

# 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



This report has been researched and authored by Andy Hill

Contact: [regulatorypolicy@icmagroup.org](mailto:regulatorypolicy@icmagroup.org)

© International Capital Market Association (ICMA), Zurich, 2016. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or by any means without permission from ICMA.

This paper is provided for information purposes only and should not be relied upon as legal, financial, or other professional advice. While the information contained herein is taken from sources believed to be reliable, ICMA does not represent or warrant that it is accurate or complete and neither ICMA nor its employees shall have any liability arising from or relating to the use of this publication or its contents. Likewise, data providers who provided information used in this report do not represent or warrant that such data is accurate or complete and no data provider shall have any liability arising from or relating to the use of this publication or its contents.

**International Capital Market Association**

Dreikönigstrasse 8

CH-8002 Zurich

[www.icmagroup.org](http://www.icmagroup.org)

## Executive Summary

This 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 the implications for the market are. 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.

Corporate bond markets serve a vital economic function in bringing together corporations requiring capital to fund or expand their businesses and investors and savers looking to earn a stable income from their investments and savings. They thus play a key role in facilitating economic growth, productivity, and employment. As the ability of banks to provide direct funding to the corporate sector has become challenged, post-crisis, policy makers are beginning to look to capital markets as an ever more important source of financing for the real economy, while also underpinning economic stability; an objective that is at the very heart of Europe's plan to build a Capital Markets Union.

Since ICMA published its report in 2014, the discourse around bond market liquidity, and its potential implications, has entered the mainstream when it comes to assessing market risks or explaining market behaviour. A number of market and academic studies have explored further the theme of bond market liquidity, across a range of asset classes, including investment grade corporate bond markets. The conclusions, based on various data collection exercises, have been mixed, with most market studies suggesting that market conditions, in general, are becoming more challenged, while a number of more academic-based studies published by authorities and regulators tend to be more sanguine. Understanding the reasons for this apparent divergence of perspectives is one of the motivations for this second study.

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.

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.

# Contents

Executive Summary	3
Contents	4
Introduction	5
<b>Why this paper</b>	<b>5</b>
<b>Structure of the paper</b>	<b>5</b>
<b>'Brexit'</b>	<b>6</b>
<b>Scope and methodology</b>	<b>6</b>
Chapter 1: current state	9
<b>The economic importance of secondary markets for corporate bonds</b>	<b>9</b>
<b>Measuring liquidity</b>	<b>11</b>
<b>Is liquidity declining?</b>	<b>17</b>
<b>Why is liquidity becoming more challenged?</b>	<b>20</b>
<b>Why the divergence in opinion between the markets and the authorities?</b>	<b>22</b>
Chapter 2: evolution	24
<b>Issuers</b>	<b>24</b>
<b>The sell-side</b>	<b>25</b>
<b>The buy-side</b>	<b>26</b>
<b>Electronification</b>	<b>28</b>
<b>Alternative products</b>	<b>31</b>
Chapter 3: challenges ahead	34
<b>Regulation</b>	<b>34</b>
<b>Monetary policy</b>	<b>35</b>
<b>The future of the market</b>	<b>37</b>
Conclusion	41
Recommendations	42
Annexes	43
<b>Annex 1: The basics of electronic trading – a primer</b>	<b>44</b>
<b>Annex 2: Credit Default Swaps – a primer</b>	<b>45</b>
<b>Annex 3: Bond ETFs – a primer</b>	<b>46</b>
<b>Annex 4: ICMA Buy-side IG Corporate Bond Market Survey Questions</b>	<b>47</b>
Acronyms used in this report	48
References and bibliography	49
<b>About the International Capital Market Association (ICMA)</b>	<b>50</b>
<b>About the SMPC</b>	<b>50</b>
<b>Acknowledgements</b>	<b>51</b>
<b>About the author</b>	<b>51</b>

# Introduction

## Why this paper

In 2014, ICMA published the paper '*The current state and future evolution of the European investment grade corporate bond secondary market: voices of the market*'. This research project was conducted mainly in response to increasing concerns among ICMA's buy-side members that market liquidity was becoming impaired. The study was based largely on a series of in-depth interviews with market participants represented by ICMA, including asset managers, broker-dealers, intermediaries and platforms, as well as corporate issuers. The research objective was to explore whether there was indeed a case for concern with respect to market functioning and the potential causes of any decline in market liquidity, as well as to identify any behavioural changes among market stakeholders resulting from a perceived decline.

The report concluded that there was a broad perception among market participants that secondary market liquidity was becoming increasingly challenged, and that the ability to execute trades quickly and efficiently was, for the most part, becoming more difficult. The causes were complex, but were largely being driven by a combination of extraordinary monetary policy and regulation, particularly to the extent that these forces were reducing the capacity, or willingness, of broker-dealers to fulfill a market-making role. At the time, many respondents expressed concern about how this could play-out under more stressed market conditions, and the potential broader economic implications of this.

Since the first ICMA study, a number of market and academic studies<sup>1</sup> have explored further the theme of bond market liquidity, across a range of asset classes, including investment grade corporate bond markets. The conclusions have been mixed, with most market studies suggesting that market conditions, in general, are becoming more challenged<sup>2</sup>, while a number of more academically -based studies published by authorities and regulators tend to be more sanguine<sup>3</sup>. Understanding the reasons for this apparent divergence of perspectives is one of the motivations for this second study.

Two years on from the first ICMA study into the state and evolution of the European investment grade corporate bond secondary market, this new study seeks to assess how the market has evolved in that time, and, in doing so, to address three fundamental questions:

- What do we mean by market liquidity, and how is this changing, if at all?
- If market liquidity is becoming more challenged, what are the contributing factors, and to what extent is this a problem?
- How are market participants adapting and evolving their business models in response to any changes in market conditions?

## Structure of the paper

Chapter 1 opens with an overview of the economic importance of secondary markets for corporate bonds and why their efficient functioning is so critical for both corporates and investors. It then goes on to discuss the concept and measures of market liquidity, drawing on examples to explore the potentially key data considerations. We also introduce a metric to help quantitatively track bond market liquidity (the ICE Data Services Liquidity Tracker) - the first attempt by the market to create a consistent and time-comparable indicator for bond market liquidity, building on existing commercially available liquidity tools.

Drawing on market data, interviews, and the results of an ICMA buy-side market survey, the chapter examines not only the extent to which market liquidity might be declining, but also the nuances of the changing liquidity landscape, as well as the causes. Finally, Chapter 1 attempts to explain why academics and market practitioners seem to be drawing what are often very different conclusions with respect to corporate bond market liquidity.

While the prevalent view, as supported by the data, is that, overall, corporate bond market liquidity conditions continue to become more challenged, and are not expected to improve any time soon, market participants are becoming more resolved to the reality of this. Business models are being rethought and adapted accordingly, for both sell-side and

---

<sup>1</sup> See References and Bibliography section

<sup>2</sup> For example: PWC, 2015, '[Global financial markets liquidity study](#)'

<sup>3</sup> For example: FCA, 2016, '[Liquidity in the UK corporate bond market: evidence from trade data](#)', Occasional Paper 14

buy-side firms, as well as intermediaries and infrastructure providers. The outlook may be mixed, but the market clearly appears to be 'getting on with it', and this is discussed in Chapter 2.

There are still many further risks and obstacles ahead, which are explored in Chapter 3, as well as the growing sense among stakeholders that perhaps the traditional market structure needs rethinking, especially if it is to continue to fulfil its economic role of bringing capital raisers and investors together, in the most efficient and effective way.

In conclusion, and based on the findings of the research and discussions with various market stakeholders, the paper provides recommendations that, either in isolation or in combination, are likely to have a positive impact on market functioning and liquidity.

## **'Brexit'**

The research for this study, including interviews, survey responses, and market data, all predate the referendum on the United Kingdom's membership of the European Union on June 23rd 2016. The referendum was discussed in some interviews, particularly in the weeks leading up to the vote, when it was noted that activity in the sterling corporate bond market had reduced significantly due to the uncertainty. However, at the time of the interviews, the general view seemed to be that a 'leave' vote was a high impact but low probability outcome, and the discussions were based on this perspective.

Since the referendum, it has become clear that the unexpected outcome may well have serious implications for corporate bond markets, in particular the sterling market, but also for the euro and other markets. In many ways, this makes the findings and conclusions of this study even more relevant, as we enter a period of even greater economic uncertainty, and when market efficiency and liquidity will, potentially, be sorely tested. A number of participants in the study suggested that the structure of the European corporate bond markets needed rethinking and redesigning, although it would probably require a catalyst to force market stakeholders into this realization. Whether the unfolding repercussions of the June 23rd UK referendum prove to be such an impetus remains to be seen.

## **Scope and methodology**

### **Scope**

In terms of scope, the study is specifically focused on the pan-European investment grade<sup>4</sup> corporate bond secondary market, both non-financial and financial.<sup>5</sup> The estimated total size of this market segment in terms of outstanding nominal value as of June 2016 is approximately €3.9tn (€1.7tn non-financial and €2.2tn financial). The breakdown of the market by currency of issue and sector is shown in Figure 1.

However, any meaningful assessment of the corporate bond market also requires input from and analysis of the European credit repo and CDS (both single-name and index) markets, since these are highly inter-related and co-dependent. The study also touches on the European high yield corporate bond market.

### **Methodology**

In attempting to answer these three questions, the study utilizes a triangular approach of quantitative (both sourced from vendors and survey-based) and qualitative data collation and analysis.<sup>6</sup> Rather than apply a more theoretical, modeling approach (the limitations of which are discussed in Chapter 1), the study relies on both qualitative and quantitative inputs from market participants, and assesses these through a more descriptive framework. This not only allows for outcomes that are more reflective of the perspectives of a broad range of market participants, but it also supports a richer and more nuanced discussion of the state and evolution of the market, rather than drawing more linear or reductionist conclusions.

### **Trading Data**

Following the 2014 study, it became clear that some form of quantitative analysis was a key element for policy makers and regulators to make credible assessments of market functioning and liquidity. It is widely acknowledged that data is difficult to source for what is still largely an over-the-counter market, and which currently does not have any systematic post-trade reporting requirements.<sup>7</sup> However, ICMA was able to work with a number of private data providers<sup>8</sup>, for both

---

4 Bonds with a minimum BBB- rating from at least one of the three main rating agencies.

5 All maturities and coupon types are included, excluding sovereign and public authority issuers, covered bonds, and ABS.

6 It should be noted that interviews, data and surveys pre-date the UK's EU referendum vote on June 23rd 2016, while most of the interviews also pre-dated the commencement of the ECB's CSPP (but after its announcement).

7 This should be improved with the introduction of MiFID II/R transaction reporting in 2018.

8 ICMA is particularly grateful to Dealogic, ICE Data Services, Markit, Tradeweb, and Trax (a MarketAxess subsidiary)

cash bonds and credit default swaps (CDS). While perhaps not fully comprehensive, these data and metrics are an important part of the overall picture, and while such data will always have limitations, or be prone to interpretation, they do help to corroborate and illustrate the qualitative inputs.

One of the challenges that the study seeks to address is the extent to which market liquidity can be quantified. A number of data providers are now generating liquidity metrics for a range of individual securities, including European corporate bonds (these metrics are briefly discussed in Chapter 1 of the report). ICMA is grateful for the opportunity to work with one such provider, ICE Data Services, to model a Liquidity Tracker for the European and US investment grade corporate and high yield bond markets, which is introduced in this report. This was developed in response to ICMA's objective of establishing a quantitative and transparent metric for tracking bond market liquidity conditions.

## Survey Data

As well as utilizing market vendor data, the study also employs a survey of buy-side participants, which seeks to assess and quantify participant perceptions and behavioral change with respect to market liquidity. The online survey was sent to a range of buy-side firms that are active in the euro, sterling, or Nordic corporate bond markets, and the aggregated results are presented throughout this report. In total, there were 18 responses to the survey, representing 15 buy-side firms, with combined assets under management of more than €2 trillion. Given the relatively low number of responses with respect to the Nordic markets, only the aggregated results for the euro and sterling markets are presented in this report. All responses were submitted in June 2016. The survey is also designed to be conducted on a regular, repeat basis, so providing an ongoing barometer for market sentiment.

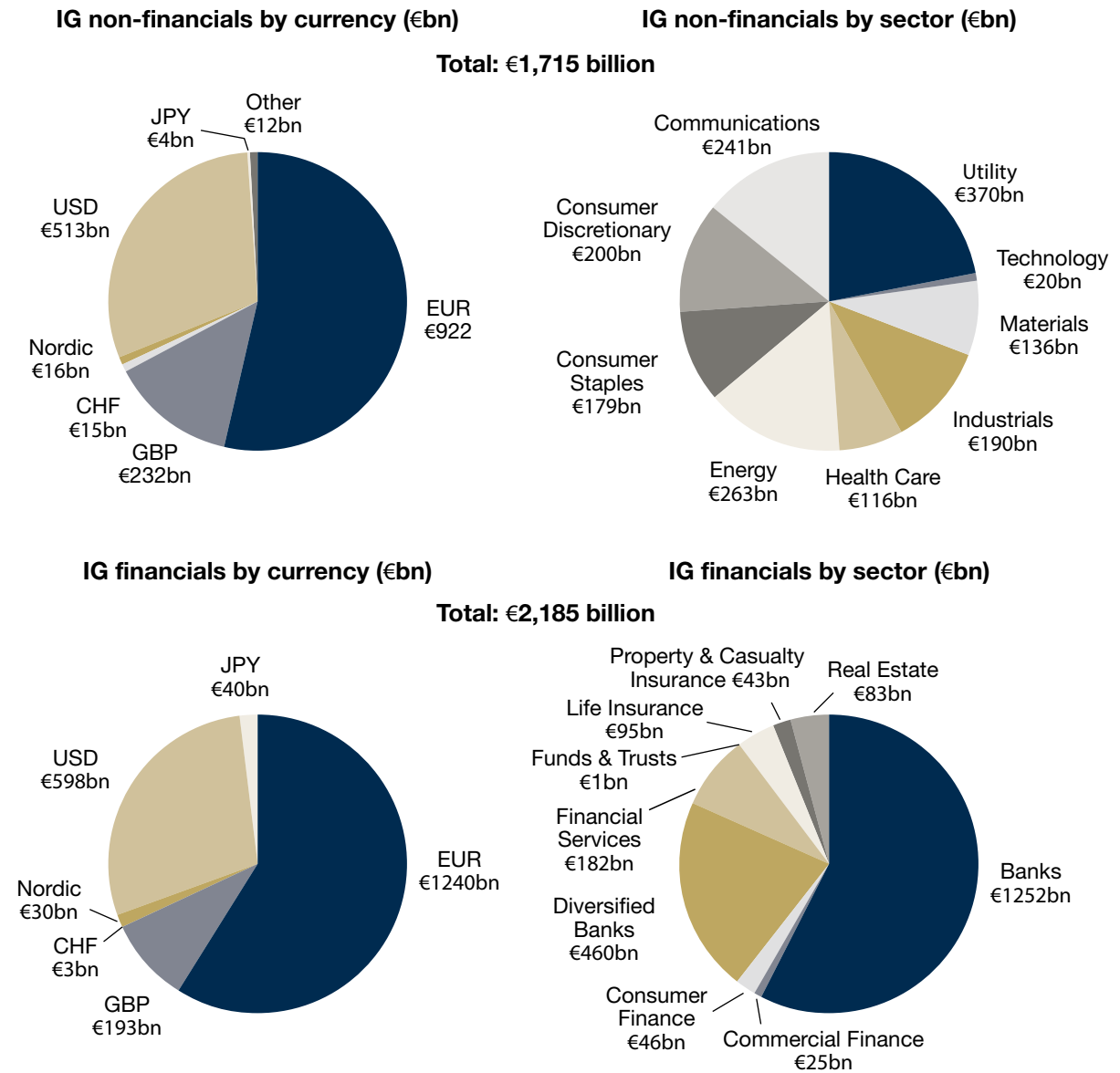
## Interview Data

ICMA relies on the analysis of direct feedback from market participants and stakeholders, which it considers to be a relevant and important form of data. As with the previous study, ICMA conducted one-on-one interviews<sup>9</sup> with a range of market participants, including banks and broker-dealers (both international and more localized activities), asset managers and institutional investors, intermediaries and platform providers, and corporate issuers. The feedback from the various interviews forms the basis of much of the narrative of the report. In total, 36 interviews were conducted between April and June 2016. The participating firms and organizations are listed in the acknowledgements.

---

<sup>9</sup> The majority of interviews were conducted in person, with some conducted by phone. All interviews were undertaken on the basis that any feedback would be represented on an anonymized basis.

Figure 1: Size and sector profile of the European IG corporate bond market



Data source: Bloomberg

# Chapter 1: current state

## The economic importance of secondary markets for corporate bonds

Corporate bond markets serve a vital economic function, bringing together corporations requiring capital to fund or expand their businesses and investors and savers looking to earn a stable income from their investments and savings. They thus play a vital role in facilitating economic growth, productivity, and employment.<sup>10</sup> As the capacity of banks to provide direct funding to the corporate sector has become challenged, post-crisis, policy makers are beginning to look to capital markets as an ever more important source of financing for the real economy, while also underpinning economic stability; an objective that is at the very heart of Europe's plan to build a Capital Markets Union.<sup>11</sup> Furthermore, corporate bond markets provide an alternative to public funding, facilitating private investment and so reducing the burden of government indebtedness, while offering investors and savers a higher rate of return than government bonds.<sup>12</sup>

Of course, where corporate issuers and investors already meet is in the primary market<sup>13</sup>, which raises a fundamental question – why do we need a secondary market for corporate bonds?

### Why investors need the secondary market

From the investor perspective, the secondary market is both a means to sell existing holdings, which were perhaps bought previously in the primary market, as well as a source of new investments where primary supply is not available. While investors in corporate bonds traditionally hold their investments for relatively long periods, there are good reasons why they may need to adjust their portfolios. These include fund inflows or redemptions, a requirement to match specific liabilities, a change in investment strategy, tracking a particular index, or simply sound risk management, say in the circumstance of a credit event or downgrade. In these instances, investors will look to the secondary market to facilitate their required sales and purchases.

### The role of the market-maker

Another key attribute of the secondary market is immediacy. When investors need to adjust their portfolios, they often look to do so quickly. Given the heterogeneous and long-term nature of corporate bond markets, the probability of matching buyers and sellers of a specific bond at the same time (the so-called 'coincidence of want') is relatively low. Accordingly, the effective functioning of corporate bond secondary markets has traditionally relied upon the intermediation services of market-makers. Market-makers are usually banks or broker-dealers who provide two-way pricing to their clients in a range of corporate bonds, regardless of their ability to find an opposite seller or buyer at the same time. Where clients are sellers of a bond, the market-maker will show a bid and take the bonds onto their own book, which they will hedge (either using derivatives or by selling other bonds), and look to sell, either to another client or another broker-dealer, at a later time. Where clients are buyers of bonds, the market-maker will show an offer, even though in most cases they will not hold the bond.<sup>14</sup> In order to make good on the delivery of the sale, they will borrow the securities via the repo market. Meanwhile, they will also hedge the resulting short exposure, and look to buy the bonds back in the market at a later time.

Usually, market-makers in a particular bond are the same banks who are involved in the primary issuance of that bond, with secondary market-making being part of the 'pitch' to the corporate issuer to win the origination mandate, and as a component of the overall service package.

***“How important is the secondary market for corporate issuers? Very.”***

**Corporate treasurer**

<sup>10</sup> Tendulkar R and Hancock G, 2014, 'Corporate Bond Markets: A Global Perspective: volume 1', Staff Working Paper [SWP4/2014], IOCV-IOSCO

<sup>11</sup> European Commission, 2015, 'Action Plan on Building a Capital Markets Union', Brussels

<sup>12</sup> ICMA, 2013, 'Economic Importance of Corporate Bond Markets'

<sup>13</sup> The primary market for corporate bonds is where the bond is created and initially sold to investors. Usually the corporate issuer will appoint a bank (or banks) as a lead manager, who will provide advice on the optimal timing, structure, and pricing of the issuance, as well as building a syndicate of other banks, all of whom will look to build investor interest in purchasing the bonds (known as 'book building'). Banks may also provide an 'underwriting' service, where they agree to take any unsold bonds onto their own books to hold or subsequently trade in the secondary market. In the primary market, the sale proceeds, less fees paid to the arranging banks, will go directly to the corporate issuer.

<sup>14</sup> It is impractical for market-makers to hold inventory in every security for which they make-markets, particularly in light of the capital costs associated with this.

