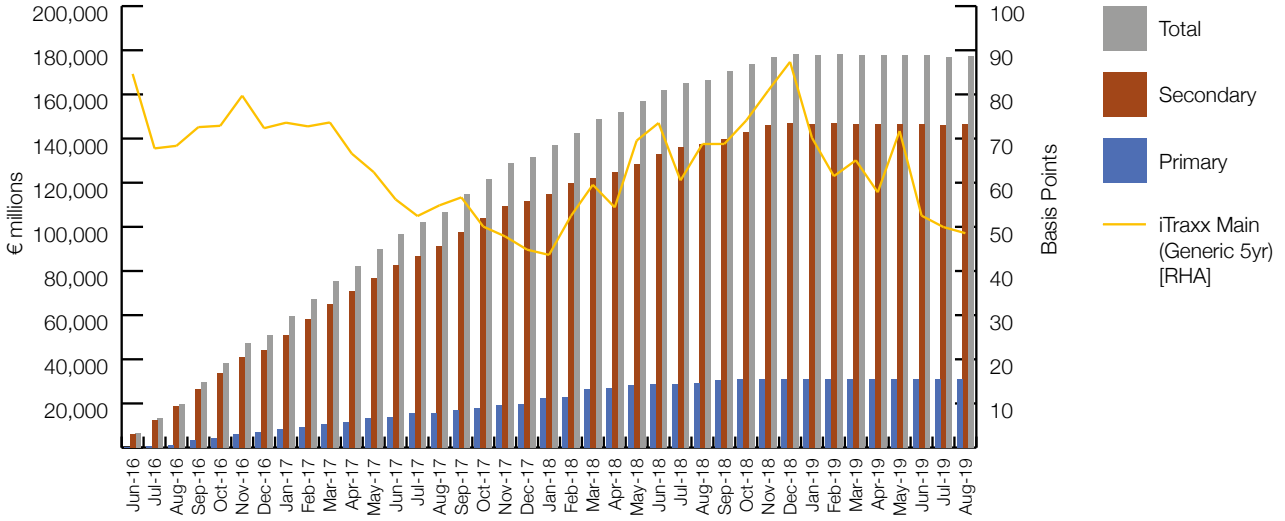
Buy-side interviewees report that they are also increasing the use of other derivative products in the pursuit of alternative liquidity sources to express more macro-credit views, in particular total return swaps (TRS) and CDS index options. They suggest that liquidity in both index-based TRS and index options is relatively respectable. There is also growing interest in more bespoke TRS baskets, as well as single name TRS, however liquidity is still quite low. Only one respondent reported that they had looked into using the EURO STOXX 50 Corporate Bond Futures contract but felt that volumes were still too thin to make it a viable alternative to CDS or RTS.

Corporate Sector Purchase Programme

The general view of interviewees is that the first round of the ECB's Corporate Sector Purchase Programme (CSPP), which ran from June 2016 to December 2018, did not lead to the evaporation of liquidity or dislocations in eligible names that some had anticipated. In total the CSPP accumulated just short of €180 billion (book value), which is estimated to be around 23% of the purchasable universe of eligible bonds, with the majority of purchases (some 83%) being executed in the secondary market. Respondents are largely complimentary of the ECB's management of the purchases, which suggests a concerted attempt not to disrupt the market or undermine liquidity. There is also a sense that they focused more on sourcing axed interests, rather than putting dealers short unwittingly.

In terms of the benefits of the CSPP, respondents seem mixed. While it did help to tighten credit spreads (see Figure 20), not only for the eligible universe but also for the non-eligible and high yield segment, as well as helping to flatten the IG credit curve (benefitting longer maturity bonds), some comment that this mainly served to benefit asset holders and frequent bond issuers through creating artificial overvaluations, rather than driving real economic stimulus. Meanwhile, there is a buy-side perspective that the programme created an information asymmetry which benefited sell-sides, since they are more directly in the flow of the purchases. Others, however, maintain that the CSPP skewed liquidity more generally, making it easier to find bids but more challenging to obtain offers.

Figure 20: CSPP Cumulative Purchases



Source: ICMA analysis using ECB and Bloomberg data

Interviewees suggest that liquidity did improve following the cessation of the purchases. While corporate bond spreads widened following the June 2018 announcement of the end of the purchases (see Figure 20),this was largely part of a broader global sell-off in credit and participants suggest that there were still plenty of conventional buyers to replace the ECB. While there was little expectation of an unwind of the programme any time soon, the concern for many was the possibility of a restart of the programme and the fear that market depth could not support further significant purchases.[27]

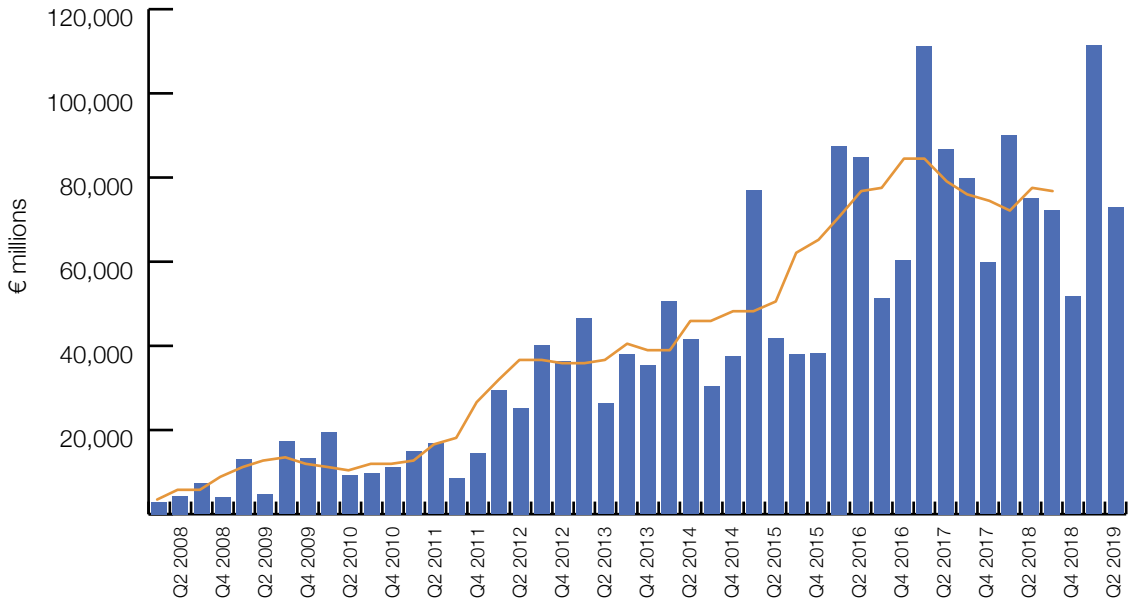
Issuers and the primary market

Issuers, as well as syndicate managers, follow secondary markets closely, usually as a barometer for market sentiment and investor appetite. The pricing action of an issuers existing outstanding issues (the issuer's 'secondary curve'), as well as SN-CDS pricing, where available, can be an important consideration in estimating demand and a useful reference point in determining the pricing of a new issue.

What becomes clear from the interviews with corporate issuers and syndicate desks is that despite any declines in secondary market liquidity conditions, the primary market remains resolutely robust. With the exception of a slow final quarter in 2018 (as global credit markets came under pressure), new issuance for European IG NFCs over the past three years has remained higher than at any previous time, and with the first quarter of 2019 hitting record levels (see Figure 21).

27 The interviews were conducted before the September 2019 announcement of the restart of the ECB's Asset Purchase Programme from November 2019.

Figure 21: European IG NFC new issuance
EEA IG NFC corporate issuance



Source: ICMA analysis using Bloomberg data

Corporate issuers report that they continue to monitor secondary conditions and hear from their dealer banks that liquidity remains challenged. However, easy monetary policy and the reach for yield, exacerbated by the CSPP, has kept demand high and spreads tight. One syndicate manager disclosed that for the first time, 2019 had seen new issues come to market at tighter levels than corresponding secondary levels, rather than at a usual discount (known as the new issuance premium). This also seems to corroborate the view from a number of asset managers that as it becomes more difficult to find offers in the secondary market, the primary market has become a main source of liquidity, particularly in order to secure larger sized clips.

