

06/4

Financial Services Authority

# Trading Transparency in the UK Secondary Bond Markets

Feedback on DP05/5

July 2006





# Contents

1	Introduction	3
2	Key themes from Discussion Paper responses	8
3	Key themes from our extended analysis	14
4	Evaluation	20
5	Conclusions	26

**Annex 1:** List of non-confidential respondents to DP05/5

**Annex 2:** Summary of responses to questions in DP05/5

**Annex 3:** A review of the TRACE literature and its relevance for UK markets

**Annex 4:** Further analysis of spreads and dealer behaviour

**Annex 5:** A summary of the CEPR reports

This Feedback Statement reports on the main issues arising from Discussion Paper 05/5 (*Trading transparency in the UK secondary bond markets*).

Please address any comments or enquiries to:

Tim Rowe  
Markets Policy  
Financial Services Authority  
25 The North Colonnade  
Canary Wharf  
London E14 5HS

Telephone: 020 7066 1862

Fax: 020 7066 9737

Email: [dp05\\_05@fsa.gov.uk](mailto:dp05_05@fsa.gov.uk)

Copies of this Feedback Statement are available to download from our website – [www.fsa.gov.uk](http://www.fsa.gov.uk). Alternatively, paper copies can be obtained by calling the FSA order line: 0845 608 2372.

# 1 Introduction

- 1.1. In September 2005, we issued a Discussion Paper on trading transparency in the UK secondary bond markets (DP05/5).<sup>1</sup> That paper examined the nature and structure of the UK bond markets, the role of transparency in those markets and the amount of trading information currently provided to market participants. It posed a number of questions around two key themes: whether a failure existed in the way that the secondary bond markets operated; and the role that trading transparency played.
- 1.2. Our main reason for issuing the DP was to inform our thinking ahead of the forthcoming European Commission review of whether transparency requirements akin to those set out in the Markets in Financial Instruments Directive (MiFID) for markets in shares should be extended to other asset classes, including bonds. The Commission is due to present its report by end-October 2007<sup>2</sup> and has recently initiated the review process by issuing a call for evidence.<sup>3</sup> We were keen to obtain the views of market participants to ensure that we were able to input effectively to the Commission's review, and the contents of this Feedback Statement will form the basis of our response.
- 1.3. DP05/5 also noted that the International Organisation of Securities Commissions (IOSCO) had asked member country regulators to assess the appropriate level of transparency in their corporate bond markets and to determine whether impediments existed to the consolidation of trade data. The DP highlighted also the apparent change in the investor profile in some countries' bond markets, with retail participation (either directly or via funds) seemingly on the rise, and that the US regulatory authorities had introduced the Trade Reporting and Compliance Engine (TRACE) for the reporting and dissemination of corporate bond trade reports.
- 1.4. We still consider that transparency is not an end in itself, and that the ultimate aim should be to have markets that are fair, orderly and clean. As a

---

1 DP05/5 *Trading transparency in the UK secondary bond markets*: [www.fsa.gov.uk/pubs/discussion/dp05\\_05.pdf](http://www.fsa.gov.uk/pubs/discussion/dp05_05.pdf)

2 This deadline has been extended from end-April 2007 since the publication of DP05/5.

3 The call for evidence: [http://ec.europa.eu/internal\\_market/securities/docs/isd/call\\_for\\_evidence\\_en.pdf](http://ec.europa.eu/internal_market/securities/docs/isd/call_for_evidence_en.pdf)

result, we have maintained our focus on whether there are failures evident in the way the markets currently operate and, associated with this, the role that transparency plays in delivering efficient markets.