## Why issuers need the secondary market

A key consideration for corporates issuing debt is the cost at which they will borrow. Thus, an important part of the issuance process is determining the appropriate price of the new bond.<sup>15</sup> If the issuance price is too low, issuers will be locking into a higher interest rate than necessary, and if the issuance price is too high, nobody will buy their debt. So issuers work closely with their lead managers and other syndicate banks to determine the optimal price for their bonds to clear at issuance. When doing this, an important factor to be guided by is where the previously issued debt of the relevant entity is trading in the secondary market, or that of similar entities and credits. The more stable and liquid the secondary market, the easier it is to establish the appropriate price for new issues. Furthermore, the secondary market provides an indication to potential investors of what they should pay for a new issue. Again, the more stable and liquid the secondary market, the more confident investors can be in determining the appropriate bid for primary issuance. A functioning secondary market further provides comfort that should they need to sell the holding at a future date, this will be possible, which again should afford the issuer with better borrowing terms since a lower liquidity premium will be factored into the issuance price.

In other words, the functioning and liquidity of the corporate bond secondary market directly impacts the borrowing costs of corporate issuers as well as the risks borne by investors.

***“There is a view that just because the primary market seems to be functioning well, the secondary market doesn’t matter. This is dangerous thinking.”***

**Credit trader**

## Issuer concerns

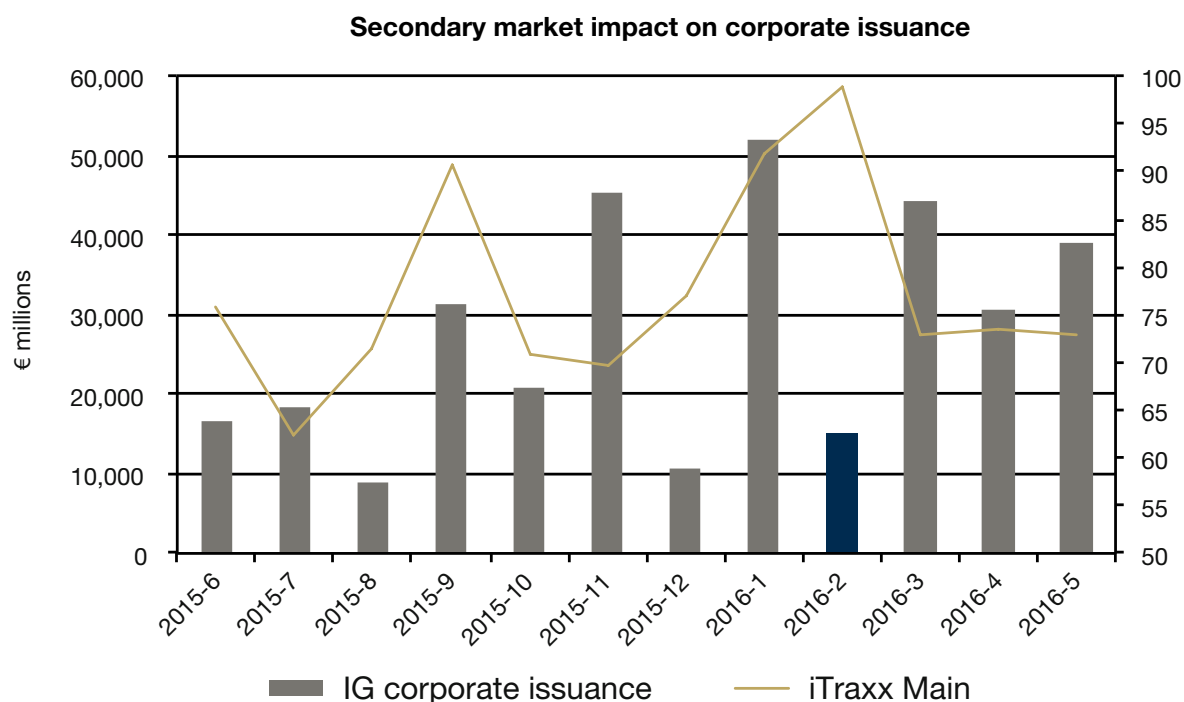
In the interviews with corporate issuers, we were keen to ascertain their views on the current state of the European corporate bond secondary market not least since it is widely accepted that the primary market has performed well over the past few years, with record levels of issuance and historically tight spreads. While all the participants agreed that the primary market remained robust, and was likely to continue as such in the near future, there was a shared concern with respect to the health of the secondary market. All of the issuers interviewed felt that there was a growing problem with the effective functioning of the secondary market, which, in theory, should have implications for their primary issuance. As they pointed out, under normal market conditions, the inability to reference the secondary market confidently should result in issuers paying a significant new issuance premium as investors demand a higher return to compensate them for taking on liquidity risk.

However, in the environment of extraordinary monetary policy and the ongoing ‘reach for yield’ by investors, this normal relationship between primary and secondary markets has broken down. Also, this was only likely to be exacerbated by the ECB’s extension of quantitative easing to corporate bonds. The worry about not having a stable investor base is not so much for the immediate future, but further down the line, post central bank intervention; not least given a perception that secondary market liquidity is in terminal decline. Several issuer interviewees pointed to the credit market sell-off from the end of 2015 through early 2016, and the corresponding drop in new issuance, particularly in February (when the market effectively ‘closed’ – see chart below), as a possible indication of things to come. This matters to issuers, not least since it increases their refinancing risk and the ability to roll-over their debt as it matures.

---

<sup>15</sup> Usually expressed as a spread in basis-points (one-hundredth of a percent) to the yield of a reference instrument, such as the LIBOR-swaps curve or a benchmark government bond

Figure 2: Impact of secondary market liquidity on new issuance



Data source: Bloomberg, Dealogic

## Measuring liquidity

The starting point for any discussion around market liquidity is – what do we mean by ‘liquidity’. Through the various interviews, as well as reviewing recent literature on the subject, it soon becomes apparent that there is no standardized definition of market liquidity. Thus, one could argue that the discourse related to market liquidity is not normative and the conclusions are not necessary comparable. In any discussion on market liquidity, it is therefore important to outline specifically what it is that we are discussing.

In the context of this study, and for the purposes of the related survey, ICMA sets out a definition of 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.***

However, this, like many definitions of liquidity, is largely qualitative and could be open to different interpretations. For instance, what do we mean by ‘significant’ in terms of impact on the market price? But answering this question does at least provide a valid picture of how those participating in the market experience liquidity, which in turn affects behaviour and decisions.

Perhaps not surprisingly, there has been a growing trend toward quantifying market liquidity, based on a number of identifiable and measurable data points. Most notably, MiFID II/R attempts to quantify non-equity market liquidity in order to calibrate the waivers for pre- and post-trade reporting requirements, with the average number of daily trades as the principal determinant.

We review some of the more commonly used measures and the liquidity profile they provide, using available data provided by Trax (a subsidiary of MarketAxess) and Tradeweb.

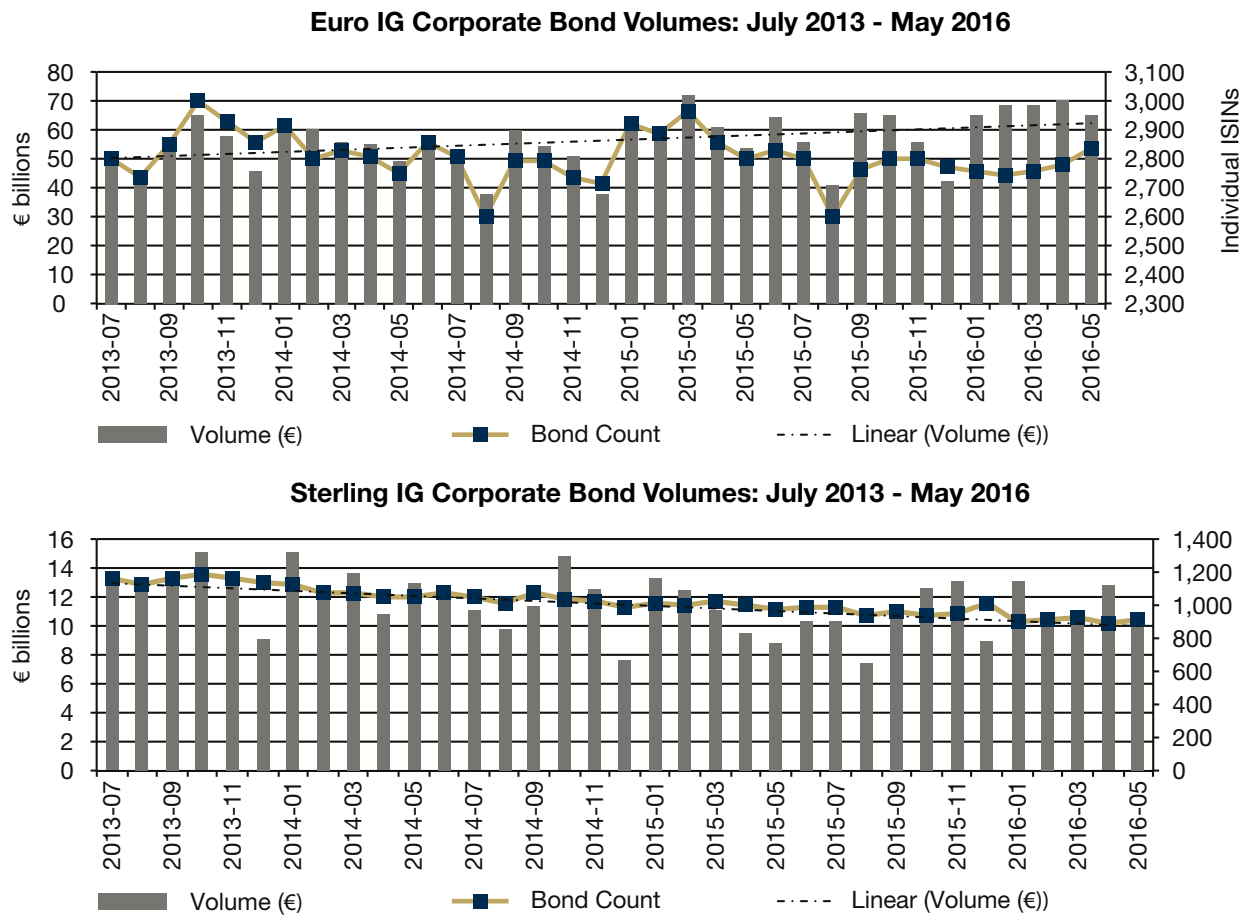
## Trade volumes

When we look at trade data for the European IG corporate bond secondary market such as the data provided by Trax,<sup>16</sup> there does not appear to be any marked change in either volumes or the number of bonds being traded over the past three years, both for euro and sterling denominated bonds. If anything, there is a slight upward trend in euro volumes, with only a gentle downward trend in sterling volumes. However, if we contrast euro IG corporate

<sup>16</sup> Trax data is combines both OTC and on-venue post-trade data. Trax estimates that it processes approximately 65% of all fixed income transactions in Europe as part of its post-trade service offer.

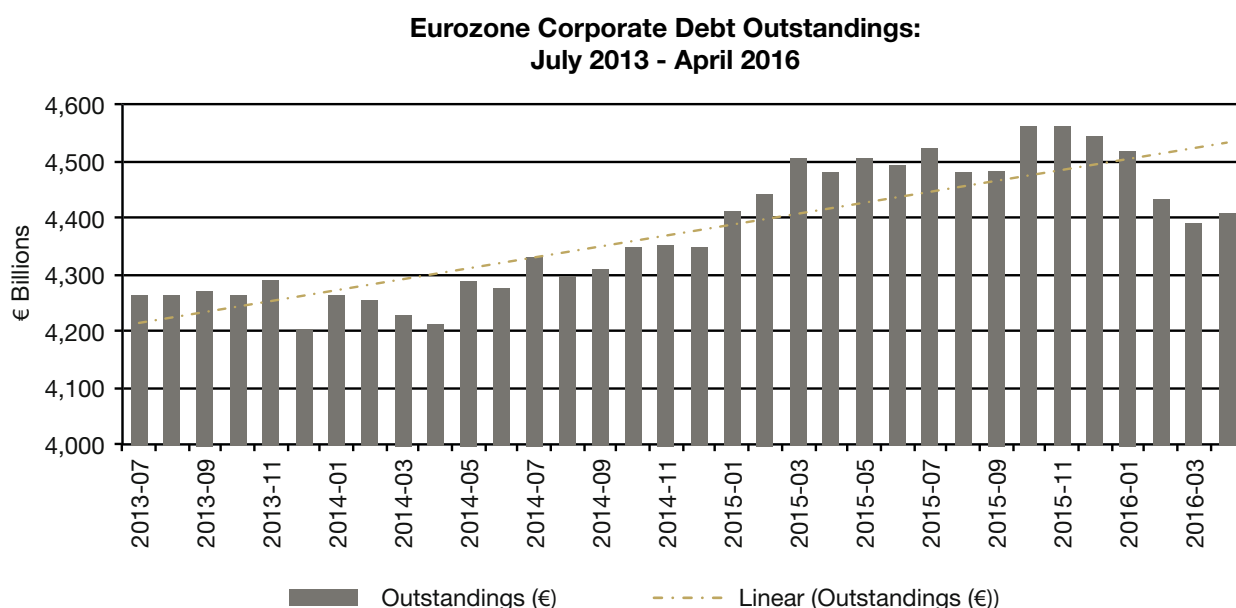
bond trading volumes with the growth in outstanding euro IG corporate debt over the same period, we see that in relative terms trading volumes are clearly lagging. Furthermore, volumes in themselves are not necessarily an indication of market liquidity, since these are also driven by underlying investor behaviour and not just the capacity to trade.

Figure 3: Trading volumes



Data source: Trax

Figure 4: Growth of corporate debt markets

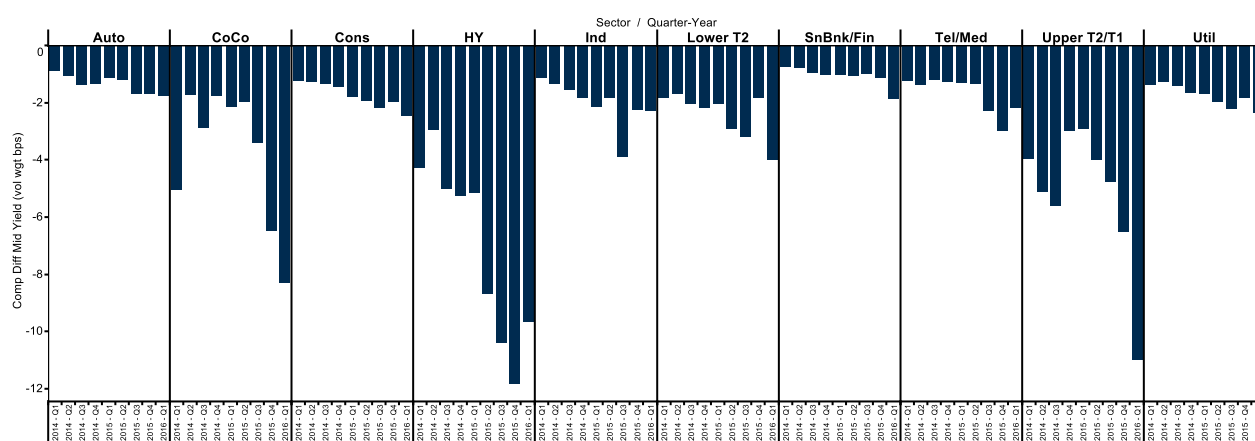


Data source: ECB

## Bid-ask spreads

Another popularly cited liquidity metric is the bid-ask spread for securities, as quoted on trading venues. However, perhaps what is more important is the price at which trades are actually executed relative to the posted bid-ask (which may only be indicative, or only available for small trade sizes). The below chart shows the effective spread of trades (executed price compared with the mid-price of the indicative composite) in euro-denominated corporate bonds on the Tradeweb platform, between Q1 2014 and Q1 2016. It is apparent that there is a consistent trend for transaction prices to move further away from the indicative price across all credit market segments, in particular for high yield and lower grade financials, suggesting increasingly impaired liquidity conditions.

Figure 5: Effective market spreads

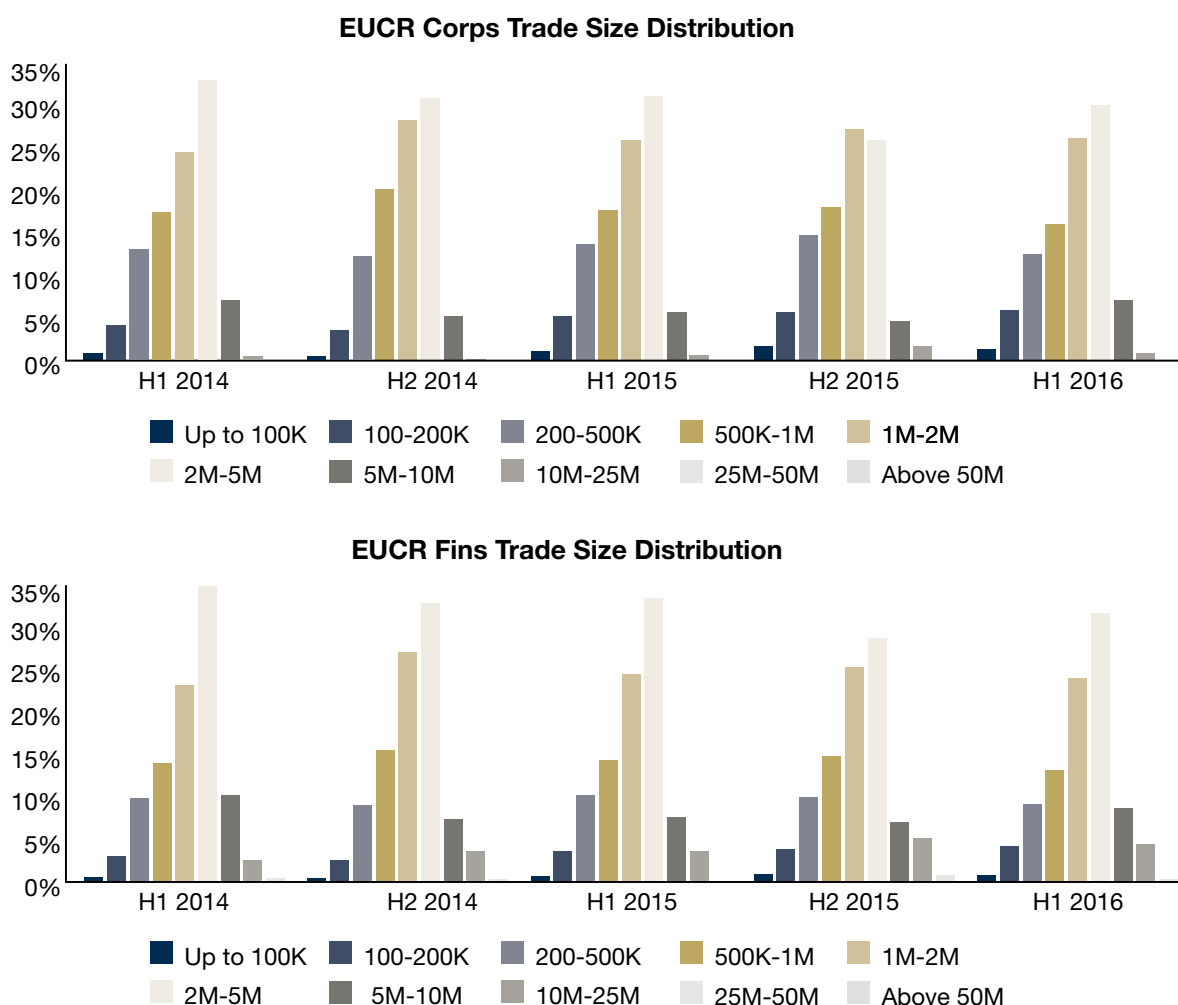


Source: Tradeweb

## Trade sizes

Ticket sizes for trades are also often looked to as an indication of liquidity, with the assertion that the ability to trade larger sizes is a sign of a healthy market. The below charts show the trend in trade size distributions executed on the Tradeweb platform between H1 2014 and H1 2016. The data is consistent with anecdotal evidence that suggests that trade sizes, at least on trading platforms, tend to be under 2 million, and that tickets over 5 million are relatively unusual. The data also suggests a small drift toward smaller ticket sizes for non-financial corporates, with no real change for financials. However, this also needs to be viewed in the context of a market where trading volumes remain predominantly OTC, with a natural tendency for participants to execute smaller trades on venue.