While this has been to the benefit of issuers, and while they do not see the underlying demand for corporate debt waning any time soon, they remain cautiously aware that at some point the market will turn, at which time the demise of secondary market liquidity will likely accelerate any blow-out in spreads, and add a liquidity premium (i.e. a price discount) to new issuance. Syndicate managers report that the lack of liquidity in the secondary market is already affecting the pricing process for less frequent issuers. They note that for these issues, where they are reliant on secondary market guidance to set the initial price talk (IPT), traded levels tend to be old, and current quotes unreliable. Hence it is not unusual to see IPTs start conservatively wide, and often much wider than where the deal eventually prices; much to the consternation of investors. They suggest that as secondary liquidity continues to decline, IPT volatility is likely to become more common, with syndicates tending to err on the side of caution.

Thus, while primary market conditions remain buoyant, issuers are nonetheless concerned about the health of the secondary market. One respondent pointed out that they had not appreciated how poor liquidity conditions were until they entered into a buy-back program to replace some of their outstanding bonds. They report being frustrated at the challenge of finding firm offers in any decent size and the unreliability of screen quotes. While there is a prevalent view that increased capital costs for dealers and onerous markets regulation are mainly the secondary market's headache, there is concern that at some point these constraints will become the problem of bond issuers.

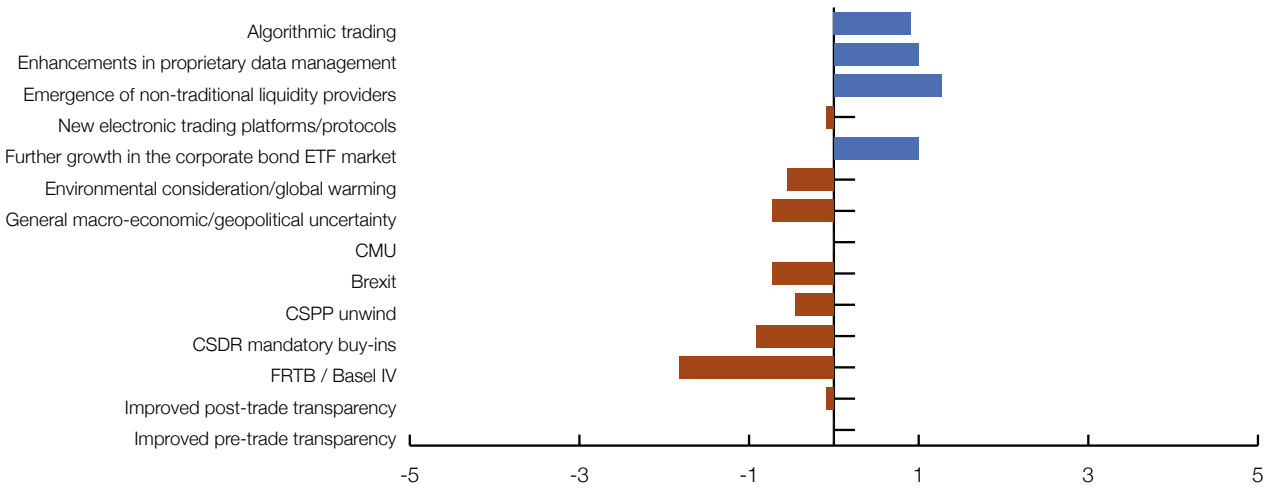
Chapter 3: future market developments

Overview

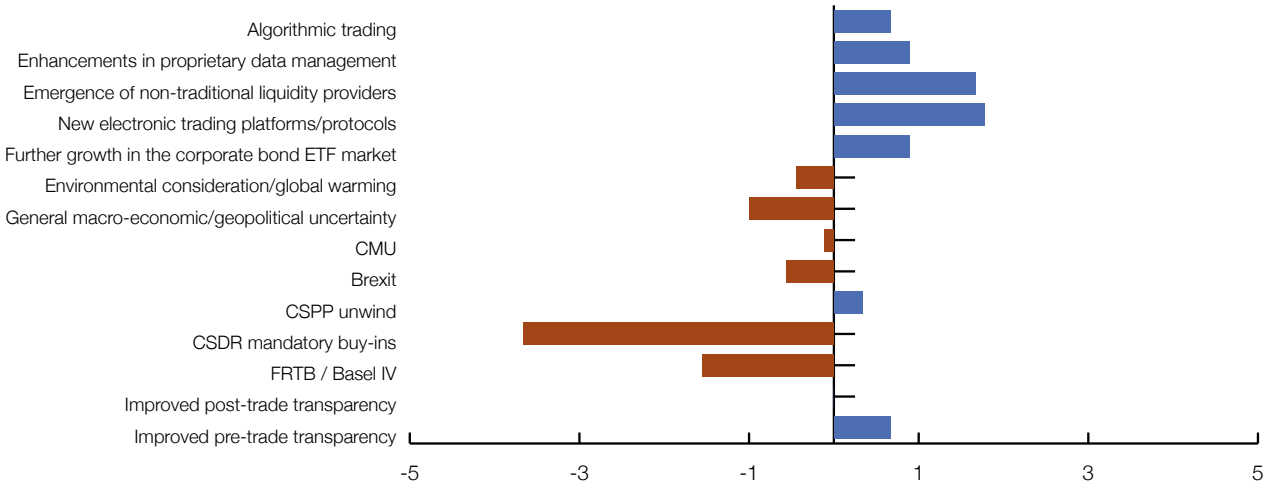
Both the surveys and the interviews flag a number of challenges, as well as potential opportunities, for the European corporate secondary bond market in the next few years. In terms of factors expected to undermine market liquidity and efficiency further, market and prudential regulation are discussed the most, in particular the anticipated increased capital costs which will be borne by market-makers with the introduction of more punitive capital requirements, as well as the introduction of the highly controversial CSDR mandatory buy-in regime. General macro-economic and geopolitical uncertainties also feature high on the list of market concerns. When it comes to positive market developments, the potential for data management, automation, and the introduction of new liquidity providers, particularly through the growth of the ETF market, are where participants pin their hopes.

Survey Q: In the next 3 years, what impact do you expect the following factors or initiatives to have on market liquidity (where -5 is very negative, +5 is very positive, and 0 is neutral)?

Sell-side



Buy-side



Mandatory buy-ins

Apprehension about the mandatory buy-in provisions of the CSD-Regulation were raised in both the ICMA 2016 corporate bond market report and the 2017 European Commission report by the Expert Group on Corporate Bond Markets. Both highlighted concerns about the impacts on bond market liquidity, efficiency, and stability, particularly with respect to Europe's corporate bond markets, and both recommended a reevaluation of the regulatory scope and provisions before attempting implementation. In the 2019 interviews, following the passing into law of the 'Level 2' regulatory standards (RTS) in 2018, the market's misgivings appear to have intensified. Buy-sides, in particular, are most animated in their criticism, suggesting that it is they that will ultimately bear the risks and costs of this contentious, and highly disruptive, regulatory initiative.

Many respondents indicate that while longstanding settlement fails are problematic, they tend to be rare. But in markets where liquidity is compromised, living with fails can be the difference between getting an offer and not being able to trade, particularly if you are comfortable with the credit risk of your counterparty.[28] Furthermore, the ability to issue a buy-in already exists; but as an option based on risk and commercial considerations, not as an unwelcomed, and unhelpful, regulatory obligation. The fear is that the resulting zero tolerance of settlement fails will mean that market-makers can no longer take the risk of showing offers in securities that they do not already hold in inventory, or are not completely certain that they can cover in the repo market.[29] Some interviewees suggest that it could potentially make sense if there was a longer tolerance period before the buy-in requirement became mandatory (30 days was proposed by two participants), but the general view seems to be that seven business days[30] is much too short a timeline for dealers realistically to work within.

Apart from the stark warnings with respect to adverse liquidity impacts, some participants also express concerns about the practicalities of implementation. High among these is the requirement to appoint a buy-in agent. Traditionally, buy-in agents in the credit markets were market-makers for the relevant securities, but post-crisis many dealers stopped providing this service, largely on the grounds that it was becoming too difficult and time consuming to find and negotiate the purchase of the securities being bought-in, and the potential reputational and conflict risks related to off-market execution prices were too significant.[31] A number of interviewees questioned the underlying assumption of the regulation that investment firms will be willing to put themselves forward as CSDR buy-in agents, particularly those with the expertise and franchise base required to operate in the less liquid segments of the bond markets. Other concerns flagged relate to the potential MiFID II/R requirements to apply the best execution obligation to the buy-in process (which could complicate the process further) and the methodology for determining the reference price for cash compensation in bonds that rarely trade.[32]

Other than the importance of continued industry efforts to petition regulators to consider the consequences of the regulation before implementing, participants discussed potential ameliorating market initiatives. Contractual frameworks to deal with some of the regulatory gaps, such as the buy-in and cash compensation differential payment and the introduction of a pass-on mechanism are considered to be helpful.[33] Greater transparency around repo availability and rates, as well as the potential for individual security 'settlement probability scoring' (similar to liquidity scoring) are also proposed.