## How this Feedback Statement has been informed

- 1.5. We received a total of 33 responses to the DP, from a wide range of interested parties. These included a number of trade associations, a variety of firms, and others with an interest in the secondary bond markets. We are grateful to respondents for their submissions. Those who did not ask for their responses to be confidential are listed in Annex 1. As well as responding to the specific questions in the DP, respondents also commented more generally on the structure and functioning of the bond and associated derivatives markets. Chapter 2 summarises the main themes that emerged from the DP responses, while Annex 2 has a more detailed analysis of the responses to the specific DP questions.
- 1.6. As we indicated in the DP, we have also followed up our earlier analysis through:
  - **Ongoing discussions with a range of stakeholders.** We held a roundtable seminar in November 2005 that drew together financial firms, regulators and others. There is a summary of the day's proceedings on our website.<sup>4</sup> In addition, we held a small roundtable meeting with institutional fund managers and a similar session with retail-focused firms to obtain a clearer impression of their views of the bond markets. This was augmented by meetings with trade associations and firms, many of whom submitted written responses to the DP.
  - **Further analysis of existing empirical research and new datasets.** This has included an assessment of the research methodologies used in the various studies on the impact of TRACE and our own data analysis of dealer behaviour and pricing in the secondary bond markets. We are grateful to the International Capital Market Association (ICMA) for providing us with information from its TRAX database for the data analysis. The outputs from these workstreams are discussed in Section 3 and in Annexes 3 and 4.
  - **Following closely the work that others have been doing in this area.** This includes the two research reports by the Centre for Economic Policy Research (the 'CEPR reports') published in May by the City of London,

---

4 See [www.fsa.gov.uk/pages/Library/Other\\_publications/Miscellaneous/2005/seminar\\_trading.shtml](http://www.fsa.gov.uk/pages/Library/Other_publications/Miscellaneous/2005/seminar_trading.shtml)

on behalf of itself and a number of trade associations.<sup>5</sup> These two papers examined the operation of the European sovereign and corporate bond markets, and are summarised in Annex 5. It includes also the paper produced late last year by the Centre for European Policy Studies (CEPS).<sup>6</sup> We are grateful to the trade associations and to CEPS for keeping us informed of their research and for inviting us to attend meetings related to their work. We have also maintained a dialogue with the European Central Bank on its analysis of liquidity, innovation and transparency in the European corporate bond markets.

## Key conclusions

1.7 Our evaluation of the evidence gathered and our key conclusions are set out in Section 4 and Section 5, respectively. The key points are as follows:

- While the anecdotal, empirical and theoretical evidence does not provide absolutely clear conclusions, we do not see any evidence of substantial market failures related to transparency in wholesale bond markets based in the UK. We agree with the view of the majority of respondents that a combination of competition, market-driven transparency, the interaction between cash and credit derivatives markets, and regulation seems sufficient, in general, to deliver efficient pricing and fair executions.
- Extreme caution would need to be exercised in mandating greater transparency in the UK and Europe. In particular, we agree with many respondents, and with the conclusions of the CEPR research, that mandating pre-trade transparency is likely to impact on the existing complex market structures, in potentially significant but unknown ways. We also note that these markets are still relatively dynamic, and continuing to evolve.
- Changes to post-trade transparency may have less impact on market structure. But it is unclear whether mandating greater post-trade transparency would tighten spreads further or only serve to reduce dealer returns, resulting in a decrease in the provision of liquidity. The impact that TRACE has had on transactions costs for corporate bonds in the US

---

5 The two papers, detailed below, were commissioned by the Association of British Insurers (ABI), the City of London, the European High Yield Association, the European Primary Dealers Association, the International Capital Market Association (ICMA), the Investment Management Association (IMA), and the London Investment Banking Association (LIBA):

Dunne, Peter, Michael Moore & Richard Portes (2006); *European government bond markets: transparency, liquidity, efficiency*; City of London: [www.corpoflondon.gov.uk/NR/rdonlyres/26DD01CC-684D-4312-B719-9C9A1F781766/0/BC\\_RS\\_TTGovernmentFULL.pdf](http://www.corpoflondon.gov.uk/NR/rdonlyres/26DD01CC-684D-4312-B719-9C9A1F781766/0/BC_RS_TTGovernmentFULL.pdf)

Biais, Bruno, Fany Declerck, James Dow, Richard Portes & Ernst-Ludwig von Thadden (2006); *European corporate bond markets: transparency, liquidity, efficiency*; City of London: [www.corpoflondon.gov.uk/NR/rdonlyres/49EC04BD-D5BE-4B05-9182-3A8B9E75E0BA/0/BC\\_RS\\_TTCorporateFULL.pdf](http://www.corpoflondon.gov.uk/NR/rdonlyres/49EC04BD-D5BE-4B05-9182-3A8B9E75E0BA/0/BC_RS_TTCorporateFULL.pdf)

6 Casey, Jean-Pierre & Karel Lannoo (2005); *Europe's Hidden Capital Markets: Evolution, Architecture and Regulation of the European Bond Market*; Centre for European Policy Studies

is unlikely to be mirrored to the same extent in the UK or Europe. This is because the latter markets already have tighter spreads than the US, are differently structured and, in many areas, have greater pre-trade transparency than existed in the US pre-TRACE.