**Figure 6: Trade size distribution**

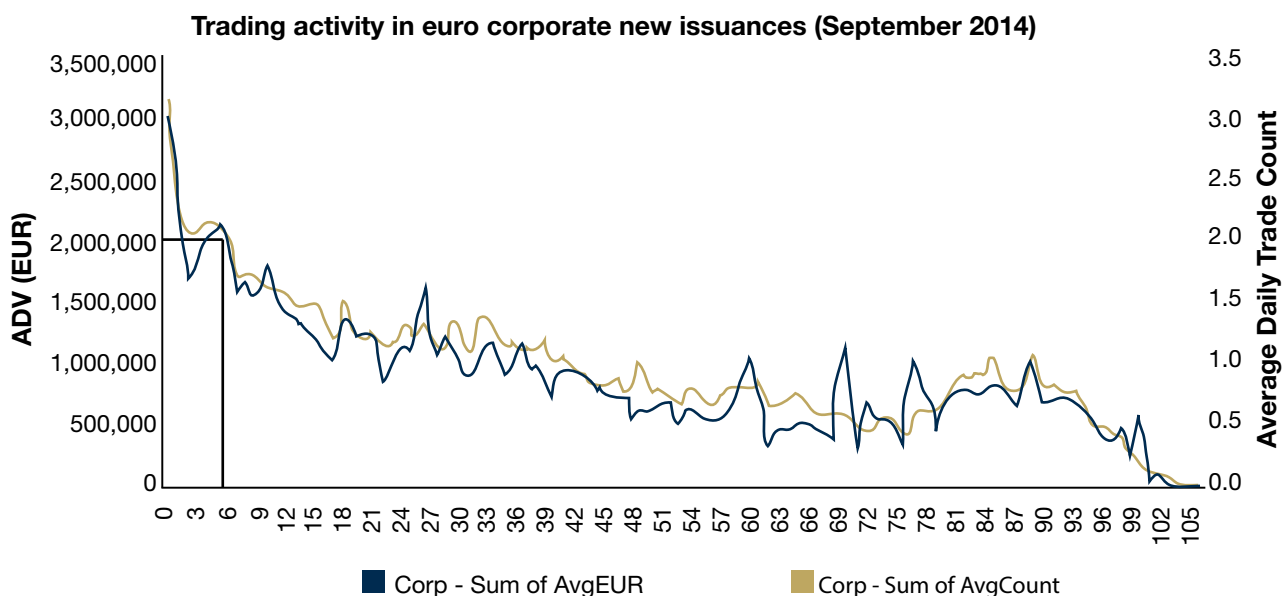


Source: Tradeweb

## Liquidity dynamics

It is often pointed out that corporate bonds, in general, can only be considered liquid for the first few days after issuance. This is illustrated by the below Trax data which shows the average trading volumes and trade counts of 489 corporate bond new issues in September 2014 over the subsequent 105 days. On average, after day 6, bonds trade less than twice a day.

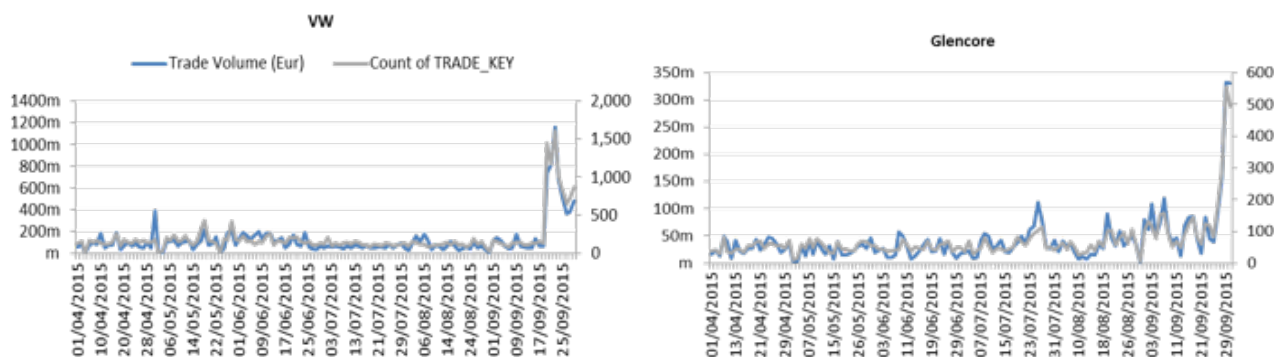
Figure 7: Liquidity decline post-issuance



Source: Trax

A key exception to this rule seems to be in the case of a credit event. This is illustrated by the aggregate trade volumes for outstanding VW and Glencore issues in response to specific credit-related new events that significantly impacted their bond prices.

Figure 8: Liquidity impacts of credit events



Source: Trax

## Liquidity scoring

Meanwhile, many sell-side and buy-side firms, as well as a number of data vendors, have, or are in the process of, creating more complex liquidity metrics for individual securities. These incorporate a whole range of data points including bid-ask spreads, historical trade frequency and volumes, price movements, outstanding issue size, and the distribution and concentration of holdings. Essentially, what these metrics, or scores, try to estimate is the expected time to execute a given order in the relevant security as well as the expected market impact of executing that order. Of course, the value of such metrics hinges on the availability and reliability of reference data, as well as the assumption that historical liquidity is a reliable predictor of current liquidity.

The drive toward creating quantifiable measures of market liquidity is likely to continue. As policy makers and regulators respond to concerns about falling liquidity, the tendency is to resort to more academic theoretical modeling based on market data. Meanwhile, there is a growing need among market participants to 'commoditize' liquidity as it becomes a fundamental component of investment decisions, pricing, and risk management. A number of interview participants even spoke of the potential to establish tradeable market liquidity indices as hedging instruments to protect against the risks arising from declining liquidity.

ICMA approached ICE Data Services, a leading provider of liquidity metrics, with a request to create a 'liquidity tracker' for the corporate bond markets, based on aggregating the liquidity scores of the constituent underlying securities. The resulting ICE Data Services Liquidity Tracker is introduced below.

## ICE Data Services Liquidity Tracker

ICE Data Services has established a means of tracking liquidity conditions in fixed income markets, in response to a request from ICMA.

### ICE Data Services Liquidity Indicators

The model is based on ICE Data Services' Liquidity Indicators, which are designed to provide an independent view of near-term relative liquidity, defined as "the ability to exit a position at or near the current value." The indicators use a transparent methodology to assign a liquidity ratio to an individual security, based on the interaction between projected price volatility and trade volume capacities.

ICE Data Services provide estimates of trade volume capacity, future price volatility, days to liquidate, and market price impact. Liquidity ratios for all securities are ranked from least liquid to most liquid, and scored between 0 and 10 (with 10 being the most liquid). These scores, based on ICE Data Services' extensive evaluation and reference data, are updated daily.

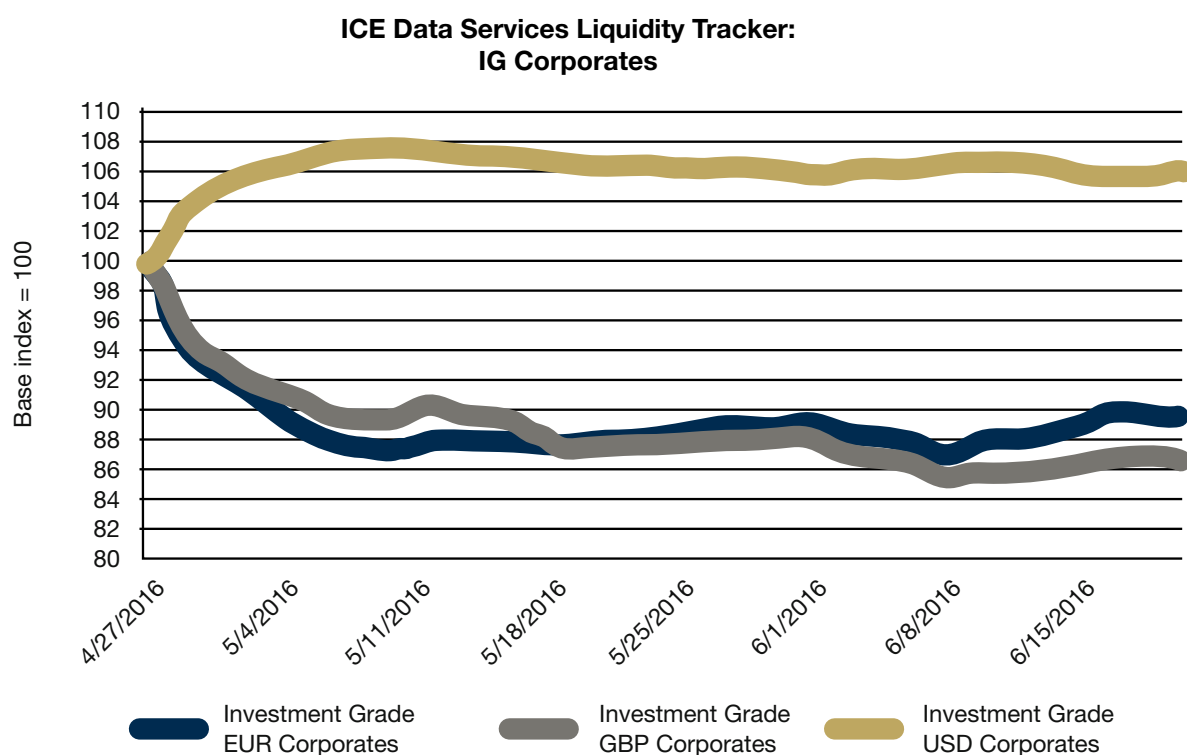
### ICE Data Services Liquidity Tracker

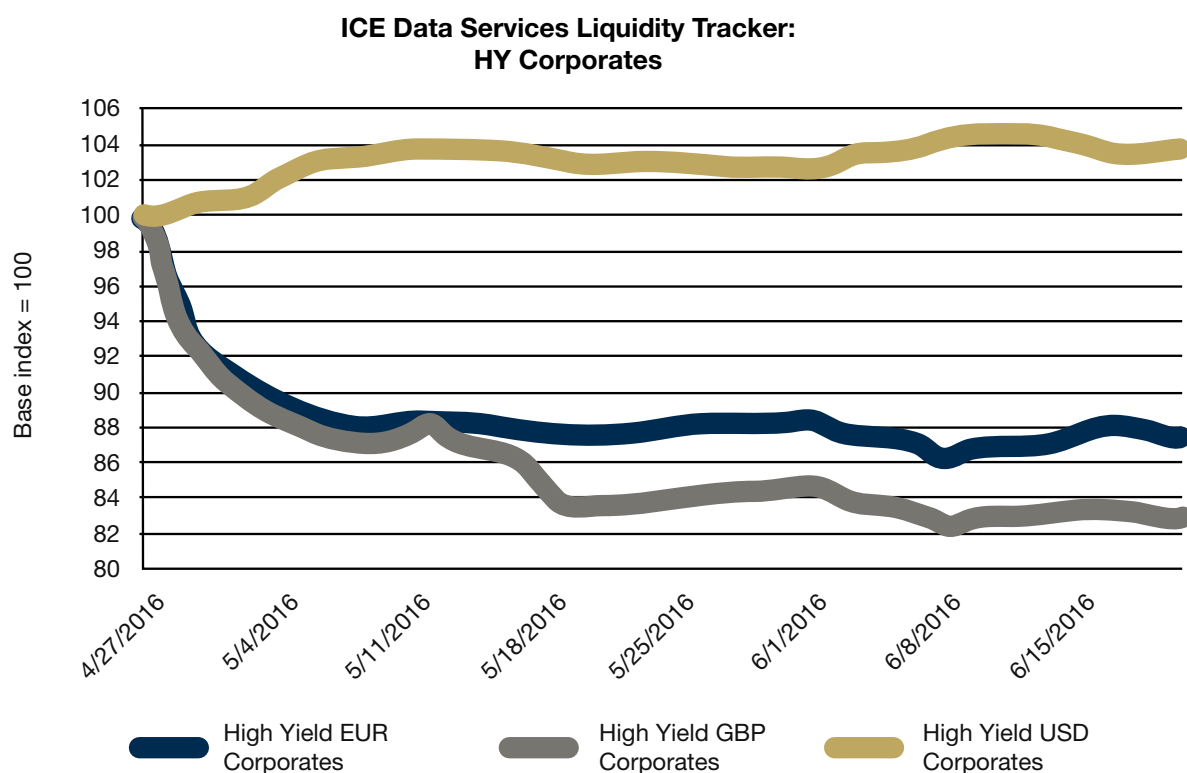
The ICE Data Services Liquidity Tracker is based on the average liquidity ratios of an extensive basket of securities for each market segment. The number of underlying ISINs used to calculate the tracker are: IG USD 15,742; IG EUR 2,828; IG GBP 672; HY USD 12,217; HY EUR 1,865; HY GBP 423. Investment grade is determined by a minimum BBB- rating from one of the three main rating agencies, and includes financials and non-financials.

The starting reference point for the tracker is April 27 2016, where it is assigned a value of 100. Data is then run on a look-back basis to determine relative changes in market liquidity since the reference date. To ensure continuity in the data series, only issues active at the reference date are included in the ICE Data Services Liquidity Tracker.

### Using the Tracker

With the permission of ICE Data Services, ICMA intends to publish and monitor the ICE Data Services Liquidity Tracker on a quarterly basis. There is also the possibility of extending the ICE Data Services Liquidity Tracker to other asset classes, including sovereign bonds, as well as creating a more granular sector based tracker.





Source: ICE Data Services

Given the very short observation period of the Liquidity Tracker, perhaps not too much should be read into what appears to be a sharp decline in the euro and, particularly, sterling IG and HY markets, with a modest improvement in the US IG and HY markets. However, anecdotal evidence would suggest that this can mostly be explained by the lead up to the UK referendum, and a withdrawal of liquidity provided by market-makers in sterling and euro credit markets as they de-risk in response to increased uncertainty.

## Fund liquidity vs. market liquidity

Finally, it is important to stress that fund liquidity (the ability of investors to purchase or redeem shares in a particular fund) is not the same as market liquidity (the ability of investors to purchase or sell a specific financial instrument). While intuitively it would seem reasonable to expect some degree of correlation between fund liquidity and the liquidity of the underlying fund assets, fund redemption risks are measured and managed in very different ways, with a whole range of tools available to fund managers to control and mitigate these risks. Fund liquidity is beyond the scope of this study, however, a recent paper published by the European Fund and Asset Management Association (EFAMA) and ICMA's Asset Management and Investor Council (AMIC) on this specific topic provides a useful source of reference.<sup>17</sup> It is also expected that much more work and research will be undertaken in this important area.

## Is liquidity declining?

The overriding perspective that comes through in the interviews is that secondary market liquidity at worst remains in a state of interminable decline, and at best is becoming more challenging to provide or source. This is substantiated by the results of the survey, provided below. Of course, underlying this common view are a range of qualifications and nuances, and the interviews allowed the opportunity to explore some of the varying viewpoints and considerations.

For instance, when discussing liquidity, **trade size matters**. Many respondents felt that executing smaller tickets was no more difficult than one-to-two years ago, and in some instances had become easier, largely a result of greater uptake in the use of electronic trading platforms. Executing larger block trades, however, seems to be becoming more challenging. A universal theme from the buy-side is that broker-dealers tend to be good for part of an order (i.e. they will show a firm price to the extent that they are happy to take the position onto their own trading book), but are only willing or able to work the majority of the order on an agency basis. This assertion is widely confirmed by the sell-side interviews.

<sup>17</sup> AMIC-EFAMA, 2016, 'Managing fund liquidity risk in Europe', Brussels, April 2016

***“What’s changed since the last ICMA study? The most notable change is that liquidity has got worse.”***

**Credit trader**

There are also **differing views on liquidity conditions across markets and credit ratings**. Most respondents feel that the sterling corporate bond market is less liquid than the euro denominated market, while a common observation is that liquidity becomes much thinner for lower rated credits, particularly ‘BBB’ and cross-over<sup>18</sup> names. A similar differentiation is noted between senior unsecured and subordinated financials.

It also becomes very clear that general market liquidity varies depending on the counterparty. As broker-dealers become more discerning in terms of balance sheet allocation and liquidity provision (see Chapter 2), larger asset managers seem to fare better at the expense of Tier 2 and Tier 3 buy-side firms. One fund manager even felt that, in general, they were enjoying the same levels of liquidity from their broker-dealer counterparties as they did two years ago.

A number of buy-side respondents commented that the development of new electronic trading platforms and protocols, particularly those providing more ‘all-to-all’ connectivity (see Chapter 2), were providing incremental improvements in liquidity, or at least going some way to stemming the general decline. As one asset manager explained, market liquidity is still there, it is just a lot harder to find and requires new ways of thinking about liquidity.

***“There is still liquidity in euro IG credit. As a fund manager, you just have to accept that it is more challenging, that you need to create your own liquidity, and it comes at a price.”***

**Asset manager**

Finally, many interviewees were keen to explain that liquidity is dynamic, and has a tendency to be fleeting. For example, in the first few days following a new issuance the bond can be relatively easy to trade in the secondary market; then, within two weeks, liquidity dries up (see Figure 7). It was explained that credit events related to specific issuers could have a similar impact, prompting a flurry of activity in the bonds of the relevant issuer, but again for only a brief window (see Figure 8). More generally, a number of respondents noted that liquidity across the entire market had a tendency to evaporate in the event of more macro-driven market moves (such as the ECB’s CSPP announcement)<sup>19</sup> and that there is now a much greater tendency for bond prices to ‘gap’ than before.

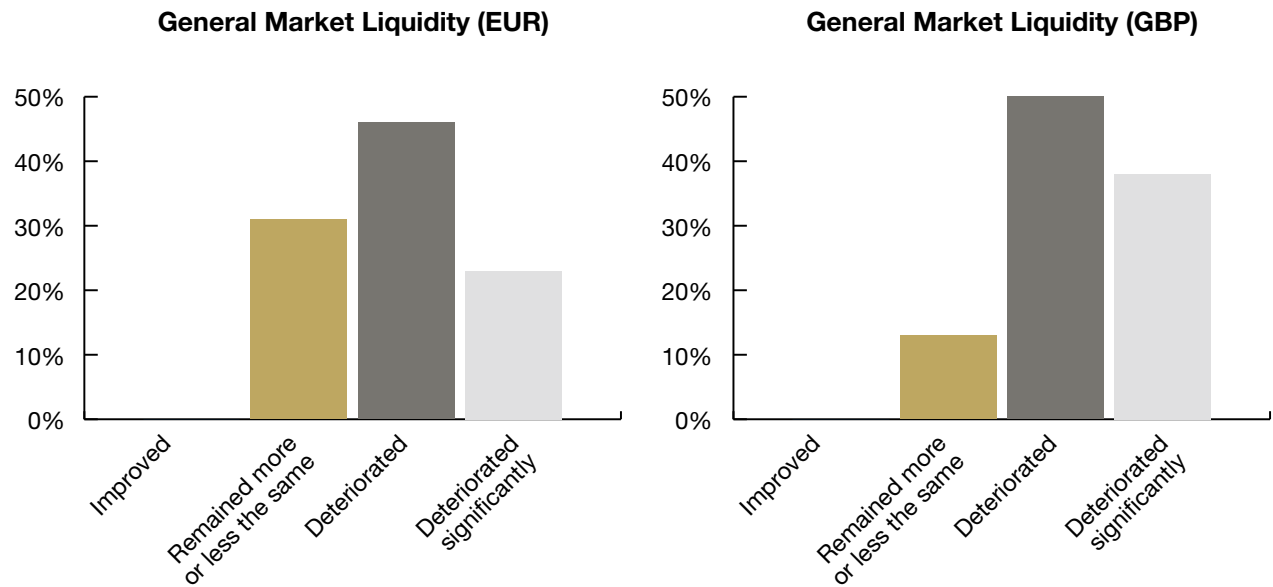
---

<sup>18</sup> A ‘cross-over’ credit refers to a security that has split-ratings across two or more rating agencies, with both investment grade and speculative grade (or ‘high yield’) credit ratings, with ‘BBB’ generally considered to be the lowest investment grade credit rating.