It was noted that many long-term fails result from the increasing trend for smaller ticket sizes. Repos (and securities lending) become economically unviable for very small sizes (usually sub-€500k), and overborrowing against odd-lot shorts is disproportionately capital intensive. To prevent a raft of buy-ins related to smaller, usually automated trades, improved depth in and access to (I)CSD auto-borrow functionality could be a critical development. This is especially pertinent in the case of the corporate bond ETF market, which requires the ability of APs and other market-makers to short-sell baskets of underlying bonds, often in small denominations.

28 It was pointed out that a failing settlement does not economically disadvantage the purchasing party: they will still own the security and all the related cash flows and market moves, as well as retaining their cash, on which they will continue to earn additional interest until the trade settles.

29 The degree of concern raised by interviewees with respect to market impacts was the catalyst in ICMA undertaking a second bond market impact assessment which was published in November 2019. See: https://www.icmagroup.org/assets/documents/Regulatory/Secondary-markets/CSDR-Settlement-Regulation/Mandatory-buy-ins-under-CSDR-and-the-European-bond-markets-Impact-Study-271119.pdf

30 In the case of most securities, including corporate bonds, the regulation requires failed-to parties to initiate buy-ins against failing trades seven days after the intended settlement date (known as the extension period').

31 Since 2017, investment firms issuing buy-ins under the ICMA Secondary Market Rules & Recommendations have been able to execute the buy-in as principal, without the requirement to appoint a buy-in agent.

32 The regulation provides that where a buy-in cannot be completed successfully within the prescribed timeline, the trade must be canceled, and the parties cash settle based on an appropriate market valuation.

33 In November 2019 ICMA announced that it would update its Buy-in Rules (widely used in the European corporate bond markets) to provide a contractual framework and market best practice to support implementation of the CSDR buy-in requirements.

One interviewee was keen to point out that tolerance for settlement fails in the Asia bond markets is relatively low, that many asset managers insist on guaranteed delivery, and yet markets continue to function, and dealers still provide offers (albeit often based on existing inventory). However, the overwhelming perspective is that this could be a potential 'disaster' for the European credit markets, pushing it more to an axe-driven, 'long-only' market, and further diminishing the role of market-making. Many suggest that despite any good intentions of the regulation, it is unlikely to help anybody, will add to market instability and systemic risk, and ultimately will harm the very investors it aims to protect.

Other regulatory initiatives

The future of MiFID II/R is a regular feature in the various interviews, particularly with respect to the outlook for pre- and post-trade transparency. Data quality remains the overarching concern, and whether it will be possible to access and consolidate meaningful, reliable, trade data any time soon. On this, expectations appear mixed. Usability issues aside, the scope for improving on the current MiFID II/R requirements, including the transparency framework, and the inevitability of MiFID III/R II seem to be broadly anticipated. But until the current problems with trade reporting data quality are resolved, there is also a reluctance among some participants to become embroiled in a wholesale overhaul of the regulation, particularly so soon after implementation. The survey results further suggest that the pre- and post-trade transparency provisions are not expected to be major contributors to enhanced market liquidity in the next three years. Although, interestingly, buy-sides indicate some value in improved pre-trade visibility.

Of more concern from a market liquidity perspective is the next wave of Basel capital requirements, particularly in the form of the Fundamental Review of the Trading Book, or 'FRTB' (more formally known as the *Minimum capital requirements for market risk*). This will be implemented in the European markets through the Revised Capital Requirements Regulation (CRR II) and is due to be phased-in from 2022. Interviewees express concern about the degree of increased capital that will be required by market-making desks for products such as corporate bonds, particularly as banks internal models are calibrated more closely to the standardized approach, and with the introduction of more onerous, and unforgiving, desk and instrument level reporting obligations, such as the 'P&L Attribution Test'. As one interviewee explained, for many banks this will simply be too much effort, pain, and cost. They expect a far narrower focus of market-making desks, with the retrenchment of liquidity providers across a broad range of corporate bonds. As another sell-side pointed out, FRTB is not an incentive to grow your market-making businesses: from that perspective it is a limit on market development.

A number of respondents also suggested the likelihood of greater regulatory attention on corporate bond fund liquidity. Many of the interviews were conducted in the wake of the collapse of Woodford Investment Management, which raised concerns about the ability to value adequately certain illiquid assets held in open-ended funds. While participants felt that corporate bond funds had sufficient tools at their disposal to manage their liquidity risk, it seemed inevitable that greater regulatory scrutiny of fund managers' capacity to deal with risk-off scenarios and mass outflows was on the cards.

One interviewee seemed to sum up the clarion call of the industry, pointing out that the ideal position of policymakers and regulators is to find a balance between establishing market resilience and the conditions required to support market-making and maintain healthy liquidity. The suggestion is that a goal of regulation should be to optimize overall market efficiency, which ultimately would be to the benefit of all participants and the wider economy.

Macro-economic risks

The main concerns highlighted by interviewees follow two intersecting themes: the growth in corporate debt that is being held by asset managers and the ubiquity of passive investment strategies. While the short-to-medium term outlook for credit markets remains sanguine, there is widespread acknowledgement that at some point the credit cycle will turn, and the ten-year bull market will shift into reverse. And while this could be some time away, the market remains vulnerable to unexpected shocks in the interim. The concern of many participants is the market's ability to cope with such shocks or to adapt to a bear market.

Interviewees suggest that the exponential reduction in market-making capacity for European credit, along with an overconcentrated, largely heterogenous investor base, makes the market susceptible to extreme blow-outs and heightened volatility. They point out that as asset managers all rush to the door at the same time, the lack of willing (or able) buyers, be they dealers or alternative investors (such as hedge funds), will exacerbate the speed and extent of any price moves. The question seems to be not so much *if* such a market shock will happen, but rather *when*.

Many participants identify potential geopolitical and related macro-economic crises as the likely trigger events for any extreme market stress. High among these are concerns around the ongoing US-China trade spats as well as a possible escalation of military tensions in the Middle East. Interviewees seem less concerned about the implications of an untidy, 'no deal' Brexit, with the suggestion that any related risks are more UK specific. This may be due to the fact that most firms had already prepared for the UK leaving the EU without equivalence for financial services.

But the common view seems to be that while the cause may be difficult to predict, the ensuing market melt-down is inevitable.

Market structure

Where both interviewees and survey respondents identify the greatest potential for improving market liquidity lies in the enhanced use of data, particularly in facilitating developments in automation and algorithmic trading, as well further growth in the corporate bond ETF market and the largely related introduction of new market participants. In the case of buy-sides (but less so from the sell-side perspective), the emergence of new trading electronic venues and trading protocols is also seen as a potential positive.

As discussed in Chapter 2, there is a burgeoning focus on the capture, analysis, and deployment of firms' proprietary order and trading related data, not only to support the optimization of investment or trading decisions, but also to facilitate the automation of the trading workflow. There is a lambent alertness among both sell- and buy-sides that this will be the focal point for market development over the next few years, generating greater efficiencies for low-touch (liquid) trading, while providing enhanced intelligence to support the high-touch (illiquid), alpha generating sub-set of trading activity. In the case of the former, machine learning (ML) will inevitably play an increasing role, creating a more established human-digital partnership to fill the traditional trading seat. For a number of interviewees' firms this is not just informed speculation, but rather a strategic priority and a major investment of resources.

Largely enabled by new trading technologies and protocols (such as auto-quoting and portfolio trading) and the evolution of more algorithmically based order and execution processes, the continued growth of the corporate bond ETF market is widely cited as an important driver of future market development and a potentially important source of bond market liquidity. Similar to the boom in the CDS market in the early-to-mid 2000s, increased depth and activity in the ETF market is seen as having a gravitational liquidity effect on the underlying market: in this case mainly through the creation and redemption processes and the arbitrage relationship of the ETF with the underlying reference index (or at least a relatively liquid sub-set of that index). The expectation is that this will also draw new investment firms into the market, which specialize in ETF trading rather than traditional bond market-making, and who generate continuous two-way flows in a spectrum of corporate bonds as a natural byproduct of their ETF activity.