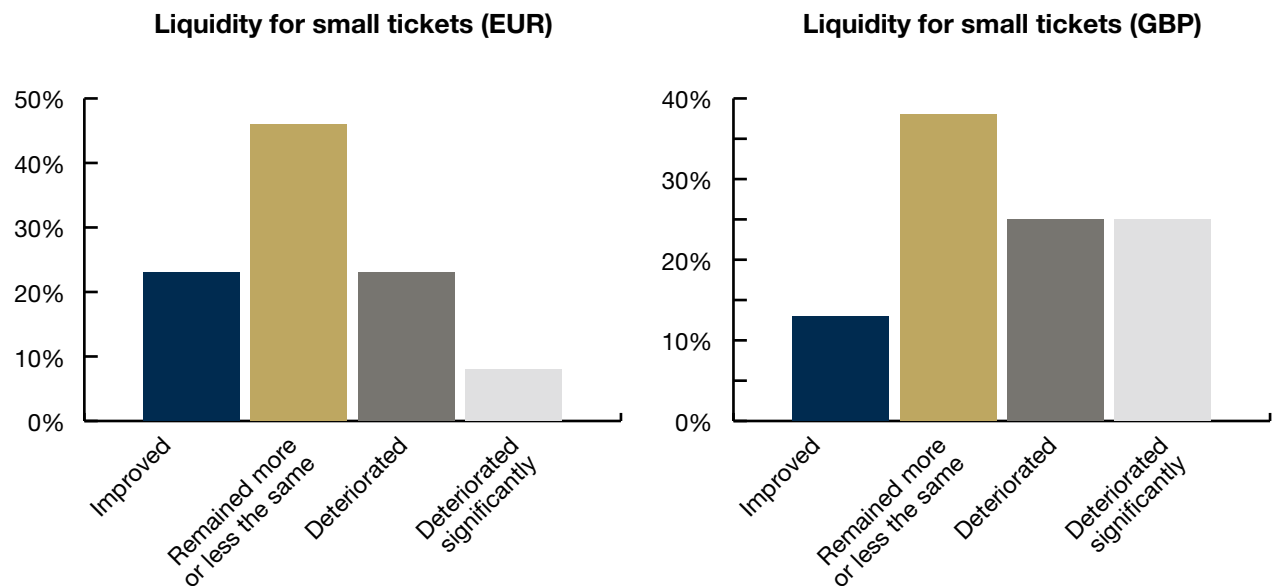
<sup>19</sup> See Chapter 3

## ICMA buy-side survey results: liquidity

Q1. General secondary market liquidity<sup>20</sup> over the past twelve months?

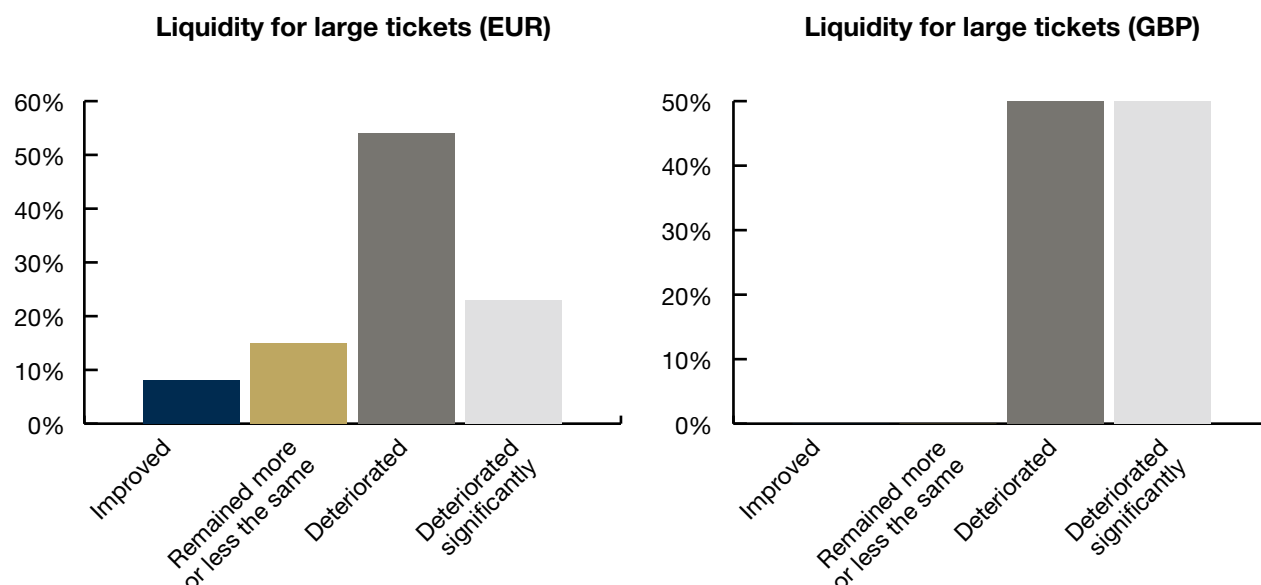


Q2. Market liquidity conditions over past twelve months for smaller transactions (<€1 million equivalent)?



<sup>20</sup> Liquidity is defined 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.

Q3. Market liquidity conditions over past twelve months for larger tickets (>€10mm equivalent)?



The survey results are consistent with the general buy-side view that market liquidity has declined over the past twelve months in both the euro and sterling corporate bond markets, but more so in the case of sterling. Furthermore, this has particularly impacted the ability to execute larger transactions.

## Why is liquidity becoming more challenged?

If we accept the widespread view that European IG corporate bond secondary market liquidity is, for the most part, in a continuing downward trend, the critical next step is to understand why this is. The interviews strongly and consistently suggest that this is being driven, either directly or indirectly, by the complex interplay of monetary policy and financial regulation.

### Monetary policy

As highlighted by the 2014 study, an extremely low interest rate environment, and expansive monetary policy, resulted in compressed credit spreads and a uniform 'search for yield'. Since that time, we have only seen rates go lower and, in the Eurozone, the extension of quantitative easing into sovereign and, more recently, corporate bonds, with a continued decline in both outright yields and spreads. This appears to create two negative outcomes for market liquidity.

Firstly, it tends to force asset managers and investors into more passive, buy-and-hold strategies. At extremely low yields, the cost of pursuing a more active investment strategy, switching between credits and issues to enhance overall portfolio performance, becomes, in relative terms, far more punitive. Furthermore, as one buy-side interviewee pointed out, if you sell a bond because it becomes expensive, what are you going to replace it with? Essentially, his point is that everybody has become a buyer, making the market strongly one-directional and fueling what has loosely been described as a 'herd mentality'.<sup>21</sup> As a number of interviewees also explained, credit markets used to trade on fundamentals, requiring in-depth credit analysis of issuers and bonds, and creating relative value opportunities and two-way views in the secondary market. However, aggressive monetary policy has meant that credit fundamentals are becoming less relevant and IG corporate bonds are beginning to trade more akin to a rates product. The retreat of hedge funds and proprietary trading desks from the market has also meant the loss of a traditional source of liquidity.

Secondly, the combination of a low interest rate and spread environment along with a largely one-directional, passive market, diminishes the potential returns for market-makers. At a time when banks are facing higher capital charges, and with returns on risk-weighted-capital being continuously squeezed, there is a natural incentive to re-allocate limited balance sheet away from less profitable activities.

This would seem to suggest that the eventual cessation and reversal of extraordinary central bank intervention,

<sup>21</sup> It is important to note that market liquidity risks are not the same as fund redemption risks, something that is briefly discussed earlier in this chapter

and a return to more 'normal' market cycles, could actually be a boon for market liquidity, with a greater diversity of investment strategies across buy-side participants, a return to more fundamentals-based investing and trading, and greater opportunity to capture 'alpha'.<sup>22</sup> However, to some degree at least, this may still depend on the capacity and willingness of banks and broker-dealers to provide a market-making service. A number of interviewees, as in the previous study, expressed concern about the potential for market disorder and overshoot as the market normalizes post-QE, particularly with a more limited capacity for market-makers to act as shock-absorbers, smoothing the volatile edges of any market re-adjustment.

## Regulation

As already discussed, the principal source of liquidity in fixed income secondary markets is market-makers, who act as ready buyers and sellers in a range of securities. Given the number and heterogeneity of bonds, and, therefore, the low probability of being able to find simultaneous buyers and sellers in any particular issue at any point in time, bond markets, particularly less liquid markets such as for corporate bonds, depend on the market-making model for pricing and immediacy of execution.

***“There doesn’t seem to be enough focus on the role of the market-maker. It needs to be highlighted that they provide a vital, socially useful, public function. At the very least, this needs to be part of any discussion on how to improve liquidity.”***

**Platform provider**

Essentially, the market-making model depends on four key 'ingredients'. Firstly, banks and broker-dealers require capital in order to take positions (long or short) onto their own trading books. Secondly, they need to be able to fund these positions (including the ability to make delivery on short-sales), and so depend on a functioning and liquid repo market. Thirdly, they need to be able to manage their risk, and so rely on an efficient hedging market – in the case of credit, this is the CDS market. Finally, and often forgotten, they need the trading skills and expertise of the market-maker her or himself.

What the interviews with sell-side firms confirm is that all four of these 'ingredients' have been severely impacted by regulation. The cost of capital required to support market-making has increased significantly under Basel III; the credit repo market has become border-line dysfunctional, largely as a result of the Leverage Ratio; while Basel III capital costs, as well as EMIR and the associated limitations and margining requirements for derivatives trading, have diminished liquidity in the single-name CDS market. Finally, and perhaps more an indirect consequence, interviewees noted a continuing attrition of experience and talent from sell-side trading desks.

## Repo

Market-makers rely on the ability to borrow securities in order to provide offer-side liquidity to their clients, not least since the ability to pre-position inventory has been severely curtailed by capital constraints. However, over the past few years, the supply of corporate bonds into the repo and securities lending market has markedly diminished.

ICMA's 2015 study<sup>23</sup> into the state and evolution of the European repo market highlighted a number of regulatory and monetary forces that are impacting and reshaping the repo market. Of particular concern is the way in which the Leverage Ratio, in combination with other regulations and capital requirements, is restricting the ability of bank repo desks to intermediate in the market. While that study focused primarily on the much larger sovereign bond repo markets, interviews with credit repo traders (as well as a number of buy-side participants) suggest that these negative impacts are only compounded in the case of corporate bond repo.

***“If you don’t have a repo market, then you don’t have a bond market; the two are intrinsically linked.”***

**Credit trader**

As repo traders explained, holders of corporate bonds are becoming less inclined to lend them, even at a time when the incremental returns for doing so become relatively more attractive with respect to the return on the underlying

<sup>22</sup> Alpha' and 'beta' describe two key investment risk concepts. Beta relates to the returns generated by the underlying market moves of an asset class or benchmark, while 'alpha' relates to additional returns beyond beta, and is generally considered to be a gauge of a portfolio manager's aptitude.

<sup>23</sup> ICMA, 2015, 'Perspectives from the eye of the storm: the current state and future evolution of the European repo market'

asset. The reason for this is due to concern that they may not get their bonds back in the event that they sell the underlying position, creating fails and reputational risk with their counterparties. It was further noted that the recently observed increase in fails in the credit markets is a result of reduced market liquidity, which is also partly a result of a less liquid repo market; thus, what we see is a vicious circle of repo and cash market illiquidity feeding off each other. One repo trader explained that historically repo desks were able to hold term repo positions, which allowed them to preposition, either via clients or through the interbank market, in anticipation of repo demand from their cash traders. Due to higher capital charges for repo trading, this was no longer possible, and the term and inter-bank credit repo markets have all but died (the effect of this on offer-side liquidity is discussed more in Chapter 2).

Another impact of reduced repo market liquidity is the diminished ability for both sell and buy-side firms to trade 'odd-lots' (nominal amounts of bonds less than €1 million in size)<sup>24</sup>. Historically, client or agent lenders of bonds have required a minimum ticket size of 1 million to justify the related transaction and administration costs. Where market-makers only required smaller sizes to cover their odd-lot shorts, they would still borrow the minimum size and fund the over-borrow (charging the cost of the over-borrow on to the end client through the offer price). However, the high cost of, and strict limitations on, capital has meant that market-makers can no longer over-borrow, even for very small sizes. Accordingly, with the rare exception of when a market-maker is already holding a position on their book, offer-side liquidity in odd-lots has sharply reduced. This is particularly painful for fund managers when trying to rebalance their portfolios, which can require multiple odd-lot transactions across a range of bonds.

## CDS

Credit default swaps are a standardized and efficient instrument for insuring against the default of an underlying credit, and provide a useful means for dealers to hedge the credit risk associated with long or short corporate bond positions (CDS structures and pricing are explained in Annex 2). The CDS market therefore allows market-makers in corporate bonds to manage their risk far more efficiently as well as providing a reference point for pricing bonds.

***“Single-name CDS has become extraordinarily difficult to trade. The banks only show prices when it suits them; if they don’t have an interest, then there is no market.”***

**Credit trader**

A common discussion point in the sell-side interviews is the lack of liquidity in the European single-name CDS market. What respondents report is that liquidity in the single-name CDS market has been in steady decline since 2008, as the combined effects of the Leverage Ratio and a capital charge for credit valuation adjustment (CVA) have made it onerously expensive for traditional market-makers of CDS. Further capital costs as a result of the Fundamental Review of the Trading Book (FRTB), bilateral margining requirements under EMIR, and the treatment of derivatives under the Net Stable Funding Ratio (NSFR) only present further challenges to CDS liquidity providers. Interviewees discussed how CDS market-makers had reduced to only three or four over the past year or so, and how volumes were in steady decline. This is despite an effort to revitalize the market in 2014 with a re-design of CDS contracts to make them simpler, more standardized, and more 'bond like' in terms of their economic features.

It was pointed out by a number of dealers that if liquidity could be re-injected into the single-name CDS market, this would almost certainly have a positive knock-on effect for corporate bond market liquidity.

## Why the divergence in opinion between the markets and the authorities?

An observation since ICMA published its 2014 study is not only the marked increase in the number of papers and studies related to bond market liquidity being published, but also what seems to be a divergence in views between market participants and the public sector as to the extent, or even existence, of a decline in liquidity.<sup>25</sup> We were therefore keen to understand why, and so put this question to the various interviewees.

A common point made by the respondents was that studies undertaken by policy makers or regulators tend to be highly academic, and so researched and authored by people who take a theoretical perspective, without necessarily reflecting the reality of how trading desks interact with the market to source or provide liquidity. Thus, in many instances, they are trying to model something of which they have no practical experience, relying purely on theory.

<sup>24</sup> Or 500,000 in the case of GBP denominated bonds

<sup>25</sup> For example, see: [AMF, 2015, 'Study of liquidity in French bond markets'](#)

A second point is that with many of these studies the researchers and authors do not seem interested in complementing or testing their analysis with discussion with market practitioners in order to challenge their conclusions or verify their underlying assumptions. Thus, these studies are largely undertaken in a vacuum.

The challenge of identifying meaningful or reliable data was another common concern. The value of using screen prices in such studies was challenged by many of the interviewees, given the broad understanding that such quotes, certainly in the case of the European credit markets, are by-and-large un-executable, and the real market is often far away from the price. It was explained by sell-side, buy-side, and platform providers that most screen quotes (or 'runs') posted by dealers tend to be indicative, have a 'last look' option,<sup>26</sup> or are only good for retail size tickets. Therefore, nothing can or should be inferred from the number of dealer quotes available nor the width of the posted bid-ask spread.<sup>27</sup>

The interpretation of data was another point raised by some interviewees. For example, an increase in dealer inventory turnover could indicate more efficient use of market-makers' balance sheets. However, as one market-maker explained, in their case it represented more selective positioning due to general risk aversion and a capital constraint driven limit on holding an individual position for more than two days.

***“If you want to understand liquidity then there is no point in looking at what traded – it’s what didn’t trade that matters.”***

**Asset manager**

Finally, and perhaps most pertinently, several respondents pointed to the fact that any post-trade data will always give the impression of liquidity, since it represents something that actually traded. What is more important, however, is what did not trade. As one fund manager explained, if he sells 10 million of a 50 million order, then the 10 million trade will be recorded, and any subsequent analysis will suggest that the market was indeed liquid for 10 million bonds, at that time. What the analysis will not reveal is that two weeks later he might still be looking for a bid for the remaining 40 million. Thus, 'dropped' trades and unfilled orders are far more revealing variables for determining and measuring liquidity, as opposed to what actually did trade.

---

<sup>26</sup> This allows the price-maker the opportunity to reflect on and change their price.

<sup>27</sup> For a recent example of a market participant questioning the validity of a market study undertaken by a regulator see: [The Trade, 2016, 'FCA urged to review Bloomberg bond rejections'](#), online, May 11 2016

## Chapter 2: evolution

Since the publication of ICMA's 2014 study, we were keen to assess how the market was adapting and evolving in terms of both participant behaviour and market structure. On the basis of analysis of the interviews, it becomes clear that both sell-side and buy-side participants are more resigned to an increasingly challenged trading environment (the 'new normal') and are changing their business models accordingly. While the general view on market liquidity is perhaps even more pessimistic than two years ago, respondents' outlook on how they are adapting, for the most part, seems much more upbeat.

***"Eighteen months ago everybody complained about liquidity; but not now. That's not to say everybody's happy – they're not. But they recognize that this is the new normal and are changing the way they do business to make the most of it."***

Credit trader

### Issuers

While it was much more of a current topic at the time the 2014 study was being conducted, the question of more standardized issuance was raised again with interviewees, including corporate issuers themselves.

***"People really need to understand why corporates issue bonds and why the corporate bond markets look the way they do. Underlying issuance is real economic activity and investment. This is the reason why issuance can't be standardized."***

Corporate treasurer

While a number of sell-side, buy-side, and intermediary participants noted that fewer, larger corporate bond issues would most probably help liquidity, not surprisingly all of the corporates interviewed went to great lengths to explain why the 'equitization' of corporate bond markets (particularly if regulatory driven) would not work, and should not be attempted.

Firstly, the capital structure of a corporation is based on the firm's business model, investment activity, and cash flows. The role of the corporate treasurer is to optimize this structure, including the profile of its debt issuance, which in turn funds the underlying economic activity and productivity of the firm. These have to be linked.

Secondly, not only does bond issuance need to match the investment or activity it is intended to fund, the treasurer has a responsibility to minimize the firm's re-financing risks, which makes a more evenly distributed coupon and redemption profile a logical issuance decision. Hence, the notion of corporates issuing a limited number of larger bonds, with standardized coupon and redemption profiles,<sup>28</sup> is not something that corporates would consider any time soon (if ever). Furthermore, it was pointed out that in Europe only a handful of corporates were large enough to issue in this way, and so this would have very little impact on the overall profile of the market.

However, a number of issuers did make the point that there were benefits to creating purposefully a liquid benchmark curve<sup>29</sup> (that in turn supported primary market liquidity and pricing), and many already did, as well as creating more standardization and streamlining in terms of covenants or certain bond features (such as call or put triggers).

***"Issuers will need to adapt as much as they can to the changing needs of the market."***

Corporate treasurer

28 One sell-side interviewee pointed out that, in effect, this is what the single-name CDS structure provided, and so rather than trying to persuade corporates to change their issuance practice, it may be more sensible (and a lot easier) to find ways to resuscitate the single-name CDS market.

29 If possible, issuers try to ensure that they issue larger than average bonds at defined maturity intervals. These bonds tend to attract higher than average secondary market activity, which in turn makes them easier to price in the secondary market. The credit-spreads of these 'benchmark' issues, when plotted together, produce a credit curve for the underlying issuer, and interpolating this curve helps to provide guidance for pricing new issuance.

Perhaps the most notable point in relation to issuance came from sell-side and buy-side interviewees who felt that the main problem with the European credit markets is that there are not enough issuers, particularly non-financial corporates, and so the market lacks the potential depth and diversity that would make it far more attractive to investors. Thus, the far more pressing consideration is not so much how to standardize the European corporate bond market, but rather how to grow it. This is also a key objective of Europe's CMU project.

## The sell-side

***“Compared with six years ago, I cannot begin to tell you how much quieter the trading floor is. These days it is more like a library.”***

**Sell-side VP (Credit Trading)**

As highlighted in Chapter 1, the single biggest challenge facing the sell-side is the increased cost of capital required to support their credit trading activities, post-Basel III. Add to this a lack of access to liquid hedging and financing markets, plus limits (either regulatory or self-imposed) on trading risk, and the capacity for sell-side firms to provide a market-making service becomes extremely challenged. A market environment impacted by extraordinary monetary policy also is not conducive to flow-trading (the active buying and selling of securities to service client needs) and only helps further to undermine the traditional broker-dealer model.

In response to this, two dominant themes come across from the interviews with sell-side firms: the need for more efficient use of balance sheet; and a re-evaluation of the franchise.

### Balance sheet efficiency

Virtually every sell-side interviewee, irrespective of their firm's size, explained that their businesses now have to operate with far less balance sheet or ability to take positions or risk than at any time post-crisis. As the ability to hold positions and assume market risk becomes constrained, credit trading desks are becoming more discerning about the actual positions that they do take on. The critical consideration seems to be the likelihood that they can trade out of any position relatively quickly; certainly within a few days, and, increasingly, relatively instantaneously. In effect, in many instances, market-makers are taking on more of a matched-principal broker role, and looking to work clients' interests as orders, rather than providing immediate pricing and liquidity. This also goes some way to explaining some reported observations of higher dealer balance sheet turnover as well as tighter bid-ask spreads. As one trader explained, if you are working a client order, rather than making a market, then it is only reasonable that the trade is executed close to 'mid', rather than trying to realize the full bid-ask spread.

Some respondents also discussed how they were changing their trading models to become more dynamic and responsive to changing market conditions. As one head of trading stated, these days you need to be more sensitive to the underlying liquidity in various, sectors, credits, or lines, and be prepared to switch-off your own liquidity provision as soon as the market feels as if it is becoming thin.

A number of interviewees explained how they now avoided being taken short when clients requested offers, primarily due to the lack of repo market liquidity (see Chapter 1) and the increased risks of being bought-in, particularly in a low interest rate environment. The imminent introduction of the ECB's Corporate Sector Purchase Programme was expected only to compound the buy-in risks associated with eligible bonds.

Specialization is another key trend, particularly among the Tier 2 dealers. Rather than trying to provide liquidity and two-way pricing in several hundred bonds, desks are narrowing their scope to a more limited number of sectors or credits where they can concentrate their expertise, effectively allocate more balance sheet, and so compete with the larger, global houses, at least in that particular segment.

However, it also becomes apparent that in terms of overall balance sheet allocation and risk appetite, it is not an even playing field for the market-maker community. As more than one interviewee suggested, the European credit market is beginning to look a lot more like the US market, with a small number of dominant houses becoming the main liquidity providers, while others either specialize in market segments, evolve into principal brokers, or simply withdraw from the market altogether.

## Re-evaluating the franchise

The second key theme coming out of the interviews is how sell-side firms are reviewing and evolving their client-base and how they engage with them. As balance sheet becomes a scarce and expensive resource, and the capacity to make markets more limited, dealers are not only having to think more carefully about the positions and risk that they take, but also the clients to whom they offer liquidity. As a number of interviewees explained, whereas traditionally salespeople would be under pressure to print as many trades as possible, while traders were largely indifferent to the counterparty so long as the trade suited their book, this model is no longer appropriate. Rather, the sell-side now has to look at its clients on a holistic level and assess the overall value of that client relationship to the bank – what is colloquially known as the client's 'wallet'. Thus clients that deliver steady revenue streams to the banks across a range of products and services, not just corporate bond trading, will take priority in terms of any pricing or liquidity that the credit desks are able to provide. This client tiering not only applies to market liquidity, but also the level of service and client interaction provided by the sales desks, particularly as banks reduce head-count across trading and sales desks.

***“Over the past twelve-to-eighteen months, you see that dealers are getting much better at gleaning information from their clients. They are becoming more thoughtful about their interests and flows.”***

**Sell-side Director (Credit Trading)**

As well as more considered selection of clients, banks are also refining the way in which they interact with their priority clients. Showing prices in response to client interests, or trying to push dealer axes,<sup>30</sup> is no longer a sufficient model. Salespeople, and even the traders themselves, are attempting to engage more closely with their clients, to understand better their needs and interests, as well as to communicate their banks' own interests, or limitations. In a number of interviews, the word 'partners' was used to describe the client base.

The importance of data, with respect to client queries and trades, is another popular theme in the sell-side interviews. As liquidity becomes more difficult to provide, and as the needs and interests of clients become harder to fill, so banks are developing more sophisticated and systematic approaches to serving their franchise. This includes recording the details of every client enquiry, order, or transaction, to identify more readily which clients are holding specific bonds, or who might be axed a certain way. In other words, liquidity is becoming more a function of information: a notion that is very much reflected in the buy-side interviews.

## The buy-side

***“The challenge for the buy-side is how to adjust their behaviour.”***

**Asset manager**

Since the interviews for the 2014 ICMA study, it is notable that there is a very conscious shift in buy-side behaviour and an overwhelming acceptance that the traditional dealer-based model for market liquidity has not only changed, but is likely to continue to do so. It becomes clear that even the larger, Tier 1 buy-side firms are having to change the way they think about market liquidity and the way they conduct their business. This is impacting both how they interact with their broker-dealers, as well as how they utilize technology. Essentially, as the market-making model breaks down, buy-side firms are not only being forced to find alternative sources of liquidity, but they are also learning how to create liquidity.

## Dealer relationships

***“We want the banks we work with to make money.”***

**Asset manager**

Despite the reducing capacity for dealers to provide liquidity, even to their favoured clients, a loud and clear message from the interviews is that the buy-side is still very much dependent on their dealer relationships; in some cases, perhaps more than ever before. There is an understanding that banks are becoming more discerning in their liquidity provision, and a realization that liquidity comes at a cost. This is driving investors and asset managers to re-evaluate whom they trade with, the terms on which they trade, and how they interact. As one buy-side head of trading

<sup>30</sup> An 'axe' is a specific interest to buy or sell securities, usually based on an existing position or client order. Sales people normally make the axes of their trading desks their priorities, rather than simply responding to client enquiries.

stated, it is becoming more important to leave something on the table for the dealer (i.e. ensuring that they are able to make a profit from facilitating the trade). Despite a shift to a greater use of platforms or electronic-based trading (see next section), buy-side firms are not only expanding the range of sell-side firms they trade with, but are also investing more time into talking to the salespeople and traders of these firms, in an attempt to establish stronger and deeper relationships. As one interviewee observed, at a time when everybody is talking about 'all-to-all' anonymous trading and open protocols<sup>31</sup>, it is actually human relationships and people attributes, such as building trust and understanding, that is really adding value.

***“Picking up the phone and talking to your dealers is becoming more important than ever. You need to know who you can go to when the screens go blank.”***

**Asset manager**

## Data and technology

Just as the utilization of data is becoming more important for the sell-side for their ability to provide liquidity, so it is becoming critical for the buy-side for their ability to source it. The interviews suggest that asset managers are becoming more adept, and even systematic, in the ways in which they collate and process data related to their interactions with their broker-dealers, including axe lists,<sup>32</sup> quotes provided in response to requests, hit rates (i.e. where quotes are traded on), and 'slippage' (the difference between the quote or transaction price and the expected market fair-value)<sup>33</sup>. Utilizing these various data points allows the asset manager to see more readily which dealers are more likely to provide a match, or at least a competitive quote, for their specific interest. As several interviewees explained, this is also becoming more important as market illiquidity is creating increased sensitivity to information leakage. If buy-side firms show their interest to too many dealers (known as 'shopping'), particularly if one of them happens to be axed the same way, then they run the risk of the market moving against them before they are able to transact. In the case of less liquid bonds, the ability to show their interest to the least number of dealers (and in some cases, ideally just the one who is optimally axed) improves their execution efficiency, in terms of both price and time.<sup>34</sup>

The use of these data also allows buy-side firms to track the relative performance of their dealers in order to understand better which are the best sources of liquidity across different asset classes, sectors, or credits. This not only helps them to know where to go for pricing for specific interests, but it enables them to assess which dealer relationships are the most valuable (and so where to reward with more flow) and which ones require either more work or re-evaluating. One interviewee stated that he had regular discussions with his dealer firms, where he would let them know where they stood in his rankings. He found that they not only appreciated this level of transparency, but often it was an incentive to generate more business.

## Price-makers

Another popular theme in the buy-side interviews is the capacity and willingness for asset managers to become more pro-active in terms of how they interact with the market (even the more passive, index-based funds). This already seems to be happening in a number of different ways. Firstly, they are becoming more flexible in terms of portfolio construction. For instance, a portfolio manager might send her execution desk an order to purchase BMW 2020s<sup>35</sup>, and the buy-side trader struggles to find a fair value offer, but also sees that one of his dealers is axed in BMW 2022s<sup>36</sup> (and so can offer at a much better spread to LIBOR<sup>37</sup> than the best market offer in the '20s'). He might therefore recommend that the portfolio manager take the longer duration exposure and buy the '22s' instead. This flexibility might not only apply to duration, but could also extend to substituting with different, albeit similar, credits (in this example, it could be a Daimler bond).

Another key change is in the way the buy-side are becoming 'price-makers', rather than purely 'price-takers'. Whereas traditionally asset managers would rely on their dealers to provide quotes for a specific interest, before trading on the best one, now they are beginning to decide what the appropriate price for their buy or sell interest should be, and providing the dealer not only with their axe, but also their target price. A number of interviewees were keen to stress that this in no way means that buy-side firms are becoming market-makers, and so risk-takers, which is unlikely to

<sup>31</sup> See Annex 1: 'The basics of electronic trading – a primer'

<sup>32</sup> These are specific dealer trading interests or inventory lists sent to clients, usually electronically, such as by email or Bloomberg messaging

<sup>33</sup> In its more systematic form, this is also known as 'Transaction Cost Analysis' (or TCA)

<sup>34</sup> It was pointed out that one of the ironies of Best Execution requirements under MiFID II/R is that in some instances this would result in achieving a worse price than had the asset manager not been forced to 'shop around'

<sup>35</sup> This example refers to the BMW 0.875% 11/17/20. This is a bond issued by BMW that pays a 0.875% annual coupon, and redeems on November 17th 2020.

<sup>36</sup> This example refers to the BMW 1.25% 9/05/22. This is a bond issued by BMW that pays a 1.25% annual coupon, and redeems on September 5th 2022.

<sup>37</sup> When valuing corporate bonds, it is the spread of their yield relative to that of a benchmark, such as the relevant swaps curve, that is important; more so than the absolute yield (or price) itself.

happen due to a number of constraints, not least fiduciary responsibility to their investors; rather it is a more subtler cultural shift toward playing a more active role in market price formation.

## Other buy-side initiatives

A further key way in which asset managers are becoming more active liquidity creators, and discussed in some of the interviews, is in terms of facilitating trading (or 'crossing') between their various funds. Rather than funds individually work their separate buy and sell orders in the market, buy-side execution desks intermediate between the various funds, so creating 'internalized liquidity'. At least for the larger buy-side firms, this seems to present an opportunity to become less reliant on dealer-driven liquidity.

Another interesting initiative highlighted by one interviewee is the outsourcing of trading by smaller, Tier 2 or Tier 3, buy-side firms, to the larger asset managers. As broker-dealers become more discerning and concentrated in terms of their liquidity provision to favoured clients, usually at the expense of smaller asset managers, the only way smaller clients can access liquidity could be through passing their orders to the larger buy-side firms who effectively act as their brokers. In turn, this would also provide these so-called 'super desks' more crossing opportunities between both their own and external funds, and so a further source of buy-side liquidity generation. This development has already been witnessed among some French asset managers, and is expected to be replicated elsewhere.

Finally, many of the buy-side interviews focused on the greater use of trading platforms and 'e-solutions', as well as diversification into non-bond products, both of which are discussed in the next sections.

## Electronification

***“Many think that e-trading is the solution. But it’s not true. E-trading does not create liquidity. It is only a venue to facilitate trading.”***

**Asset manager**

Perhaps not surprisingly, a good part of every single interview focused on the ongoing electronification of the European corporate bond markets, and how this is helping to shape and evolve market structure. Both sell-side and buy-side firms reported that they were not only executing a greater proportion of their trades electronically, but that they were becoming more interested in the potential for technology to support and enhance their business models. Underlying this evolution seem to be a number of factors, including the opportunity to achieve greater efficiencies, advances in available technology, and improved capacity to comply with upcoming regulatory reporting requirements, in particular those under MiFID II/R. However, what also becomes clear is that many market participants are also looking to technology to help support the sourcing or provision of market liquidity, as this becomes ever more challenging.

An overview of electronic trading in fixed income, including different platform types and trading protocols, as well as a summary of the potential benefits and efficiencies of electronification, can be found in Annex 1.

## The evolution of electronic trading in the credit markets

There were numerous discussions around the plethora of e-platforms and trading protocols that various market vendors and intermediaries have developed and marketed over the past few years, with many more expected to come. What many of the interviews seem to suggest, however, is that given how corporate bond markets are structured, with market-makers as the principal source of market liquidity, most participants only look to a number of limited trading protocols to serve their needs. It also needs to be remembered that the European corporate bond markets have been 'electronified' for the best part of two decades, with the two principal platform types – the central limit order book (CLOB) and request-for-quote (RFQ). Effectively, these are electronic versions of the traditional OTC market model: CLOBs doing the job of inter-dealer brokers (IDBs) in the inter-dealer market, and RFQ the same concept as buy-side firms calling their broker-dealers for a price.

It is perhaps therefore not surprising that most of the developments in e-trading, at least until very recently, have been based on this traditional model, particularly with respect to RFQ protocols. New products such as request-for-stream (continuous RFQ) and all-to-all anonymized RFQ, seem to have found some traction among market participants. And while the inter-dealer market has diminished significantly as the result of limited dealer capacity to hold and trade positions, innovations such as inter-dealer matching auctions to clear up odd-lot positions on dealers' books have proved to be very successful, which in turn should have a positive impact on market-makers' ability to provide liquidity in smaller sizes.

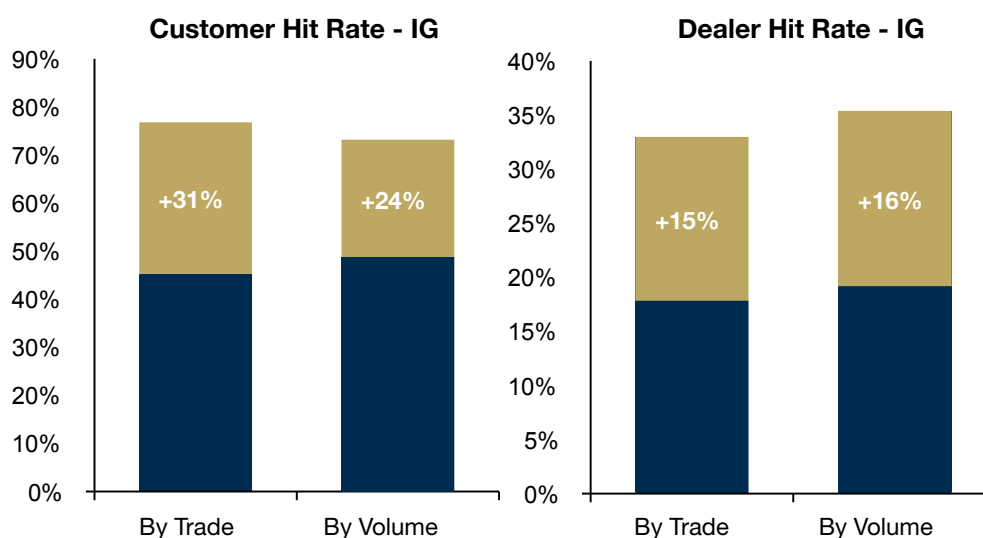
***“Order books won’t work for corporate bonds. It’s not like equities; it’s a completely different market.”***

Credit trader

## The next generation: information networks and matching engines

However, where much interest seems to be developing, particularly, though not exclusively, with the buy-side, is in platforms that focus more on identifying and matching axes rather than quotes, that connect all market participants (including buy-side to buy-side), and that try to identify pools of liquidity, rather than try to create liquidity. This new generation of platforms places less importance on facilitating trade execution; in fact, some do not even do this, such as ‘information networks’. For many, their key function is to ‘scrape’ the axe sheets and order books of participants in order to connect potential sellers and buyers. Discussions around size and price come later, either anonymously (so called ‘dark pools’ that are executed through a principal intermediary) or directly. Effectively, these platforms are not so much e-trading platforms in the traditional sense, but rather they are ‘matching engines’.

**Figure 9: Improvement in hit rates for axe-driven markets on the Tradeweb platform for euro IG corporate bonds (H1 2016)**



Source: Tradeweb

## Connectivity and fragmentation

Despite the rapid growth in these new initiatives to support e-trading and liquidity sourcing, the interviews suggest a high degree of concern, and even frustration, as a result of the number and diversity of the products available. A common complaint is that so many different platforms and variations on protocols are only serving to fragment the market, spreading liquidity thinly across a range of locations, rather than concentrating it into one easily accessible place. This makes selecting which platforms to use increasingly challenging, both for buy-side and sell-side firms, since connecting to each platform requires significant investment and time in terms of harmonizing different connectivity and messaging standards between their internal order and execution management systems and those of the respective platforms, as well as legal and data security considerations. Furthermore, as a number of interviews pointed out, even if one could connect to all the platforms on the market, you can only physically look at a few at a time.

While eventual consolidation in the e-trading and platform space is considered inevitable, there seems to be a strong desire, particularly from the buy-side, for this to happen sooner rather than later, or at least to find some way of pooling the liquidity provided by the various products into one centralized venue.

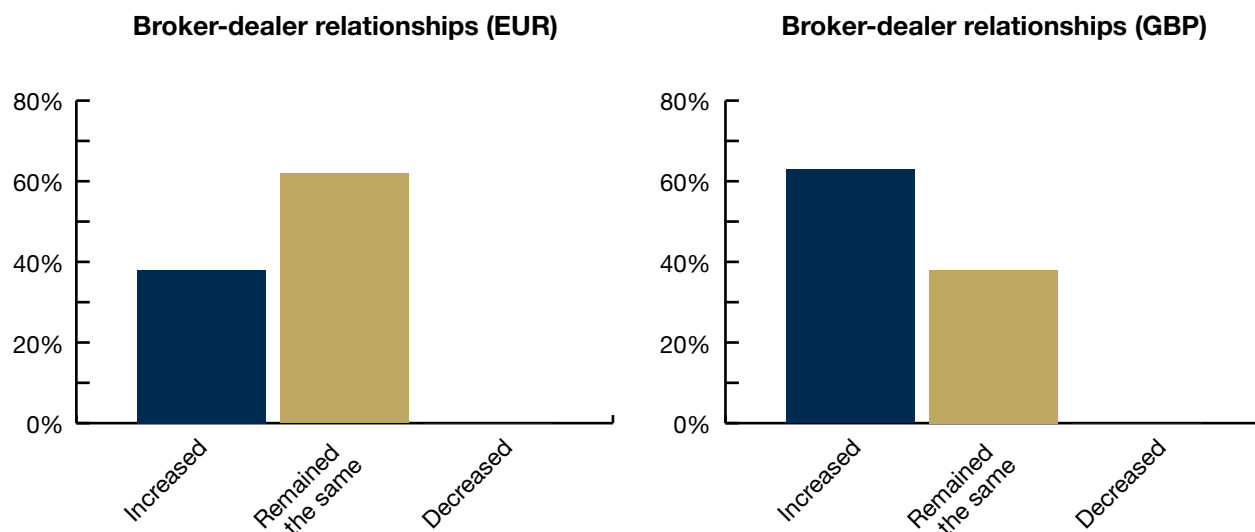
However, as many interviewees were keen to point out, the full automation of the credit markets is an unlikely and undesirable eventuality. A message repeated through numerous interviews is that corporate bond markets are distinct from equities, commodities, or financial futures, and even from sovereign bond markets. While technology has an important role to play, a significant part of the market will always need to be ‘people based’ and negotiated by voice.