Conclusion

The interviews and surveys that form the basis of this report emphatically support the proposition that, more broadly, liquidity in the European investment grade corporate bond secondary markets has continued to decline since 2016. More specifically, they suggest that liquidity is becoming fragmented between very small, 'odd lot' transaction sizes, where liquidity is considered to be adequate, and, in the case of more liquid bonds, even improving, and larger, 'block' trades, which have become far more challenging to execute.

The continued evolution of the market structure, with the adoption of new platforms to facilitate connectivity and e-trading protocols, partly spurred on by the introduction of MiFID II/R, is helping to drive greater efficiencies, from price discovery and order management, to execution and post-trade processing. RFQ-to-all and open trading functionality is widening connectivity among market participants, providing greater access for both smaller, or more niche, buy-sides and sell-sides. More recent initiatives such as price-streaming, axe dissemination, and portfolio trading are providing potential new tools for buy-sides to source liquidity. Such developments are being underpinned by advancements in automation, such as algorithm-based dealer quoting and rules-based buy-side auto-execution, although these are still very much in their infancy in the credit space when compared to other markets such as equities and FX.

These advances in connectivity and automation are further supporting the rapid expansion of the European corporate bond ETF market, facilitating greater price discovery and immediacy through the creation and redemption processes; which in turn is generating activity and liquidity in parts of the underlying bond market, as well as drawing in new, non-traditional market participants in the form of ETF market-makers. This is broadly viewed as one of the most important market developments of the past few years.

However, the clear message from market participants is that, as welcomed as these structural developments are, they have not in themselves altered the underlying model of the corporate bond market, which is inherently reliant on broker-dealers as the primary source of market liquidity and immediacy. While new technologies are supporting greater efficiencies in the trading workflow, this largely pertains to flows in smaller transactions and more liquid bonds. When buy-sides need to sell or buy blocks of a bond, especially one that is not actively traded, this will invariably require the willingness, or ability, of a dealer to take on risk and show a price. This is becoming more challenging for banks as the cost of capital to support market-making activity is increasingly squeezed, forcing them to reconsider their business models.

What we continue to see is traditional liquidity providers becoming more specialized in certain segments of the market, transforming their core model into principal-broking rather than market-making, or reserving their balance sheet and risk capacity for preferred, 'high-wallet' clients. In turn, buy-sides are having to become increasingly more sophisticated and creative in how they source liquidity and manage their risk. Central to this is managing their dealer relationships. Scouring the market for quotes for large or illiquid interests, or slicing orders into smaller lots, are counterproductive and will result in worse execution. Therefore, knowing which dealers are complementarily axed or are willing to show a competitive price is of paramount importance. *As much an art as a science*.

In terms of other market developments since ICMA's 2016 report, participants report that the ECB's Corporate Sector Purchase Programme did not harm secondary market liquidity to the extent that had been anticipated, and that, on the whole, it was relatively well managed. Nor did the end of the CSPP result in a sustained sell-off, and, if anything, liquidity improved following its cessation. Liquidity in the single-name credit default swap market remains challenged, limiting the hedging options of both asset managers and market-makers, although buy-side use of CDS indices, primarily to manage redemptions and inflows, appears to have gained more traction. Credit repo traders report that the market is seeing more supply and more intermediaries, particularly post-CSPP, although overall demand has been in steady decline as the risks of being short have become asymmetrical. Meanwhile, corporate issuers and syndicate desks confirm that the primary market remains buoyant, widening the dislocation between primary and secondary market liquidity conditions.

Looking forward, there is continued optimism about the benefits of deepening automation and technology-led efficiencies, particularly enabled through more systematic capture and processing of proprietary data. Along with further growth of the corporate bond ETF market, and the related introduction of new liquidity providers, this is where participants see the most potential for improvements in market liquidity.

In terms of more systemic hazards, participants express concern about the risks arising from the intersection of the growth and concentration in corporate debt being held by asset managers and the predominance of passive investment strategies. The worry is that in the inevitable downturn, possibly triggered by a geopolitical or related macro-economic crisis, a disorderly rush to the exit would likely ensue. The limited capacity of market-makers to offer

liquidity, and the absence of alternative investment funds willing to take the other side, are expected to exacerbate any such market 'corrections'.

With respect to regulation, interviewees and survey respondents seem relatively ambivalent about MiFID II/R, and while there is an expectation that the quality and accessibility of trade data will improve, its impact on market efficiency and liquidity will remain limited. There are hopes among many participants for the eventual creation of a consolidated tape for European bond markets, along the lines of the US's TRACE; although this should not be an end in itself, and the rationale for, and the format of, any such tape are critical considerations. Many suggest that the touted objective of encouraging direct retail participation in corporate bond markets is misguided, and that the use of more appropriate investment vehicles should be promoted.

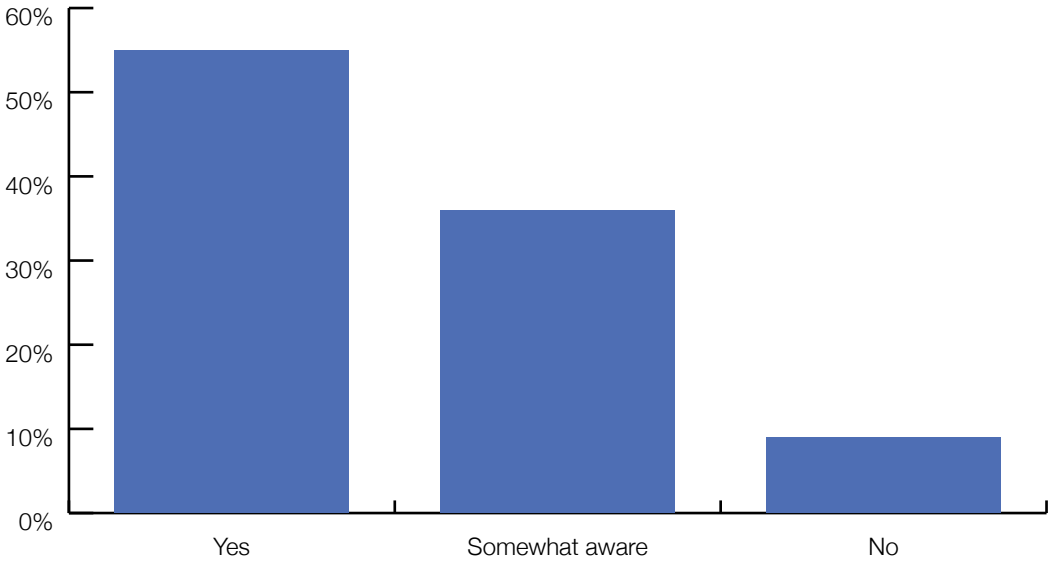
But it is two regulatory initiatives that go straight to the heart of the corporate bond market liquidity model that cause the most consternation among both sell-side and buy-side participants: further increased capital costs (mainly as a consequence of the Fundamental Review of the Trading Book) and CSDR mandatory buy-ins. Both will further constrict, potentially fatally, the capacity of market-makers to take risk and provide liquidity.

The risks arising from further increased capital costs for banks and the mandatory buy-in regime were also identified by the European Commission's Expert Group on Corporate Bond Markets as fundamental threats to the functioning of Europe's secondary corporate bond markets. A liquid secondary market is seen as essential in improving the efficiency and resilience of the European corporate bond markets, which is an explicit aim of the Capital Markets Union. Accordingly, the Expert Group recommended that both these regulatory initiatives be reviewed in the context of their impacts on market-making and underlying market liquidity, and potentially recalibrated in line with the goals of CMU (see Annex 3).

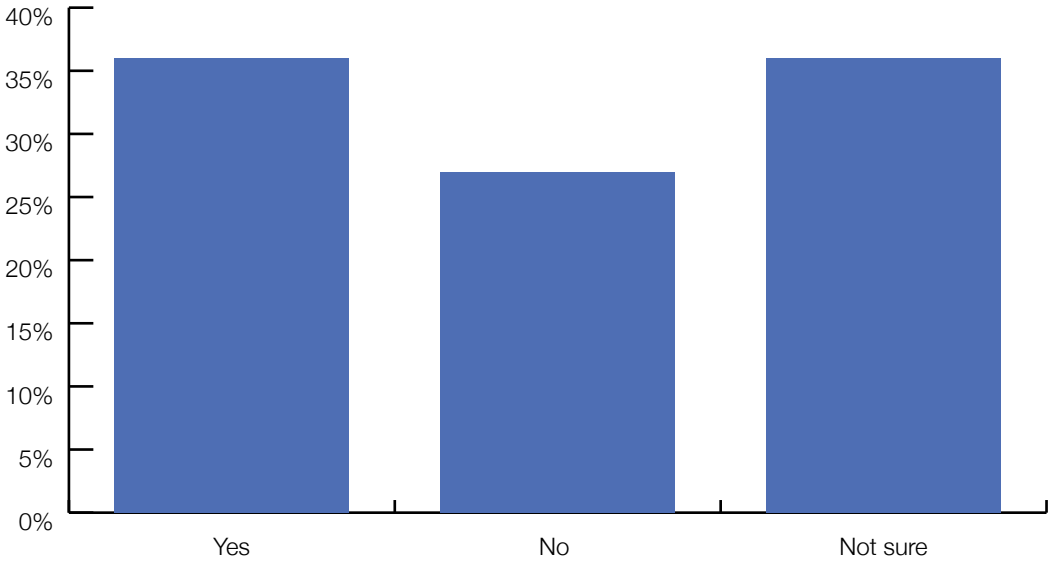
In the survey for this study, participants were asked whether they were aware of the work of the European Commission's Expert Group on Corporate Bond Markets, and whether they thought that there was enough regulatory focus on corporate bond market liquidity. Both the survey results and the interviews suggest that the 2017 reports of the Expert Group could have been more widely publicized and potentially used as a platform for broader and richer engagement between market stakeholders, including regulators and policymakers, in the common pursuit of improving the efficiency and resilience of the European corporate bond market.

If there is one recommendation arising from this study, it is that policymakers, regulators, and market participants should re-focus on the conclusions and recommendations of the Expert Group, particularly with a view to developing Europe's corporate bond markets, and in doing so establishing the optimal balance between market resilience and market efficiency. Liquidity in the European corporate bond secondary market is in long-term retreat. Without re-engagement and swift action by policymakers and regulators, it is set to decline further, thereby undermining the objectives of the CMU to improve the efficiency and resilience of the European corporate bond market. It is time to act.

Survey Q: Are you aware of the 2017 report and its recommendations, 'Improving European Corporate Bond Markets' by the European Commission Expert group on Corporate Bond Markets?
Aware of EC's Expert Group reports



Survey Q: Do you believe that there is appropriate focus by policymakers and regulators on European corporate bond secondary market liquidity?
Enough regulatory focus on liquidity?



Annexes

Annex 1: European corporate bond market liquidity: a summary of the literature 2017-19

Introduction

Prior to 2017, the discourse on corporate bond market liquidity was highly polarized between an industry perspective that market conditions were becoming increasingly challenged (ICMA 2014; PWC 2015; ICMA 2016a; CFA Institute 2016), and the regulatory viewpoint which took the line that liquidity was healthy enough (AMF 2015; FCA 2016; IOSCO 2017). However, market commentators routinely pointed to flaws in the regulatory analyses (ICMA 2016b), which often relied on unreliable price data, aggregated data from different asset classes or market segments, utilized arbitrary measures of liquidity, or were overly reliant on the Amihud equity market liquidity measure (Lou and Shu, 2016).

In 2016, the European Commission mandated Risk Control to undertake what is potentially the most extensive quantitative analysis of liquidity conditions and drivers in the European financial and non-financial corporate bond markets. The study (European Commission, 2017a) concludes that a range of indicators, including turnover ratios, mean trade numbers, and transaction cost indicators, suggest that market liquidity has been in marked decline in the years since the financial crisis. The report further suggests that previous regulatory studies had conflated a sharp decline in volatility with a perceived improvement in liquidity; corroborating some of the previous market criticism.

This seemed to mark a shift in the direction of regulatory discourse. In 2017 the UK's FCA updated its previous analysis of the UK corporate bond market by extending the data sets beyond 2014, as well as incorporating new data related to quotes and actual execution. In a volte-face to its earlier conclusions ((Aquilina and Suntheimquilina, 2016), it now suggested that trading conditions had become somewhat more difficult over the previous 18 to 24 months, and that market participants may have to work harder today to complete a trade than in previous years (FCA, 2017).

This brief report summarizes the key findings of the relevant literature since 2017, covering regulatory, market, and academic papers and reports.

Regulatory studies

ESMA (De Renzis, et al., 2018) also looked at the drivers of EU bond market liquidity, in particular at the relationship between liquidity and market conditions. The researchers concluded that in recent years market liquidity has been relatively ample for the sovereign bond segment, potentially a result of monetary stimulus. While they fail to recognize a systematic drop in corporate bond market liquidity, they do observe decreasing market liquidity when market conditions have deteriorated. They further identify a positive correlation between bond issuance size and liquidity.

The notion of bond market liquidity being directly related to market conditions, and therefore more of a potential systemic risk in stressed scenarios, has become a focus for regulators. IOSCO (2019) sought to increase understanding of how stressed conditions may affect both bond and other financial markets and the financial system more broadly. Drawing on a review of the literature on liquidity in corporate bond markets under normal and stressed conditions, an examination of past episodes of stress in corporate bond markets and discussions with a broad range of industry stakeholders. The report notes that changes in the structure of secondary corporate bond markets have altered the way that liquidity is provided in these markets. These changes result from such things as post crisis regulations that have reduced the capacity of intermediaries to provide liquidity in secondary corporate bond markets; greater risk aversion on the part of intermediaries; the gradual introduction of electronic trading; and significant growth in the size of these markets resulting from central banks' quantitative easing policies and low rates of return on other financial assets. Whilst the researchers suggest that these changes in market structure may result in greater price volatility in corporate bond markets in times of stress, their research concludes that that asset managers appear to recognize the problem and believe they have liquidity risk management arrangements that should allow them to handle an increase in redemption requests from their clients, without having to conduct fire sales of their corporate bond assets.

The Bank of England (Baranova et al., 2019) built a framework to simulate stress dynamics in the UK corporate bond market to analyze the behaviour of institutional investors to different types of market shocks and the potential for fire sales which can amplify price falls. The study finds that the magnitude of amplification depends on the cause of the initial reduction in price and is larger in the case of shocks to credit risk or risk-free interest rates, than in the case of a perceived deterioration in corporate bond market liquidity. Amplification also depends on agents' proximity to their

regulatory constraints. It further finds that long-term institutional investors (such as pension funds) only partially mitigate the amplification due to their slower-moving nature. The research further concludes that shocks to corporate bond spreads, similar in magnitude to the largest weekly moves observed in the past, could trigger asset sales that may test the capacity of dealers to absorb them.

In another study, the Bank of England (Mallaburn et al., 2019) explored the resilience of trading networks from the perspective of the UK corporate bond market. Using proprietary, transaction-level data, first it analyses the key properties of the trading networks in these markets. The study finds that the trading networks exhibit a core-periphery structure where a large number of non-dealers trade with a small number of dealers. Consistent with dealer behaviour in the primary market, the study finds that trading activity is particularly concentrated for newly issued bonds, where the top three dealers account for 45% of trading volume. Second, the research tests the resilience of these markets to the failure or paralysis of a key dealer, or to bond rating downgrades. It finds that whilst the network structure has been broadly stable and the market broadly resilient around bond downgrades over its 2012–2017 sample period, the reliance on a small number of participants makes the trading network somewhat fragile to the withdrawal of a few key dealers from the market.

Perhaps in response to the criticism of its 2015 study, the AMF revisited the concept of measuring corporate bond market liquidity, commissioning the Institut Louis Bachelier to analyze both the liquidity of securities and that of the corporate bond market as a whole resulting from the liquidity of these securities (AMF, 2019). The researchers identify the importance of the market's structure when analyzing the relevance of liquidity measures. They also note that many previous studies have been carried out on the corporate bond market have often merely used traditional liquidity measures, initially designed to measure the liquidity of equity markets, and therefore suffer from a lack of perspective regarding the relevance of these measures. Somewhat incongruously to the inconclusiveness of the analysis, the report concludes that to act upon the liquidity of the corporate bond market, changes need to be made to trading protocols, which means changing the roles of the various market participants and, where possible, switching from the current RFQ system to one more similar to an all-to-all CLOB system. Recognizing past failures to change the inherent nature of the corporate bond markets, it suggests that this will only be possible through an agreement or consortium between banks and/or asset managers.

Market studies

The market-based literature has largely moved on from the recognition that corporate bond market liquidity has become more challenged, and instead mainly focuses on changing market structure and the behavioural adjustments needed to adapt to the new market paradigm.