***“The market, both the sell-side and buy-side, need to come together to figure out the right solutions. The solutions should not be vendor-driven.”***

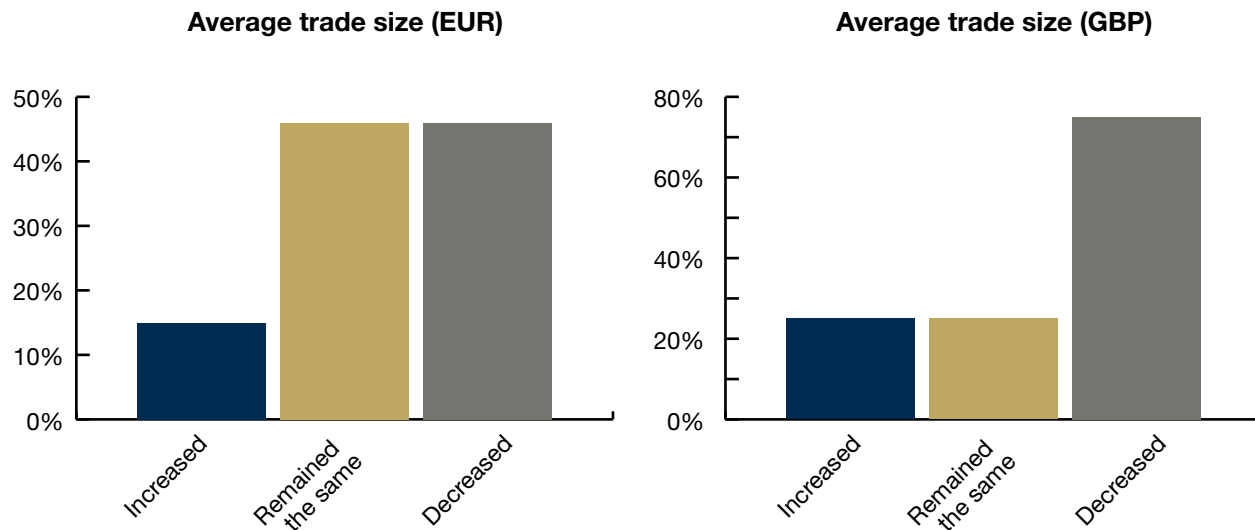
Asset manager

## ICMA buy-side survey results: behavioural change

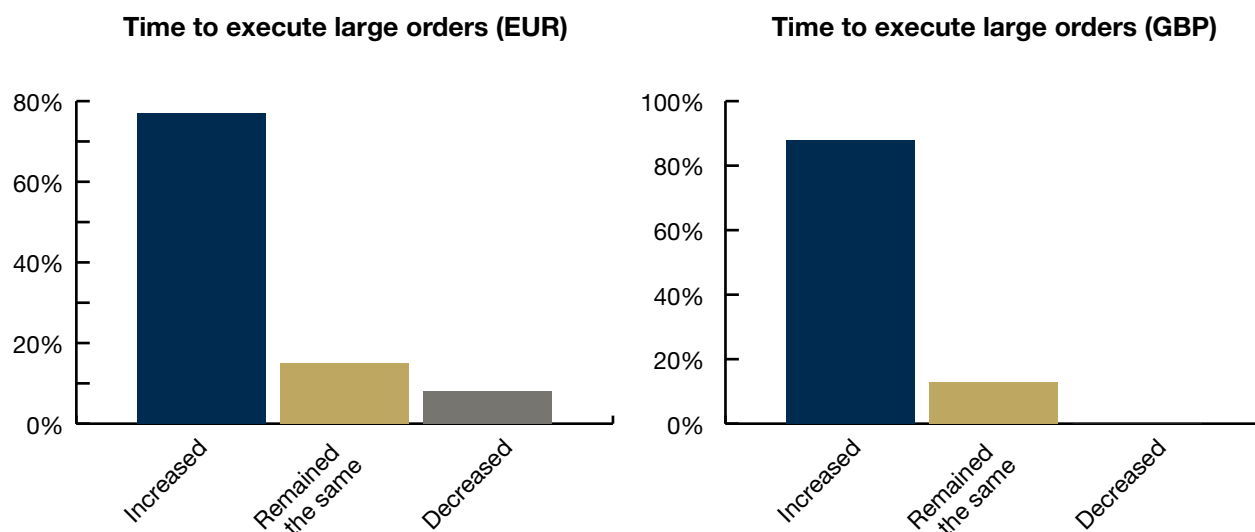
Q4. Number of broker-dealer relationships over past twelve months?



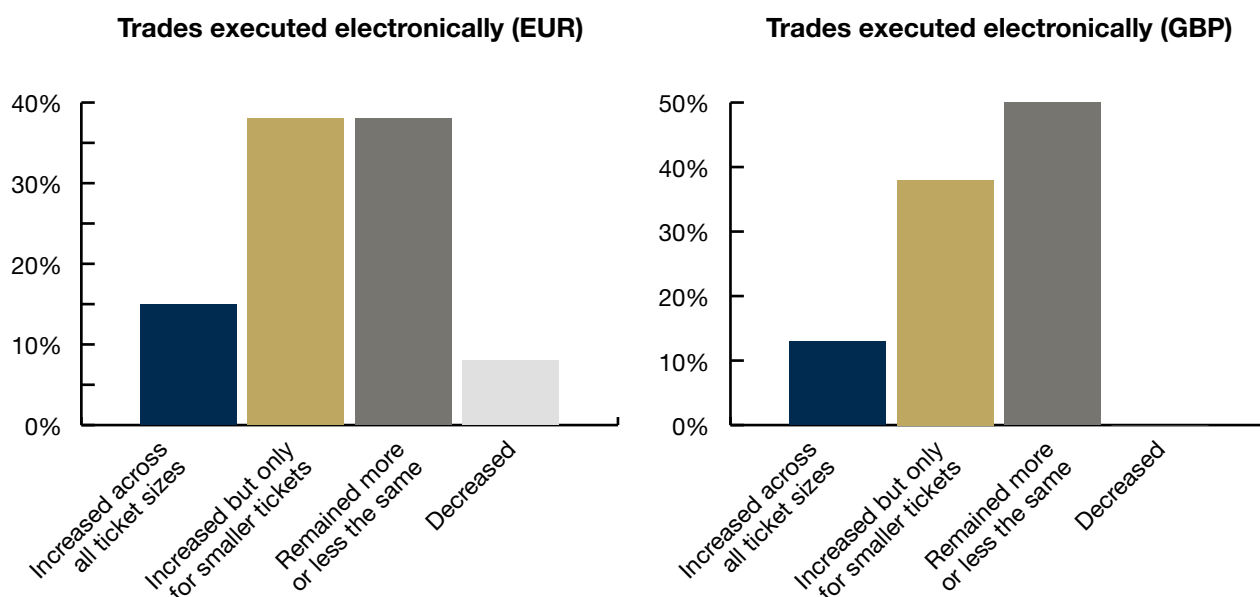
Q5. Average ticket size over past twelve months?



Q6. Time taken to execute block orders (>€10 million equivalent) over past twelve months?



Q7. Proportion of trades transacted on electronic trading platforms over past twelve months?



The survey results confirm the anecdotal evidence that buy-side firms are increasing the number of broker-dealers that they work with. Meanwhile, average ticket sizes are, in most cases, becoming smaller, while it is taking longer to execute larger orders. Again, the smaller sterling corporate bond market seems to be more affected than the euro market. Furthermore, the proportion of buy-side trades executed on electronic platforms has also increased, although mainly for smaller transactions.

## Alternative products

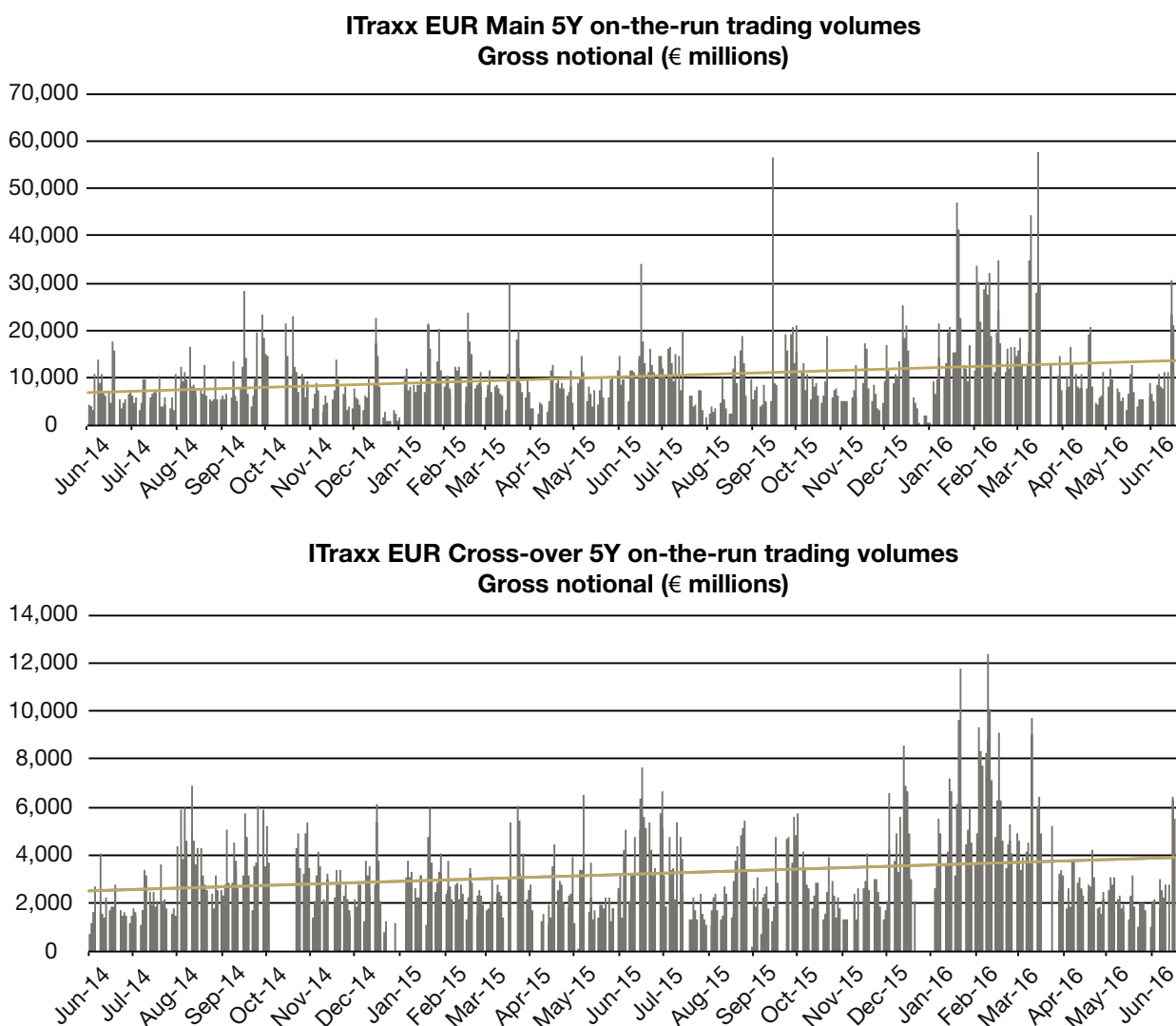
A number of interviews highlighted a growing trend toward using alternative products to corporate bonds as a means of taking credit market exposure. For fund managers in particular, products such as credit default swap (CDS) indices and corporate bond exchange traded funds (ETFs) provide far more liquidity, with tighter bid-ask spreads and larger tradeable volumes, even in volatile markets. Furthermore, while liquidity in cash bonds is generally considered to be declining, liquidity in these alternative products seems to be increasing, particularly as they attract more participants.

## CDS Indices

While many interviewees report that liquidity in single-name CDS is becoming problematic (see Chapter 1), there appears to be far more interest in using the CDS index market. Products such as the iTraxx 'Main' and 'Cross-over' allow fund managers (as well as sell-side traders) greater ability to take long or short 'beta' exposure to the underlying asset class or market segment, particularly when immediacy is key (say in response to a macro-credit event), with the ability to execute in significant size and often with tight bid-ask spreads. Interviewees reported that being able to execute €100 million or even €200 million clips of the iTraxx Main index was not unusual, even during the credit market sell-off in early 2016. Furthermore, it was noted that in times of sharp market moves, not only does the CDS market respond quickly, but far more so than the cash bond markets, where prices simply tend to widen (or disappear) rather than move. One asset manager explained that because of this dynamic, they often will create their market exposure through the CDS market first, before scaling into the intended cash bond exposures over time.

An overview of credit default swaps, how they work and are priced, including indices, is provided in Annex 2.

**Figure 10: the growth in CDS indices**



Data Source: Markit

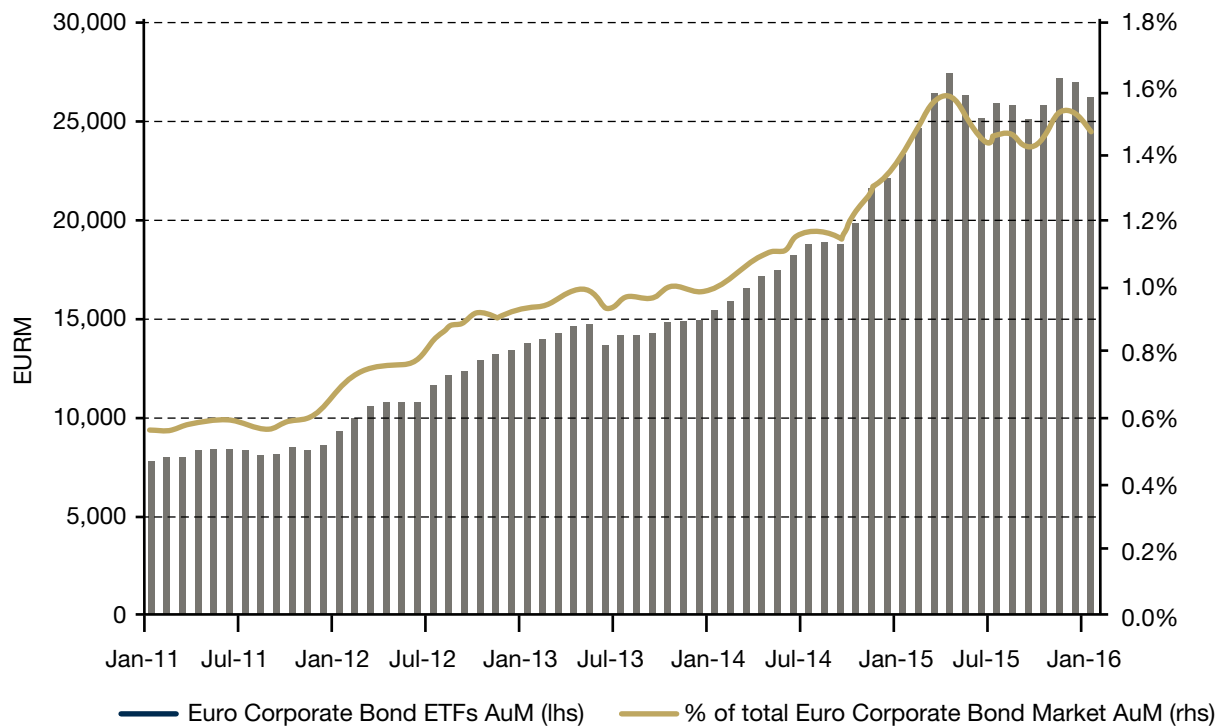
## ETFs

A notable change since the interviews conducted for the 2014 study is the increase in interest, and use, of exchange traded funds by buy-side firms. As it becomes more difficult and expensive for fund managers to trade in corporate bonds, ETFs provide a means to invest in a basket of underlying bonds, or reference index, with not only low execution costs, but also the ability to transact in reasonable size (for corporate bond ETFs, clips of €5 million are standard, with €20 to €30 million trades often possible). Another key attraction is the fact that the market price of the ETF should never deviate too far from the value of the underlying securities, and that it should always be possible to sell ETF shares relatively quickly and easily (with liquidity provided by approved participants in the ETF).

Interestingly, some interviewees did express concern that liquidity in bond ETFs seems to be increasing in contrast to the liquidity in the underlying bond markets, and wondered whether this was sustainable or could lead to increased volatility between ETF prices and underlying market value. This could particularly be the case where the underlying cash bonds become more difficult to value, or if everybody rushes to the door and tries to sell at the same time. However, the main counter argument seems to be that bond ETFs represent a relatively small amount of the underlying bond markets (around 1.5% in the case of corporate bonds), which helps to maintain the ETFs 'arbitrage' fair value in the event of any strong selling or buying pressure. Another argument put forward is that the market price of the ETF may in fact be a better indication of fair value than the quoted prices for the constituent bonds (which may not be the same as the trading prices).

An overview of bond ETFs, including how they are created and redeemed, is provided in Annex 3.

**Figure 11: the growth in corporate bond ETFs**



Source: Lyxor International Asset Management, Bloomberg, SG Cross Asset Research/Credit

## Chapter 3: challenges ahead

One of the questions put to every interviewee was what they considered to be the key challenges, or potential opportunities, in the near future, and how they envisaged the market two-to-three years from now. With respect to the future, there seems to be a range of views and a lot of uncertainty. In terms of the immediate challenges, not surprisingly, regulation and monetary policy top everyone's list.

### Regulation

When discussing pipeline regulation, interviewees cited a range of initiatives that are expected to have a significant impact on market structure or behaviour. As to be expected, MiFID II/R was an aspect of virtually every discussion, particularly with respect to its pre- and post-trade transparency obligations.

#### MiFID II/R

What is notable when compared with the interviews conducted for the 2014 study, is that there appears to be a lot less concern about either the practicalities of implementing MiFID II transparency rules, or the extent of the potential for detrimental impacts for the functioning of the corporate bond market. Part of the reason seems to be the delay in implementation, which allows firms more time to prepare, but also what are seen as improvements in the draft regulatory technical standards with respect to its liquidity calibrations. However, that is not to say that there is still not a high degree of apprehension among both sell-side and buy-side participants. While the proposed new liquidity calibrations will take the vast majority of corporate bonds out of scope for pre-trade transparency, with a deferral for post-trade reporting, there are still some anticipated potential hazards for market liquidity.

***“MiFID should go smoothly, now that we have sufficient time – at least for the larger banks. We see it more as a transformation than a risk.”***

**Credit trader**

The overwhelming view of buy-side interviewees, as well as many sell-side contributors, is that post-trade transparency is a welcome and positive development that has the potential to improve market efficiency and liquidity. Many buy-side firms referenced TRACE<sup>38</sup> as a successful example of a post-trade reporting mechanism, and a model that the European markets should try to emulate (although there were some sell-side detractors of TRACE in the interviews). However, both buy-side and sell-side participants expressed concern about the potential maximum deferral period of only 48 hours for fixed income securities. Many interviewees explained that in the case of many corporate bond trades, particularly in less liquid bonds or in larger transactions, knowing that the trade was going to be public information in only two days added significant risk, not least for a liquidity provider taking the trade onto their book. This would dis-incentivize broker-dealers or other liquidity providers from showing prices for such trades, and so reduce market liquidity further. The general view among many interviewees was that the post-trade reporting provisions that allow for the possibility of much longer deferral periods in the case of less liquid or larger corporate bond trades need to be applied by the various national authorities, ensuring that this is done consistently across all jurisdictions.

The principle of pre-trade transparency, however, has no support from any of the interviewees, with views ranging from it being completely pointless at best, to dangerous at worst. While most corporate bonds are expected to be out of scope of pre-trade transparency, this exemption is likely only to apply from some weeks, or even months after a bond is issued.<sup>39</sup> Where the pre-trade transparency obligations require liquidity providers to show quotes to multiple counterparties, rather than in response to specific client enquiries, the natural incentive is not to show prices in any bond other than those in which the dealer is axed.

***“Everybody wants transparency for everyone else’s trades; apart from their own.”***

**Platform provider**

<sup>38</sup> FINRA's Trade Reporting and Compliance Engine (TRACE) facilitates the mandatory reporting of OTC secondary market transactions in eligible fixed income securities.

<sup>39</sup> This is due to the fact that until a period of transaction data has been collated to determine a bond's liquidity calibration, its 'liquidity' is determined by issuance size (proposed as being

€500 million or more for corporate bonds), putting a significant universe of issues in scope of pre-trade transparency.

There were also some discussions around the Systematic Internaliser (SI) regime,<sup>40</sup> and what this would mean for both the sell-side and buy-side. The interviews reveal a great deal of uncertainty as to the implications, and a general 'wait-and-see' attitude. While a number of buy-side interviewees commented that trading with an SI might have its benefits in terms of reporting obligations (since the onus would be on the SI to report, rather than the client), many felt that in most cases sell-side firms would fall short of the criteria for becoming SIs, either naturally or deliberately, or that SIs would resultantly be incentivized to show less competitive prices than non-SIs.

## CSDR mandatory buy-ins

CSDR mandatory buy-ins is still a priority concern for many participants, particularly the sell-side who stressed the point that while it is becoming increasingly difficult to provide offers to clients in bonds they do not hold in inventory, in a mandatory buy-in environment it will be impossible. Some interviewees also suggested that despite an exemption for repos under the regulation, it would still deter holders of less liquid bonds from lending them (see 'repo' section in Chapter 1), and could create more settlement fails than it is intended to prevent, while also creating opportunities to profit from failing trades.<sup>41</sup> Removing the provision for mandatory buy-ins from CSDR would undoubtedly be a positive for potential future market functioning and liquidity, and, according to repo market participants, actually help to improve settlement efficiency.

***“Mandatory buy-ins is one of our biggest concerns as it is a sure way of killing the market altogether.”***

**Inter-dealer broker**

## Other regulatory initiatives

Among other regulations and initiatives discussed, key concerns included MAR investment recommendations, which have the potential to restrict the way in which banks and broker-dealers communicate with their clients to discuss markets and trade ideas, whether verbally or electronically, MiFID II/R Best Execution requirements, adding another level of reporting burden on the buy-side, as well as further capital and funding costs as a result of FRTB and NSFR.

The potential impact of various regulations is illustrated in the survey results at the end of this chapter.

## Monetary policy

The announcement on March 10th 2106 of the ECB's extension of its Asset Purchase Programme (APP) into IG non-bank corporate bonds (the 'Corporate Sector Purchase Programme – or CSPP) came shortly before the interviews and research for this study began. The commencement of the CSPP began towards the end of the interview process, and prior to the survey. Needless to say, it was a major topic of discussion, and, for many, a major cause for concern. As one participant stated, it is a 'game changer'.