AXA Investment Managers (2017) were keen to shed new light on the more general market complaints of a major breakdown in corporate bond market liquidity. Based on analysis of historical proprietary trading data, the researchers posit that while It is undisputable that market structure has changed along with lower capacity of banks to warehouse bonds due to new regulatory framework and more stringent risk constraints, a lot of effort have been put into technology using innovative proprietary tools to improve information flow with banks on bond pricing and specific axes discovery. This has helped traders to identify promptly the potential sources of liquidity for both euro government and corporate bonds. They also cite the importance of building and leveraging the dealer-client relationship, particularly in building a strong reputation among market-makers on the way firms manage block trading inquiries and post execution communication. They argue that these elements contributed in building a partnership with counterparties which in turn dedicate balance-sheet capacity and provide liquidity. Finally, along with reputation, technology, and counterparty evaluation, adaptable trading strategies are viewed as key to nurture appropriate market access. The report predicts this will hold true for the coming years.

Amundi (2019) very much echo the conclusions of the AXA study. The report posits that assuming that different asset classes should remain liquid at any time can fuel a false sense of security and result in a lack of preparation for future possible tensions. This issue is in part due to the fact that liquidity has been poorly defined, with confusion between macro (the systemic liquidity provided by central banks) and micro (market liquidity at asset class levels) liquidity. It concludes that when liquidity is low and market impact might be significant, the only efficient approach is to source liquidity from all available sources. Hence, being big means having a global trading organization capable of ensuring the best mix of connectivity to liquidity venues and relationships with counterparties to ensure as many liquidity touch points as possible.

Citi (2018) also point to the changing credit market structure, noting the fundamental differences between equity markets and corporate bond markets. Credit markets have traditionally relied on warehousers of risk to provide liquidity and immediacy, usually broker-dealers; without this, sustained two-way flow is unlikely without market-makers to commit discretionary capital. The lack of market standardization of underlying securities, larger ticket sizes and lack of

retail involvement, no liquid repo/securities lending market for small sizes, and a predominant reliance on counterparty identification and transaction negotiation make corporate bond markets very different from equity markets. As the capacity of market-makers becomes more challenged, lessons learned and best practices from more mature electronic markets, such as equities, remain largely missing in credit. However, this does not warrant the 'equitization' of corporate bond markets. Ultimately, protocols are best left to evolve organically as suited to the underlying market. More prudent would be to recognize that credit remains a predominantly principal market, and to focus on building market confidence and robust infrastructure.

Academic studies

Academic studies of credit markets have also shifted away from the question of whether liquidity has declined and are also more focused on evolving market structure and where liquidity comes from.

Bessembinder et al. (2017) study trading costs and dealer behavior in US corporate bond markets from 2006 to 2016. Despite a temporary spike during the financial crisis, they observe that trade execution costs have not increased notably over time. However, alternative measures, including dealer capital commitment over various time horizons, turnover, block trade frequency, and average trade size not only decreased during the financial crisis, but continued to decline afterward. These declines are attributable to bank-affiliated dealers, as non-bank dealers have increased their market commitment. The evidence supports that liquidity provision in the corporate bond markets is evolving away from the traditional commitment of dealer capital to absorb customer imbalances and toward dealers playing more of a matching role, and that post-crisis regulations focused on banking contributed.

Anand et al. (2018) examine the role of buy-side institutions as liquidity suppliers in bond markets. Focusing on mutual funds, the researchers classify a fund's trading style as liquidity supplying if the fund helps absorb dealers' inventory. While mutual funds, in aggregate, demand liquidity, persistent cross-sectional variation exists: stable funding, family affiliation with dealers, and fund manager skill are associated with liquidity supply. Liquidity supplying trading style earns higher alpha, especially in illiquid markets. The evidence suggests that bond market liquidity can be enhanced by removing institutional frictions that impede broad investor participation in liquidity provision.

Gündüz, et al. (2019) study the impact of transparency on liquidity in OTC markets. They do so by providing an analysis of liquidity in a corporate bond market without trade transparency (Germany), and comparing these findings to a market with full post-trade disclosure (the US). They researchers find that overall trading activity is much lower in the German market than in the US. Secondly, similar to the US, the determinants of German corporate bond liquidity are in line with search theories of OTC markets. Thirdly, and surprisingly, frequently traded German bonds have transaction costs that are considerably lower than a matched sample of bonds in the US. The results support the notion that, while market liquidity is generally higher in transparent markets, a sub-set of bonds could be more liquid in more opaque markets because of investors 'crowding' their demand into a small number of more actively traded securities.

Butler et al. (2019) study the influence of credit default swaps on the intermediation of the bond issuance process. They conclude that after CDS initiation, corporate bond underwriting fees are lower due to the hedging opportunities CDS provide to investors. Participation increases for bond offerings by investors facing risk-based regulatory requirements, underwriting fees decline more for riskier issuers and illiquid bonds for which the ability to hedge with CDS is more valuable, and the underwriting quality remains unchanged. The researchers' evidence suggests that CDS-driven innovations in risk sharing contribute to the transactional efficiency of the market by reducing the financial intermediation costs of placing bonds.

Conclusion

2016-2017 seems to have been a watershed in the discourse around corporate bond secondary market liquidity. Previously, this had largely been framed in the context of market-based reports arguing the case that liquidity had deteriorated, primarily, if not exclusively, as a consequence of regulatory reform, and public sector studies contesting that there was no clear empirical evidence to support this. In some cases, they posited that market liquidity was improving. Following the European Commission's 2017 study there has been a more general acceptance that liquidity has become at best challenged, and instead the focus has moved on to a deeper analysis of market structure and the sources of secondary market liquidity. Regulators are particularly concerned about the importance, and fragility, of liquidity in more stressed conditions, and the vulnerability of corporate bond markets in the event of a market correction. Market commentators seem keen to emphasize the adaptability of the market to the new liquidity paradigm and the embracement of evolving market structure, while emphasizing the point that the underlying model of the dealer-centric market has not changed; nor is it likely to anytime soon. Academics have also shifted their gaze to market structure, the search for new sources of liquidity, and the vulnerabilities of the existing.

Perhaps what these themes commonly suggest is that the general perspective of corporate bond market liquidity, and the factors that drive it, has matured, superseding much of the thinking that may have been prevalent during the formulation of many prudential and market regulatory initiatives that are only now beginning to impact the European credit markets, or are yet to come into force. The critical evaluation of current regulatory provisions, in the context of corporate bond market structure and liquidity dynamics, looks set to gain momentum, while the calls for informed, evidence-based regulation are likely to grow louder.

A wide range of academic, regulatory, and market studies, reports, and white papers related to bond market liquidity can be found in the ***ICMA Bond Market Liquidity Library***:

https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/Secondary-Markets/market-liquidity/bond-market-liquidity-library/

Annex 2: ICMA's previous studies on the European credit markets

The current state and future evolution of the European investment grade corporate bond secondary market: perspectives from the market, November 2014

The catalyst for the study was increasing concern that the secondary markets for European credit bonds had become critically impaired and are no longer able to function effectively or efficiently. The research found that while liquidity has clearly eroded post-crisis, mainly as a result of stricter capital requirements for market-makers and unusually benign market conditions, the story is more nuanced than simply the end of liquidity. There are arguments to suggest that the levels of market depth and liquidity experienced between 2002 and 2007 were largely the result of banks mispricing balance sheet and risk, and overtrading in cash bonds being driven by the Credit Default Swap (CDS) and structured product markets.

The study sets out to explore stakeholder concerns related to market liquidity and to present a picture of the current state of the European investment grade corporate bond secondary market from the perspective of the market participants: the investors, the traders, the intermediaries, and the issuers. As much as it looks to highlight the risks and challenges, it also focuses on the extent to which participants are meeting those challenges and adapting to a new landscape. In this respect, it is an attempt to deepen the discourse around credit secondary markets, and to raise awareness and stimulate discussion among not only market participants, but also policy makers and regulators.

Summary of findings

Bank broker-dealers are responding to the impacts of regulation by changing their models. As a result of more discerning capital allocation within the banks, there is a shift to running smaller inventory, but increasing turnover. Firms are attempting to become more client-focused, particularly through the use of technology, while working client orders on an agency basis rather than making markets. Smaller players are becoming more involved in the space, focusing on niche sectors, and again leveraging technology to reach a broader client base.

The electronification of the credit market is making an impact in Europe, and most, if not all, expect this trend to continue. However, while the general view is that technology has an important role to play, not least in enhancing data management in terms of identifying potential holders or buyers of bonds, as well as improving connectivity across the market, this is still not a substitute for liquidity.

Corporate issuers are aware of the decrease in liquidity in secondary corporate bond markets, not least since this is key in pricing primary issuance. But the degree of concern is varied as to the likely impact this could have on their future issuance and capital structure, or their potential role in improving liquidity, and is largely dependent on their issuance profile.

There is a high level of concern from both sell-side and buy-side regarding new regulation, not least MiFID II/R. While many see improved transparency as a good thing, there is a worry that too much transparency could cause market liquidity to deteriorate further. There is suspicion that regulation confuses transparency and liquidity, which is not the same thing. There is also concern about the regulatory process in Europe, which, compared to the US, is viewed as less consultative and less circumspect to the possibility of unintended consequences.

A commonly held view is that a correction to the credit rally is inevitable and is likely to be severe. Some see the lack of liquidity in the secondary markets as exacerbating any correction, while others are more concerned about how a non-functional secondary market could impede any return to normality.

A number of market-led solutions to the potential liquidity crisis are discussed as a result of the various interviews, including greater utilization of e-commerce and e-trading, more developed cross-market connectivity, and changes in issuance practice. However, it is widely accepted that these initiatives cannot replace the role of market-making nor compensate for inimical regulation.

The study concludes that if the challenges facing the corporate bond secondary markets are to be addressed and solutions found, this will require the constructive and coordinated effort of all stakeholders: market-makers, investment managers, trading platforms and intermediaries, the issuers, and the various regulatory bodies and authorities.

Remaking the corporate bond market ICMA's 2nd study into the state and evolution of the European investment grade corporate bond secondary market, July 2016

The study sets out to explore how the European investment grade corporate bond market has developed since ICMA's 2014 study on the state and evolution of this market. It reviews how liquidity and market efficiency are being defined and impacted by the confluence of extraordinary monetary policy and unprecedented prudential and market regulation, and what are the implications for the market. Unlike the previous report, which was largely based on a series of in-depth interviews with market participants represented by ICMA – investors, issuers, banks and broker-dealers, intermediaries and infrastructure providers – this report relies on both qualitative and quantitative input from these market participants. It also asks where the market is heading, what are the challenges and opportunities in front of us and provides recommendations to support the long-term efficiency and functioning of the market.

Summary of findings

Market participants report that in the current environment it continues to be more challenging both to provide and source liquidity, primarily as the result of the concurrence and interaction of various regulatory initiatives and extraordinary current and future monetary policy, and the undermining of the market-making liquidity model, largely due to greater capital constraints on banks and broker-dealers. It appears to be increasingly difficult to trade in large sizes, to execute orders quickly, or to establish reliable prices. European corporate issuers are also increasingly concerned about the state of the corporate bond secondary market, which directly impacts their ability to raise capital necessary to fund investment. They note an unsustainable disconnect between primary market stability and secondary market liquidity that is being perpetuated primarily as the result of ongoing central bank intervention.

However, since the 2014 study, market participants are more resolved to adapt to the new norm and are evolving their business models accordingly. While sell-side firms continue to reshape their models around balance sheet efficiency, acting more as principal brokers than market-makers, the buy-side is taking more initiative in terms of locating and creating liquidity. Technology is playing an increasingly important role in the market, there is growing recognition that a significant part of the market will always need to be 'people based', and so values such as trust and relationship building are becoming ever more important as market conditions becomes more challenged.

The report concludes that there is an evolving sense that the whole market architecture may need to be redesigned if it is to continue to support its essential function of facilitating investment in the real economy. This will require the close cooperation of all market stakeholders, including issuers, asset managers and investors, banks and intermediaries, infrastructure providers, as well as policy makers and regulators. Given the breadth and diversity of its membership across the European region, ICMA is perfectly placed to bring all these key actors together.

The European Credit Repo Market: The cornerstone of corporate bond market liquidity - a study into the state and evolution of the European credit repo market, June 2017

This study builds on ICMA's previous work with respect to both corporate bond market and repo market evolution and liquidity, and attempts to investigate the European credit repo market from the perspective of its role, structure, participants, dynamics, external impacts, challenges, opportunities, and potential evolution, particularly to the extent that this plays a pivotal role in overall corporate bond market liquidity. Accordingly, there is no underlying hypothesis with respect to market functioning or liquidity; rather this is simply an attempt to understand the market, and to tell its story.

Summary of findings

The repo market for corporate bonds (the credit repo market) is, on many levels, fundamentally different to the larger sovereign bond repo markets. The primary, though not exclusive role, of the credit repo market is to help facilitate the liquidity provision of corporate bond market-makers. Corporate bond market-makers are reliant on a functioning credit repo market, both to fund any long positions that they take onto their books as well as to cover their short sales in order to make good delivery. To the extent that efficient and liquid corporate bond secondary markets are essential in supporting the vital link between corporate capital raisers and investors, the health of the credit repo market plays a direct and critical role.

Banks are very much at the centre of the credit repo market, and the main drivers and facilitators of market activity: principally to support their corporate bond market-making activity, but also as financing liquidity providers to their clients who are active in the corporate bond markets. Bank models tend to vary with respect to credit repo, with some focused purely on financing their bond trading desks, while others are, to different degrees, also focused on servicing clients, while some banks also extend their liquidity provision to competitor banks.

The European credit repo market appears to work well, however, the capacity for the market to function effectively is highly dependent on the supply of corporate bonds into the market. The extent to which buy-side holders are able and willing to lend their holdings back into the market, whether directly or through agent lenders, has a direct bearing on the ability and willingness of banks to support the market-making function that underpins bond market liquidity. For the most part, supply into the European credit repo market is relatively good, particularly with respect to investment grade corporates. And while repo rates for specials, particularly in the high yield space, can be expensive and volatile, there is usually still availability.

The changing nature of the underlying market, with a trend toward smaller trade sizes and more rapid turn-over of dealer positions, is making sourcing supply more difficult. While there may be plenty of bonds in the securities lending programmes, there is little or no economic incentive to lend small sizes for very short-periods.

Looking forward, the single biggest challenge to supply, and so the health of the credit repo market, is the CSDR mandatory buy-in regime. The overarching market view is that this will have dramatic and potentially devastating consequences for credit repo market liquidity. Quite simply, it is the ultimate deterrent to lending corporate bonds.

While any increase in the cost of capital to support credit repo intermediation has an impact on corporate bond market pricing, the biggest challenge to credit repo intermediation is likely to come from the application of NSFR, which will increase the cost of borrowing corporate bonds significantly. The additional costs of NSFR on credit repo intermediation will need to be passed on to dealers and clients through the repo rates charged, and so ultimately into the pricing of the underlying market. However, there is also a risk that the additional costs of NSFR may result in the reduction in or withdrawal of credit repo desks' services beyond financing their own trading desks.

While ongoing and future challenges to supply and intermediation will ultimately determine the credit repo market's ability to play its pivotal role in supporting corporate bond market liquidity, there would certainly seem to be scope for creating efficiencies through automating many of the highly manual and labour-intensive processes of the market. However, automating the credit repo market is not straightforward, given the intricacies and nuances of the market, with the market becoming even more complex and fragmented with every new layer of regulation.

The European Corporate Single Name Credit Default Swap Market: A study into the state and evolution of the European corporate SN-CDS market, February 2018

Given the importance of the SN-CDS market to well-functioning, liquid corporate bond markets, this ICMA study sets out to explore and map the state and evolution of the European SN-CDS market. The study asks who the users of the SN-CDS market are and the benefits and risks associated with the product. It looks at where and how liquidity is provided, and the costs and challenges related to this. Finally, it asks whether a lack of broad understanding of the product and unfavourable misrepresentation in the press has hindered more widespread participation in the market, with the benefits of improved corporate bond market liquidity this would provide.

Summary of findings

A highly efficient means of managing credit risk, corporate single name credit default swaps (SN-CDS) are used by a range of market participants, including corporate bond market-makers, investors, hedge funds, loan book traders, and those managing banks' counterparty credit exposures. As well as being an effective hedging instrument, SN-CDS can be used as an alternative means of assuming credit risk, as well as creating trading opportunities with respect to other financial instruments, and so playing a vital role in price discovery in the corporate and sovereign bond markets. Historical data shows that a vibrant SN-CDS market is a critical contributor to deep and liquid corporate bond secondary markets.

A very clear message from the data and interviews is that liquidity in the corporate SN-CDS market has deteriorated significantly in the period since 2007-2008, which can largely be attributed to a retrenchment of market-makers, including some high-profile actors. Interviewees suggest that there are now only four or five fully committed market-makers for corporate SN-CDS in Europe, and perhaps only two-to-three active within each sector; and while these dealers continue to provide pricing and liquidity, it is too few to support a deep and liquid market.