***“The CSPP could be a positive if it brings more corporates into the capital markets. But if it doesn't work, it is only going to make an already challenged market even more difficult.”***

**Credit trader**

## CSPP: could be good, could be bad

The predominant theme that comes out of the discussions with interviewees is a great sense of uncertainty as to what this could mean for market efficiency and liquidity, particularly longer-term. At the time of the interviews there was no real perspective on how much the ECB (through the various national central banks – NCBs) intended to buy, either in the secondary or primary market, and so how this could potentially skew the market. It was noted by several participants that the initial reaction to the announcement in March was to stem the sell-off in credit markets that began at the end of 2015, to tighten spreads significantly (not only for eligible credits, but also for bank financials and high yield), which in turn re-opened the primary issuance market which had more-or-less closed the month before (see Chapter 1). From an issuer and investor perspective, this could indeed be viewed as a positive.

40 The Systematic Internaliser (SI) regime under MiFID II/R extends pre- and post-trade reporting obligations to financial firms active in particular securities, but trading OTC, and is intended to prevent circumvention of the transparency rules by trading off-venue.

41 The mandatory buy-in process under CSDR contains an unusual asymmetry in the way the buy-in is settled, which automatically advantages the failed-to-buyer of bonds, at the cost of the selling party or intermediary. This is often referred to as the 'CSDR put' since it is the equivalent of any seller of securities also writing a free 'at the money' put which becomes active in the event of a buy-in.

However, the interviews also reveal a high degree of concern, particularly as the CSPP advances and as more purchases are made. Many interviewees drew possible parallels with the third Covered Bond Purchase Programme (CBPP3), which is cited as a prime example of an asset purchase programme destroying secondary market liquidity. While some expressed hope that the ECB may have learned lessons from the CBPP3, the overarching fear is that the CSPP could ultimately prove to be detrimental to market liquidity. Some cited the fact that following the announcement of the CSPP, the market for bonds anticipated to be eligible was very well bid, but it was almost impossible to find offers.

**Figure 12: iTraxx EUR 5yr CDS indices (main (rhs), cross-over (lhs), senior financial (rhs), subordinated financial (lhs)), June 2015-June 2016. ECB CSPP announcement was on Mar 10.**



Source: Bloomberg/Markit

With regards to the CSPP providing support for the European IG market, again sentiment is mixed. Some asset managers felt that this gave them more confidence to hold credit, as well as to move down the credit curve<sup>42</sup> in search of more yield. However, others, including some sell-side respondents, thought that this would only increase volatility as traders and asset managers tried to second-guess what the NCBs would like to purchase and when, and position accordingly. Also, not all fund managers have the ability to move into sub-investment grade and are constrained by their mandates with respect to the credits or risk they can assume.

There also seem to be diverse views with respect to the impact on non-eligible bonds. While some interviewees thought that the CSPP would drive a steady narrowing of spreads between investment grade and high yield and subordinated, others felt that in the event of a market sell-off, it would be the non-eligible bonds that would feel the brunt of any pain.

In discussions around the impact on issuance, including interviews with corporate issuers, there was some optimism that the CSPP could prompt increased issuance from non-eligible corporates, attracting high yield issuers to the market, or non-Eurozone domiciled entities. The general view, however, was that it would not motivate eligible credits to increase their issuance. It was pointed out by a number of participants that these corporates already have no problem tapping the market, are generally already sitting on a pile of cash, and a few

<sup>42</sup> In other words, to switch into riskier assets, with higher default risk, and so lower credit ratings

more basis-points off their funding costs are not going to prompt a wave of new issuance to fund share buy-backs or potential acquisitions.

What seems to be the main concern, particularly for the buy-side, is that in a market where liquidity is already challenged, they are now having to compete with a significant, new, and somewhat transient competitor, both for secondary market liquidity and primary market allocations. Issuers, too, seem to share this worry, as they would like to keep their traditional long-term investors happy, and the secondary market for their bonds liquid.

***“I’m not sure that the CSPP will make much difference to eligible issuers. They already have no problem getting cheap funding. And now that it is going to be cheaper by another 20 to 30 basis points; so what? The bigger concern is what this does to market liquidity.”***

Corporate treasurer

## The future of the market

While the interviews suggest a low degree of certainty in terms of how the market will evolve over the next two-to-three years, the most common themes coming out of the responses suggest that it will not look very much different to how it does today, but with liquidity likely to be more of an issue. Of course, this is premised on a number of significant unknowns, not least how the CSPP will eventually pan out.

General themes include less capacity for market-makers to provide liquidity (and potentially fewer of them), more buy-side driven liquidity (although the dealer-to-client model is still likely to dominate), more trading electronically (although across fewer platforms), and broader use of non-bond alternatives, such as CDS, ETFs, or even products such as bond index total return swaps (TRS)<sup>43</sup> (although these are still limited compared to the underlying cash market).

## Rethinking the market

While all respondents seem relatively hopeful that the market can continue to function, and, in the case of some respondents, maybe even see improvements, a few suggest that perhaps the traditional market structure cannot continue in the way it has always worked and that historically has served investors and capital raisers well. In this new regulatory environment, the model is no longer fit for purpose, and it may be necessary to rethink the paradigm. As one interviewee framed it, market participants almost need to start again with a blank sheet of paper, look at what the market is supposed to do, and then think about how we can best make it work given the realities of today's regulatory and monetary environment. In other words, the suggestion of some participants is that we completely re-engineer the entire architecture of the corporate bond market.

***“The market liquidity structure has to change. The question is what will be the catalyst to get us there? Does it take us waiting for another crisis, or does the market figure it out before then?”***

Credit trader

However, the same respondents also question what it will take to make that happen, given the inherent conflicts of interest between all the various stakeholders, including investors, issuers, dealers, brokers, platform providers, and even policy makers and regulators. In a worst case scenario, this could be another market crisis.

## Post-QE stress

A point made in a number of interviews is that the main obstacle to thinking more radically about how we redesign the market is a reluctance to accept that there is a problem, and that we can somehow carry on by just tweaking the existing paradigm. So long as the primary market continues to function, there appears to be less need to address the mounting stresses in the secondary market. But as interviewees point out, this is largely the function of extraordinary monetary policy, which is in effect masking the growing fractures in the secondary market. Of course, central bank intervention is not likely to end anytime soon, and a number of participants felt that it was likely to go on for longer than expected, while also being broadened to an even larger range of assets. The risk is that this could leave the

43 These are swap products that allow the receiver of the swap to receive the income, and price movements, of the referenced asset, basket, or index (usually an established bond index such as the Markit iBoxx indices), without physically holding the underlying reference asset(s). In return, the receiver of the swap pays an agreed rate (usually set as a spread to LIBOR) to the payer of the total return swap (who usually owns the reference asset(s)).

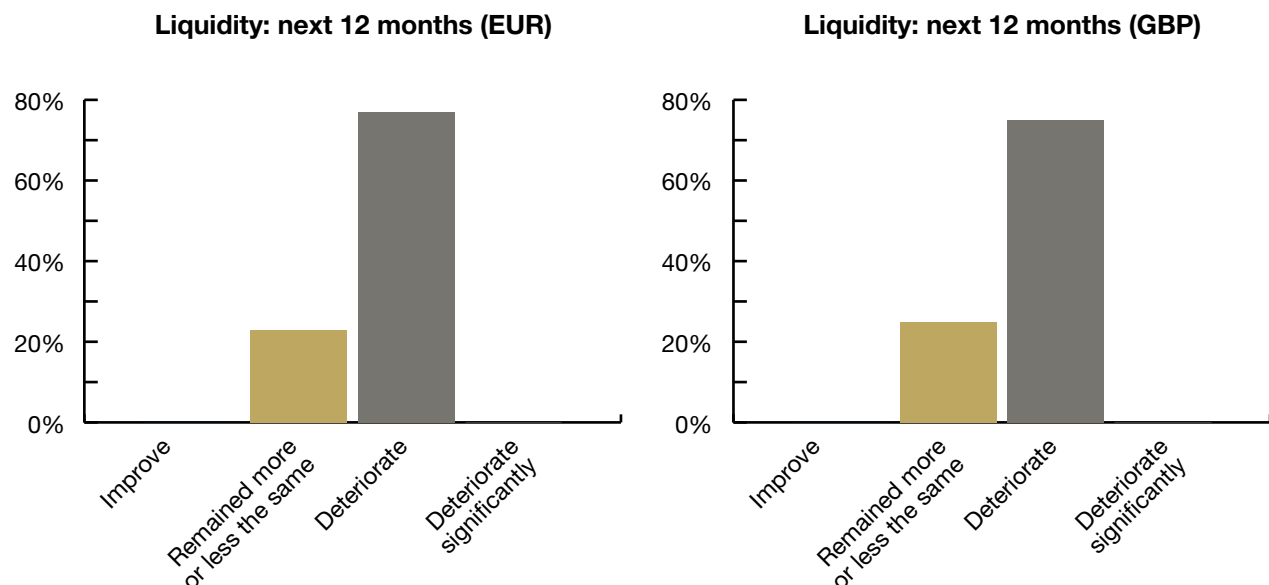
challenges facing the secondary market unaddressed for longer, exacerbating the eventual problem of how the corporate bond market will function once QE stops.

***“Is anybody thinking about what happens when the central bank stops buying?  
Because that’s masking a lot of problems, and it isn’t going to last for ever.”***

Corporate treasurer

## ICMA buy-side survey results: looking ahead

Q8. Expectations for general secondary market liquidity over the next twelve months?

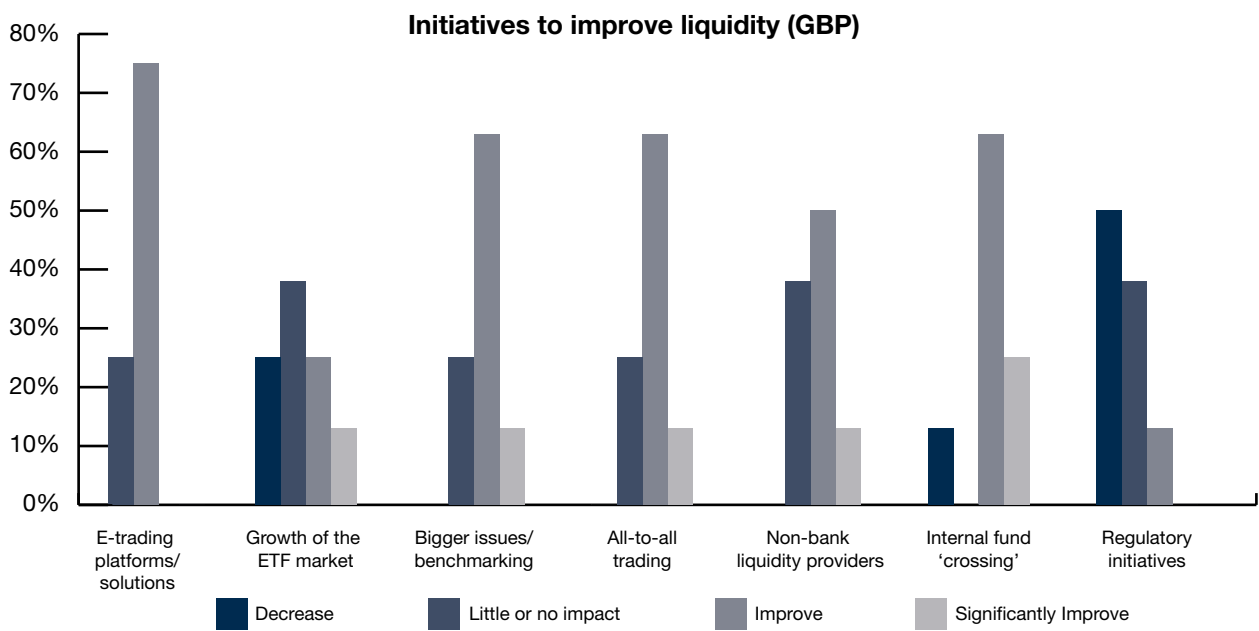
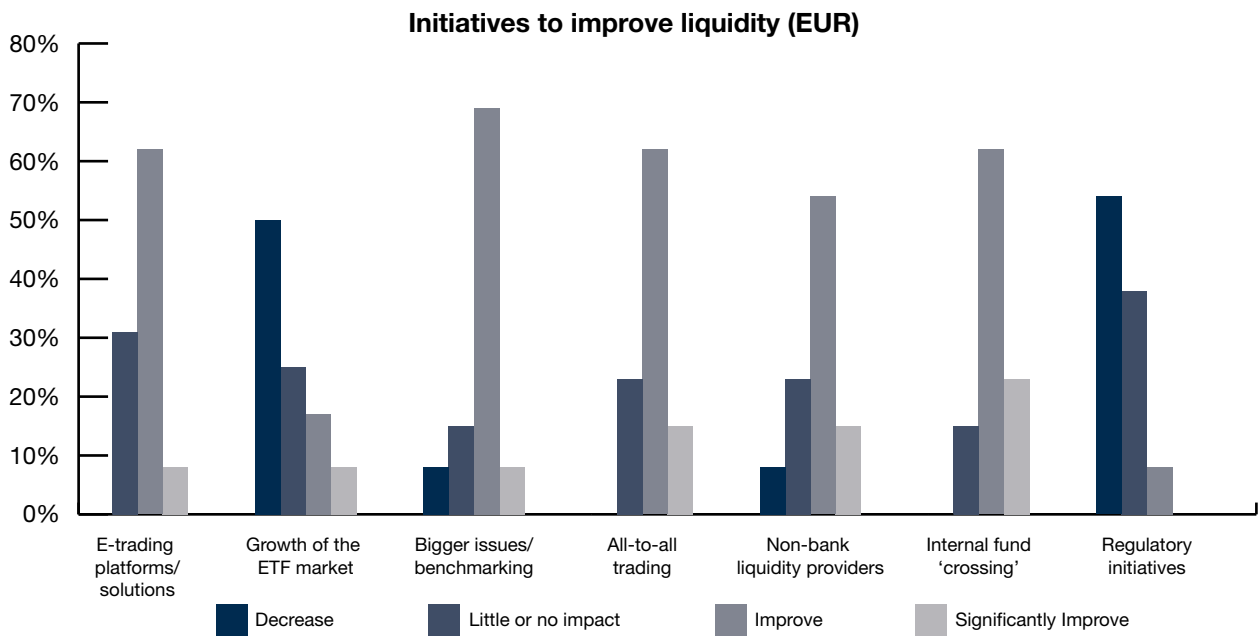


The survey results suggest that there is little optimism that liquidity will improve in either the euro or sterling corporate bond markets over the next twelve months, and that at best it will remain the same.

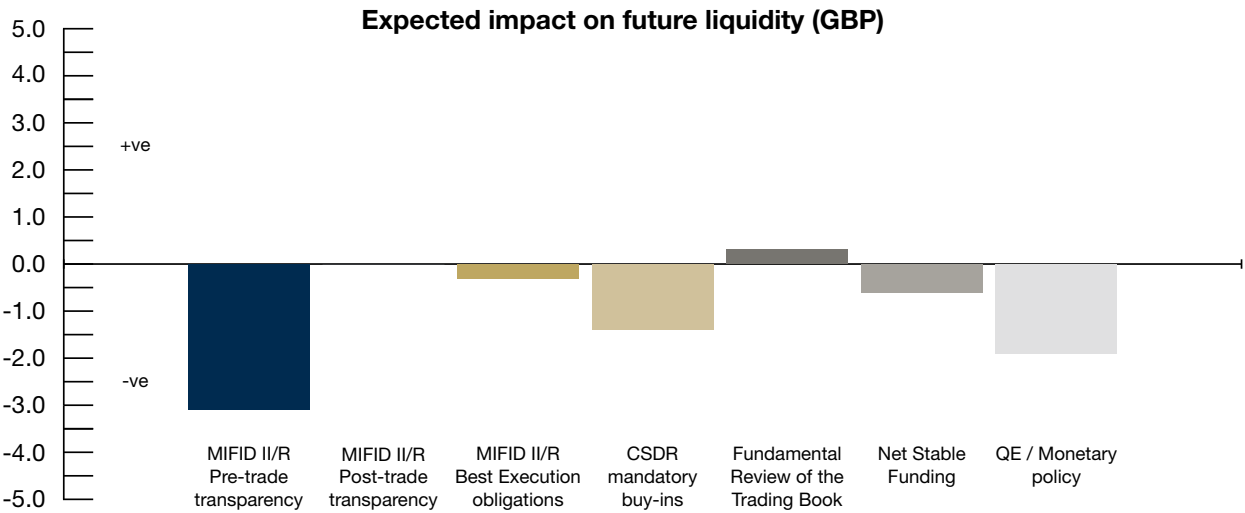
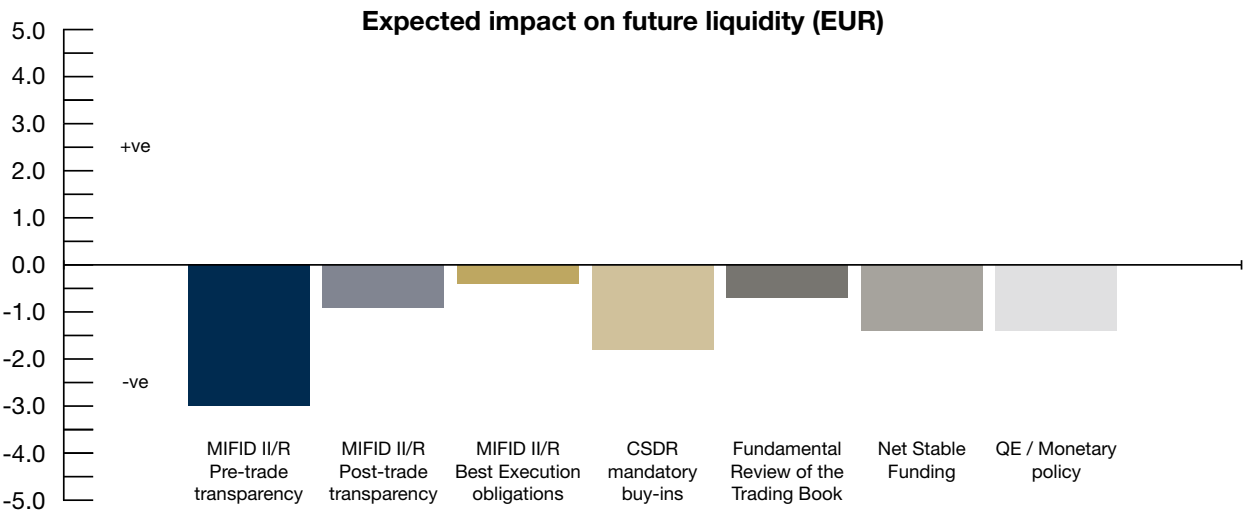
The below responses highlight a general view that initiatives such as electronification, more benchmark issuance, all-to-all trading protocols, non-bank liquidity providers, and buy-side internal ‘crossing’ could all help improve liquidity conditions. Regulation, however, is expected to do either very little or the opposite, while the growth of the bond ETF market has mixed reviews, but seemingly limited upside in terms of liquidity creation.

In terms of the potential for negative impacts for market liquidity, MiFID II/R pre-trade transparency, CSDR mandatory buy-ins, and the CSPP score highest.

Q9. Factors or suggestions that could impact liquidity



Q10. Potential future liquidity impacts of regulation and monetary policy?<sup>44</sup>



<sup>44</sup> Respondents were asked to score the expected impacts of these initiatives between -5 and +5, where -5 is the most negative impact, +5 the most positive, and 0 no expected impact. The above charts show the average respondent scores.

# Conclusion

Since ICMA published its study on the state and evolution of the European investment grade corporate bond secondary market in 2014, the discourse around bond market liquidity, and its potential implications, has entered mainstream thinking on financial markets, particularly when it comes to assessing market risks or explaining market behaviour. This has helped to spawn numerous studies, many specifically focused on the notion of market liquidity. What we observe is that there is no normative definition of liquidity, which perhaps explains the conflicting conclusions of the more academic studies that attempt to model liquidity from a theoretical perspective, often relying on selective (and sometimes questionable) reference data, and those of real world market participants who live this day in and out.

This 2016 study falls into the latter category, and sets out to explore how the market has evolved since ICMA's initial study, how liquidity and market efficiency are being impacted by the confluence of extraordinary monetary policy and unprecedented prudential and market regulation, and what are the implications. It strives to understand how market stakeholders – investors, issuers, banks and broker-dealers, intermediaries and infrastructure providers – are responding and adapting. And it asks where the market is heading, what the challenges are, and what opportunities are in front of us.

This latest study provides four key observations.

Firstly, for the most part, **the ability either to source or provide secondary market liquidity continues to be challenged**. The interviews, survey, and data, in general, point to a market where it is becoming increasingly difficult to trade in large sizes, to execute orders quickly, or to establish reliable prices. Furthermore, the difference in ease of access to liquidity available to the largest buy-side firms, compared with their smaller competitors, appears to be widening. The principal factor underlying this remains the reduced capacity of the sell-side to make-markets, primarily due to higher capital costs and less functional hedging and financing markets. The low-rate, spread-compressed environment only adds to the reasons for retracting the provision of liquidity.

Secondly, **despite a more challenged environment, the general mood of most market stakeholders compared to 2014 is significantly more upbeat**. Sell-side firms are reinventing themselves as more client-focused principal brokers, selectively providing balance sheet where it makes sense, and relying more on data management to facilitate what is becoming an axe-driven, rather than quote-driven, market. Correspondingly, the buy-side is realizing that they can no longer rely unconditionally on their broker-dealers, and increasingly and proactively are establishing themselves as part of the liquidity creation equation. They, too, are becoming more discerning about who they deal with, expanding their broker relationships, utilizing data to identify more efficiently which brokers are more likely to have an interest, and expanding their potential counterparties to other buy-side firms. Meanwhile, platform providers and intermediaries, both established incumbents and adventurous newcomers, are busily innovating and attempting to provide new tools and protocols to help bridge the liquidity gap.

The third key observation is that, **compared with the 2014 interviews, the corporates themselves are becoming increasingly concerned by, and engaged in, the discussions around secondary market liquidity**. There seems to be a recognition of a growing disconnect between primary market stability and secondary market liquidity; something that would be unsustainable under normal market conditions, but is being ensconced by extraordinary monetary policy. What becomes clear from the latest study is that while the issuers may have little direct involvement in, or limited scope to affect, the secondary market, they are more eager than ever to be part of the discussion to find a solution. They, more than anyone, have the most to lose from a dysfunctional secondary market; along with the people they employ, and the economic activity they help to sustain.

Finally, and a key message, that comes through in the recent interviews is that, **from the perspective of many participants, the current market model is not sustainable, at least not in the long-term, and certainly not post central bank intervention**. At a time when Europe's leaders are looking to develop and expand its capital markets as a means to support economic growth and diversity, the capacity to sustain liquidity in those markets is being simultaneously undermined. As a number of participants in this study were keen to express, there is a pressing need to review the prevailing market model, and possibly to redesign how this can work going forward. Particularly in light of the increasing constraints and limitations on its participants, not least those who are the principal source of market liquidity. Furthermore, this cannot be done in isolation, and will require the cooperation and collaboration of all market stakeholders, including investors and asset managers, corporate issuers, banks and broker dealers, intermediaries and infrastructure providers, the relevant market associations and representative bodies, as well as policy makers and regulators.

In short, it might be time that we all need to begin rethinking, and possibly 'remaking', the European corporate bond secondary market.

## Recommendations

Based on the stakeholder interviews underlying this survey, there are a number of possible measures that could be taken, either in isolation or in combination, in order to improve the long-term efficiency and functioning of the European corporate bond markets.

- **Provide capital relief for market-making.** Given the heterogeneous and inherently illiquid nature of credit markets, the market-making model is the optimal, and perhaps the only viable, source of true market liquidity. While there are multiple pressures on banks and broker-dealers' capacity or willingness to provide market-making services in bond markets, it becomes clear that the increased cost of capital is perhaps the single biggest constraint. Given the economically important and socially useful service that market-makers provide in supporting the efficiency and functioning of corporate bond markets, policy makers and regulators should at the very least consider the possibility for less stringent capital charges related to this activity, including associated hedging and financing.
- **Revitalize the single-name CDS market.** Single-name CDS not only provide an efficient and standardized tool for market-makers and investors to hedge credit exposures, but given its close relationship with the underlying reference bonds, an active and liquid single-name CDS market could help stimulate liquidity in the corporate bond market. Measures to revitalize the market could include reviewing CVA capital charges and NSFR funding requirements under CRD IV/R.
- **Review and re-assess harmful regulation.** It becomes clear that there are a number of regulatory initiatives that seem to offer no obvious benefits to fixed income markets, and, in certain cases, are likely to cause significant harm. There is a strong case for suspending the projected implementation of these regulatory initiatives with a view to undertaking rigorous and detailed impact analyses. Chief among these would be MiFID II/R pre-trade transparency obligations for bonds and CSDR mandatory buy-ins.
- **Bring all market stakeholders together to review the market structure.** All market stakeholders, including investors and asset managers, corporate issuers, banks and broker dealers, intermediaries and infrastructure providers, relevant market associations and representative bodies, as well as policy makers and regulators, need to work together in a formalized and structured forum to share views and ideas on market structure and development. Only through a greater understanding and appreciation of different stakeholder needs and perspectives can the market community achieve consensus and develop private and public initiatives to maintain and grow a healthy and vibrant pan-European corporate bond market.

## Annexes

- 1 The basics of electronic trading – a primer
- 2 Credit Default Swaps – a primer
- 3 Bond ETFs – a primer
- 4 ICMA Buy-side IG Corporate Bond Market Survey Questions

## Annex 1: The basics of electronic trading – a primer

### Potential benefits and efficiencies:

- Pre-trade: liquidity sourcing and price formation
- Execution: order and execution management and optimization
- Post-trade: confirmation, settlement, and reporting ('STP – straight through processing')
- Data management: trade audit, transaction cost analysis (TCA), 'best execution'
- Auxiliary services: analytics, liquidity scores, research
- Automated trading: algorithmic/auto-intelligent trading
- Reg-tech': regulatory compliance support and audit

### Connectivity:

- **Dealer-to-dealer** ('D2D'): the inter-dealer market, with no client access or visibility
- **Dealer-to-client** ('D2C'): the classic market-making model, where clients can request prices from dealers, via single-dealer (SDP) or multi-dealer (MDP) platforms
- **Client-to-client** ('C2C'): disintermediation of the broker-dealer, putting buy-side firms directly in contact with each other (usually anonymously, via a matched-principal broker)
- **All-to-all** ('A2A'): connecting all participants, sell-side and buy-side (usually anonymously, via a matched-principal broker)

### Trading protocols:

- **Central Limit Order Book (CLOB)**: bids and offers are stored in a 'queue' and executed in sequence depending on best price and time of entry – the protocol of choice for standardized, homogenous, actively traded instruments, such as equities, commodities, or financial futures
- **Request for Quote (RFQ)**: one participant messages a request for a price to another (or multiple) counterparties - usually clients to market-makers
- **Request for Market (RFM)**: similar to RFQ, but the requestor does not specify whether they are a buyer or seller, so requests a two-way price
- **Open RFQ**: an anonymous 'all-to-all' version of RFQ
- **Streaming / Click-to-Trade (CTT)**: a system whereby a dealer (or multiple dealers) provides a continuously updated stream of firm prices that clients are able to transact on
- **Request for Stream (RFS)**: similar to RFQ, but the requestor requires a continuously updated price or market over an agreed period of time
- **Dark Pool** (or 'Hidden Order Book'): a trading platform where pre-trade transparency is deliberately withheld to protect the liquidity providers – usually full size/market depth is withheld, and possibly price
- **Standardized auction**: a frequent auction process that attempts to create 'liquidity windows' by providing buyers and sellers the opportunity to meet at scheduled intervals, rather than on a continuous basis
- **Matching auction**: a point-in-time auction process that matches buy and sell interests at a transparent and referenced mid-price (usually utilized for odd-lots)
- **Matching Engines or Information Networks**: a means to identify and match buyers and sellers with complementary interests – more price-driven than quote-driven, and may not support price formation or execution

## Annex 2: Credit Default Swaps – a primer

### What is a CDS?

A credit default swap (or CDS) is not so much a swap, but rather an insurance policy, or **protection**, against the default of a reference entity. The seller of a CDS is effectively 'selling protection', with a contractual obligation to pay the buyer of the CDS (who is 'buying protection') an agreed amount in the event of a default, or 'credit event', of the reference entity (i.e. the underlying corporate, bank, or sovereign against which the CDS is written). Credit events are usually a failure of the reference entity to make payment on its debt (either loans or bonds), but can also include restructuring, bankruptcy, or a downgrade (the definition of a 'credit event' is written into the terms of the contract). The amount paid out by the seller of the CDS is the nominal value of the CDS, less the market value of the referenced debt instruments following the credit event, which, in the case of corporates, is usually that of the senior unsecured bonds of the reference entity. The buyer of CDS pays an annualized premium to the seller over the life of the CDS in return for this protection.

### How are CDS priced?

The premium paid for a CDS can be viewed as the probability of a credit event over the life of the CDS contract. In theory, this should be comparable to the asset-swapped spread value of similar maturity bonds of the reference entity (e.g. if the 5-year bond of a corporate trades at Libor+80, the 5 year CDS should trade somewhere close to 80bps). This is the annualized premium that the buyer of the CDS must pay to the seller. The difference between the CDS price and the Libor-spread of the reference entity bonds is called the 'CDS basis'. This basis can be either positive or negative, and is determined by a number of factors, such as relative liquidity, or the bond's repo rate.

### How are CDS structured?

More recently, there has been an attempt to make CDS more standardized, and more 'bond like' in their structure. For instance, CDS contracts tend to have standardized maturities (such as 3yr, 5yr, 7yr, and 10yrs, with 5yrs being the most popular), standardized contract dates (quarterly) and roll-dates (semi-annual), and even coupons (in Europe this is 1% for IG and 5% for HY). This means that the seller of the CDS receives the annualized premiums from the buyer, but must also pay a coupon to the buyer. Thus, on settlement, CDS trades involve an upfront payment between the buyer and seller that reflects the discounted value of the projected cash flows related to the CDS (similar to a bond, but excluding principal).

### What are CDS indices?

A CDS index is a basket of underlying single-name CDS. In Europe, the most common CDS Indices are the iTraxx indices: 'Main' for IG non-financial corporates, and 'Cross-over' for sub-IG corporates. The Main index has 125 underlying reference names, which are deemed to be the most active single-name CDS. The fair value of the index is effectively the aggregate value of the underlying reference (5yr) CDSs. Similar to single-name CDS, indices also pay a coupon (1% for IG and 5% for HY) and have standardized roll-dates (every 6 months), when a market poll will determine the construct of the new index. In the event of a credit event related to one of the underlying reference entities, the seller of the index will pay out to the purchaser in the same way they would on a single-name CDS, but proportional to the reference entity's weighting in the basket.

## **Annex 3: Bond ETFs – a primer**

### **What is an ETF?**

An exchange traded fund (or ETF) is a cash-settled, marketable security that looks and trades in the same way as an equity, but tracks an underlying index or basket of securities. Bond ETFs will therefore track an underlying bond index or basket of bonds. Usually these represent different asset classes, such as sovereign, investment grade corporate, high yield, or emerging markets. In many respects, an ETF can be compared with a closed-end fund, actively traded on a nominated exchange (or exchanges) at a market-determined price.

### **How are ETFs created, redeemed, and priced?**

The ETF manager is the originator of the particular ETF. Major originators of Bond ETFs include large fund managers such as BlackRock (iShares), Vanguard, and State Street. Critical to the pricing mechanism of ETFs are Authorized Participants (APs). These sophisticated institutional trading firms enter into an arrangement with the ETF that allows them to create or redeem shares in the ETF. They do this on a discretionary basis, whether on their own behalf or acting as agent for their clients.

When APs create or redeem shares, they do this directly with the ETF manager, simultaneously exchanging the underlying securities of the ETF. This is done at the net asset value (NAV) of the underlying securities, and the exchange of underlying securities is made 'in-kind', rather than by physical delivery.

This mechanism is essential in ensuring that the market price of the ETF (which is determined by supply and demand for the ETF shares) does not deviate too far from the NAV of the underlying securities. If the ETF price falls too much below or rises too much above the NAV of the underlying securities, this provides an arbitrage opportunity for the APs, who can either buy and redeem ETF shares, or create and sell them.

### **Does the ETF manager have to hold and trade the underlying securities?**

Bond ETFs can be based on an index or basket of many hundreds, or even thousands, of bonds. It is therefore often impractical (and too expensive) for the ETF manager to hold and maintain the corresponding positions in the underlying securities. It is more common for ETF managers to approximate the underlying basket with a representative, smaller basket of securities, taking into consideration credit exposure, duration, and, quite importantly, correlations. This process is also known as 'optimization', and comes with its own risks, affording the ETF manager with the opportunity to out-perform (or underperform) the ETF returns.

### **What are the advantages of Bond ETFs?**

Given the relatively low costs and high transparency associated with ETFs, they are generally more liquid than the underlying bonds, and volumes tend to be multiples of the underlying. In fact, during times of market stress liquidity in ETFs has actually been observed to increase as they become an easier and immediate way of expressing a view, rather than trying to transact in the bond market itself. Furthermore, while the market price and NAV of the reference basket should not diverge too far, for too long, it is often argued that the ETF price is a more accurate reflection of fair value than NAV.

## Annex 4: ICMA Buy-side IG Corporate Bond Market Survey Questions

Liquidity is defined 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.***

- 1) Over the past 12 months, do you feel that secondary market liquidity in general has:  
Improved/Remained more or less the same/Deteriorated/Deteriorated significantly
- 2) Over the past 12 months, do you feel that secondary market liquidity for smaller transactions (<€1mm nominal or equivalent) has:  
Improved/Remained more or less the same/Deteriorated/Deteriorated significantly
- 3) Over the past 12 months, do you feel that secondary market liquidity for larger transactions (>€10mm nominal or equivalent) has:  
Improved/Remained more or less the same/Deteriorated/Deteriorated significantly
- 4) Over the past 12 months, has the number of your broker-dealer relationships:  
Increased/Remained the same/Decreased
- 5) Over the past 12 months, has your average ticket size traded:  
Increased/Remained the same/Decreased
- 6) Over the past 12 months, has the time taken to execute block orders (>€10mm nominal or equivalent):  
Increased/Remained the same/Decreased
- 7) Over the past 12 months, has the proportion of your trades transacted on ETPs:  
Increased, but only for smaller tickets/Increased across all ticket sizes/Remained more or less the same/  
Decreased
- 8) Over the next 12 months, do you expect secondary market liquidity to:  
Improve/Remain more or less the same/Deteriorate/Deteriorate significantly
- 9) To what extent do you think the following factors or suggestions could impact liquidity:  
E-trading platforms/solutions; Growth of ETF market; Bigger issues/benchmarking; All-to-all trading; New nonbank liquidity providers; Internal fund 'crossing'; European & international regulatory initiatives (including CMU)  
Decrease/Little or no impact/Improve/Significantly improve
- 10) In terms of potential future impacts on European IG corporate bond secondary market liquidity, please rate the following (with 0 being neutral, +5 being the highest positive impact, and -5 being the highest detrimental impact):  
MiFID II/R Pre-trade transparency; MiFID II/R Post-trade transparency; MiFID II/R Best execution obligations; CSDR Mandatory buy-ins; Fundamental Review of the Trading Book; Net Stable Funding Ratio; QE/Monetary policy; Other (please specify)

## Acronyms used in this report

AP	Approved Participant
APP	Asset Purchase Programme
CBPP3	(Third) Covered Bond Purchase Programme
CDS	Credit Default Swap
CLOB	Central Limit Order Book
CMU	Capital Markets Union
CRD IV/R	Capital Requirements Directive (IV)/Regulation
CSDR	Central Securities Depository Regulation
CSPP	Corporate Sector Purchase Programme
CVA	Credit Valuation Adjustment
ECB	European Central Bank
EMIR	European Market Infrastructure Regulation
ETF	Exchange Traded Fund
ETP	Electronic Trading Platform
FIG	Financial Investment Grade
FRTB	Fundamental Review of the Trading Book
HY	High Yield
ICMA	International Capital Market Association
IDB	Inter-Dealer Broker
IG	Investment Grade
LIBOR	London Inter-Bank Offered Rate
MAR	Market Abuse Regulation
MiFID II/R	Markets in Financial Instruments Directive (II)/Regulation
NAV	Net Asset Value
NCB	National Central Bank
NSFR	Net Stable Funding Ratio
OTC	Over The Counter
QE	Quantitative Easing
RFQ	Request For Quote
SI	Systematic Internaliser
TCA	Transaction Cost Analysis
TRACE	Trade Reporting And Compliance Engine
TRS	Total Return Swap

## References and bibliography

**Global financial markets: between uneasy calm and turbulence**, BIS 86th Annual Report, June 2016

**Future evolution of electronic trading in European bond markets**, ICMA, April 2016

**Liquidity in the UK corporate bond market: evidence from trade data**, FCA, March 2016

**Addressing Market Liquidity: A Broader Perspective on Today's Bond Markets**, BlackRock, February 2016

**Fixed income market liquidity**, CGFS Papers, No 55, January 2016

**Electronic trading in fixed income markets**, BIS, January 2016

**Perspectives from the eye of the storm: the current state and future evolution of the European repo market**, ICMA, November 2015

**Study of liquidity in French bond markets**, AMF, November 2015

**Market liquidity – resilient or fleeting?** Global Financial Stability Report: Vulnerabilities, legacies and policy challenges: risks rotating to emerging markets, Chapter 2, October 2015

**Global financial markets liquidity study**, PWC, August 2015

**Bond ETFs: Benefits, challenges, opportunities**, BlackRock, July 2015

**Liquidity wars: Who wins and loses in the race to the bottom?** Citi Research, June 2015

**The Liquidity Conundrum: Shifting risks, what it means**, Wholesale and Investment Banking Outlook Blue Paper, Oliver Wyman and Morgan Stanley, March 2015

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

**Market-making and proprietary trading: industry trends, drivers and policy implications**, CGFS Papers, No 52, November 2014

**The liquidity challenge: exploring and exploiting (il)liquidity**, BlackRock, June 2014

**Corporate Bond Markets: A Global Perspective**, IOSCO, February 2014

**Economic Importance of Corporate Bond Markets**, ICMA, March 2013

## About the International Capital Market Association (ICMA)

ICMA represents institutions active in the international capital market, including investors, issuers, banks and broker-dealers, intermediaries and infrastructure providers. It has more than 500 members located in 60 countries. ICMA's market conventions and standards have been the pillars of the international debt market for almost 50 years, providing the framework of rules governing market practice which facilitate the orderly functioning of the market. ICMA actively promotes the efficiency and cost effectiveness of the capital markets by bringing together market participants including regulatory authorities and governments.

[www.icmagroup.org](http://www.icmagroup.org)

## About the SMPC

The ICMA IG Corporate Bond **Secondary Market Practices Committee** is an open forum for sell-side and buy-side member firms active in the European investment grade corporate bond secondary market. 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 European corporate bond secondary market: addressing practical issues directly relevant to market practitioners; standardising market best practice; disseminating relevant market information; and promoting the best interests of an efficient and liquid market.

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/>

## Acknowledgements

ICMA would like to thank the many firms and their representatives who generously gave up their time to participate in the interviews that form such an integral part of this study:

Arcelor Mittal S.A.; AXA AM; Barclays; BAT plc; Bayerische Landesbank; BGC Partners; BlackRock; BNP Paribas; BNP Paribas AM; BP plc; Citigroup; Daimler AG; Credit Suisse AM; Deutsche Bank; EDF S.A.; Euronext NV; Goldman Sachs; JP Morgan; KBC AM; MarketAxess; Morgan Stanley; MTS Bondvision; Natixis; Nomura; Nordea AM; Norddeutsche Landesbank; NNIP AM; Norges Bank IM; Rabobank; Project Neptune (E-trading Software); Rothschild Bank AG; Schroders AM; Skandinaviska Enskilda Banken; Tradeweb; Uniliver Europe; and Westpac.

ICMA would further like to thank the individuals and firms that participated in the online Buy-side Liquidity Survey, 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, Dealogic, ICE Data Services, Markit, Tradeweb, and Trax (a subsidiary of MarketAxess).

## About the author

**Andy Hill** is a Senior Director in ICMA's Market Practice and Regulatory Policy group, where he leads the association's work on liquidity in the European corporate bond and repo markets. He is responsible for ICMA's Secondary Market Practices Committee.

Prior to joining ICMA in 2014, Andy was a repo and money market trader for seventeen years, for ten years of which he was an Executive Director at Goldman Sachs.

He has also worked as a consultant in the Aid and Development sector, primarily based in Cambodia, and previously served on the Board of the Cambodian NGO Education Partnership in Phnom Penh while on a Goldman Sachs Public Service Fellowship.

Andy holds a BSc (Hons) in Business Studies from Cass Business School and an MSc in Poverty Reduction and Development Management from the University of Birmingham

Email: [andy.hill@icmagroup.org](mailto:andy.hill@icmagroup.org)