The attrition of market-makers is in turn attributed largely to the increased capital costs of running CDS books post Basel III, as well as benign market conditions which have reduced the demand for protection, as low credit spread volatility makes it more difficult to generate profits. A number of interviewees suggest that a more volatile market environment would draw some of the recent defectors back to making markets.

Many interviewees cited the ECB's Corporate Sector Purchase Programme as a key dampener of volatility, while also creating asymmetric risks towards further spread tightening. Low spread volatility, as well as historically low default rates, also reduce the value placed on buying protection, which limits end user activity.

A prominent theme from many of the interviews is that one of the major barriers to new entrants to the CDS market is the required level of expertise, and an attrition of market experts. A more concerted effort by capital market participants and stakeholders to understand, embrace, and promote the corporate SN-CDS product and market would only be to the benefit of the European corporate bond market, which in turn would have positive implications for issuers, investors, and so the European economy.

Annex 3: European Commission's Expert Group on Corporate Bond Markets

The Expert Group

In November 2016, the European Commission's Directorate General for Financial Stability, Financial Services and Capital Markets Union (DG FISMA) launched an **Expert Group on Corporate Bond Markets**,[34] an initiative under the Action Plan on Building a Capital Markets Union.[35] The Expert Group was made up of 17 individuals representing a broad cross-section of corporate bond market interests and participants. The task of the Group was to assist the Commission in the preparation of analysis of market developments, policy evaluation, and definition related to European corporate bond markets.

The Expert Group's mission is stated as: "With a view to improving the efficiency and resilience of corporate bond markets, the group will advise the Commission on its review of liquidity in European corporate bond markets, in the context of the Action Plan on Building a Capital Markets Union". The projected output would be two reports (a summary Headline Report[36] and a more detailed Analytical Report[37]) intended to inform market evolution and policy, authored by the Group. The former outlining 20 recommendations intended to improve market efficiency and resilience. Both reports were published in November 2017 and launched with a public hearing in Brussels.[38] At the hearing, DG FISMA announced that it intended to launch a public consultation on the reports of the Expert Group in early 2018. To date, this consultation or further public discussion of the recommendations put forward by the Expert Group have not been forthcoming.

Recommendations of the Expert Group

Making issuance easier for companies

1) The Market Abuse Regulation be amended in order to alleviate the requirements regarding market soundings that could result in disproportionate burden for companies.
2) Regulators should work with market professionals to support transparent and fair allocation methods in the high yield market.
3) National Promotional Banks should be given the necessary mandate to support SMEs to issue corporate bonds
4) enhancing the alleviations of the Growth Prospectus foreseen by the recently agreed Prospectus Regulation
5) Expedite its long-promised Recommendation on private placements in order to extend good practices from lead Member States to other Member States.

Increasing access and options for investors

6) The Expert Group strongly supports the Commission's proposal on restructuring and second chance. In addition, it recommends (i) EU harmonisation of ranking of creditors and the definition of insolvency triggers, and (ii) national measures to increase transparency regarding the position of investors in creditors' ranking.
7) Coordinated action between regulators and market professionals should discourage any artificial inflation of primary orders from all investors in a primary allocation process.
8) A recalibration or alleviation of capital requirements for corporate bonds with a long tenor in the forthcoming Solvency II review (2020). It also recommends the review of eligibility criteria of Matching Adjustment to determine whether broadening their eligibility is appropriate.
9) ESMA should conduct a mapping of existing practices in Member States with regard to internal crossing of orders. Building on this, it should promote convergence by setting out criteria with regard to how asset managers may internally cross buy and sell orders.
10) The PEPP should be swiftly adopted and implemented. Its take-up should be encouraged by national and EU authorities, including through eligibility for special tax treatments. National authorities should determine which tax breaks would be best suited to their national context.
11) The Commission should review Member States' regulations and market practices to identify the obstacles that stand in the way of investors trading ETFs on exchange.

34 Originally it was called the Expert Group on Corporate Bond Market Liquidity
35 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52015DC0468&from=EN
36 https://ec.europa.eu/info/sites/info/files/171120-corporate-bonds-report_en.pdf
37 https://ec.europa.eu/info/sites/info/files/171120-corporate-bonds-analytical-report_en.pdf
38 https://ec.europa.eu/info/events/finance-171124-corporate-bond-markets_en

Ensuring the efficiency of intermediation and trading activities

12) EU authorities review the capital and liquidity requirements, on the basis of a quantitative assessment of their impact on market-making and corporate bond liquidity. This review should notably:

   a) Adjust the haircuts and inclusion amounts applied to corporate bonds in the Basel Liquidity Coverage Ratio (LCR), and distinguish between assets held on the trading book for market-making purposes from those held in the banking book;

   b) Adjust the factors applied in the Net Stable Funding Ratio (NSFR) to corporate bonds and to inter-bank financing activities in repos and securities lending;

   c) Amend the Leverage Ratio for the additional treatment of written credit derivatives to apply to contracts with a remaining term of less than one year.

13) The timing for the implementation of CSDR mandatory buy-ins should be carefully managed to cushion its impact and provide space to review the provisions before they have unintended and potentially irreversible consequences.

Fostering the development of new forms of trading and improve the post-trade environment

14) To support the development of a strong e-trading system, industry groups representing the buy side, the sell side and all trading venues, including Fintech firms, should issue guidance papers on good practices for electronic trading.

15) To encourage progress in improving the efficiency of post-trade processes, building on the European Post Trade Forum, the European Commission should (i) report in 2018 on how barriers to greater fixed income clearing are being addressed, and (ii) identify best practices.

Ensuring an appropriate level of information and transparency

16) A consolidated tape owned by ESMA should be created expeditiously to collect data on all eligible public and private corporate bonds. This should be accompanied by an "easy to use" interface accessible to all EU bond markets stakeholders at reasonable cost.

17) To avoid fragmented liquidity across jurisdictions and limit regulatory arbitrage, ESMA should actively encourage NCAs to adopt similar deferral regimes across European jurisdictions in regard to post trade transparency requirements.

18) The European Commission should explore different mechanisms that would enable smaller issuers to obtain reliable credit worthiness assessments.

19) The European Commission should monitor the impact of MiFID II rules on the availability of research in the corporate bond market. It should devote particular attention to small issuers, and take appropriate action swiftly should this impact be found to be negative.

Improving the supervisory and policy framework

20) The European Commission and ESMA:

   (i) assess the differences between EU legislations having an impact on corporate bond markets;

   (ii) streamline and consolidate overlapping and inconsistent rules and reporting requirements affecting corporate bond markets;

   (iii) set up a specialist industry group which would advise regulators on how to adapt the framework for corporate bonds, notably on a suitable methodology for ESMA's yearly assessment of corporate bond liquidity thresholds, and to support policymakers negotiating international standards at Basel; and

   (iv) upgrade capacity and knowledge of all competent authorities and ensure adequate training of supervisors and regulators in relation to corporate bonds.

Acronyms used in this report

AP	Approved Participant
CDS	Credit Default Swap
CLOB	Central Limit Order Book
CMU	Capital Markets Union
CRR II	Capital Requirements Regulation (II)
CSD	Central Securities Depository
CSDR	Central Securities Depository Regulation
CSPP	Corporate Sector Purchase Programme
CTT	Click-to-trade
D2C	Dealer-to-Client
DAT	Direct Access Trading
EC	European Commission
ECB	European Central Bank
EEA	European Economic Area
EMS	Execution Management System
EONIA	European Overnight Index Average
ETF	Exchange Traded Fund
EU	European Union
FIG	Financial Investment Grade (issuer)
FINRA	Financial Industry Regulatory Authority
FRTB	Fundamental Review of the Trading Book
GC	General Collateral
HY	High Yield
ICMA	International Capital Market Association
ICSD	International Central Securities Depository
IG	Investment Grade
IPT	Initial Price Talk
ISDA	International Swaps and Derivatives Association
ISIN	International Security Identification Number
MiFID II/R	Markets in Financial Instruments Directive (II)/Regulation
ML	Machine Learning
NAV	Net Asset Value
NFC	Non-Financial Corporate (issuer)
OMS	Order Management System
RFQ	Request For Quote
RFS	Request For Stream
RTS	Regulatory Technical Standards
SN-CDS	Single Name Credit Default Swap
SMPC	(ICMA) Secondary Market Practices Committee
TCA	Transaction Cost Analysis
TRACE	Trade Reporting And Compliance Engine
TRS	Total Return Swap

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