- The trade-off between transparency levels and liquidity provision was highlighted by many respondents, and by much of the academic literature. More analysis is needed of this trade-off, particularly for less liquid bonds, before any regulatory action is contemplated. Such analysis would need to bear in mind also that the trading pattern of many bonds sees even those that are liquid trade less frequently over time. We recognise the importance, in illiquid markets, of dealers committing capital to help investors acquire or liquidate positions. We would not wish to see regulatory action adversely impact liquidity provision.
- However, the evidence does suggest that some participants may find existing transparency deficient within the secondary bond markets. We are not clear whether existing differences in the availability of trading information to different types of institutional participant reflects a market failure per se, as in any market there will be those participants with better access to information than others. To the extent that groups of participants within the bond markets are keen to obtain more trading transparency, we will look to the market to generate solutions in the first instance. We will be discussing this with industry stakeholders and will monitor developments.
- There are very few direct UK retail participants in the secondary bond markets. We conclude that this limited participation is due mainly to a number of structural features of the bond market which are unlikely to change in the near term. Trading information on bonds is, in general, considerably less easy for retail investors to access than information relating to equities. But to the extent that issues have been raised about retail participation in bond markets, we think they relate primarily to matters other than market transparency.
- MiFID introduces a new pan-EU best execution regime that, if implemented effectively, should address a key concern for retail investors in relation to bond markets. Best execution requirements are, by their nature, designed to protect those participants that are less well-placed to obtain transparency information and judge prices. The publication of DP06/3 in May was designed to open up debate on how best to implement the MiFID best execution requirements across a range of financial instruments, and the role that transparency information might play. We will continue this discussion in the next few months ahead of our Consultation Paper in October on the implementation of MiFID's conduct of business provisions.

## **Who should read this paper?**

- 1.8. This Feedback Statement will be of interest to investors in the bond markets; to the operators of trading venues, intermediaries and dealers in those markets; to bond issuers; and to bond market analysts and commentators. It should be read alongside the original analysis and material laid out in DP05/5.

# 2 Key themes from Discussion Paper responses

- 2.1. In this section we review the key themes from the written responses and our meetings with various stakeholders since we published the DP. In general, these responses and discussions confirmed that the picture we painted in the DP of the bond markets was broadly accurate. So the observations below largely focus on the additional points which our discussion generated and put in context the Market Failure Analysis (MFA) and policy conclusions discussed later in this paper.

## **The cash markets for bonds**

- 2.2. Respondents felt we had appropriately recognised the broad diversity of the bond markets, how they differed from the markets for shares, and the role of different participants in making the bond markets function. In general, respondents did not systematically distinguish between different segments of the bond market – such as government, investment grade, high yield and so on. Respondents agreed that direct retail participation in the UK – as in most other EU countries – was tiny when compared to total activity, and was restricted mainly to government debt, with very little investment in corporate bonds.
- 2.3. However, various respondents felt that our picture of the bond markets needed to be extended in some respects. Important comments included the following:
- While a government normally issues debt in its domestic currency, a corporate often issues in the currency through which the most advantageous rates can be accessed and then looks to swap the proceeds into the required currencies as necessary. This practice means the notion of a ‘domestic’ corporate bond market is losing its relevance: rather, the market is international in nature, although divided between the various currencies of issue, and needs to be regulated on an international rather than a domestic basis. London dominates this international activity:

International Financial Services London (IFSL) estimates that 70% of secondary market trading in such bonds takes place here.

- In contrast to the government bond markets, many corporate bonds are not subject to a full public offering when issued, and there may be little or no secondary market trading in them. The structure of such bonds may have been tailored to meet the requirements of a small number of particular investors, and perhaps only one. Such investors (e.g. large pension funds and insurers) often have no immediate intention of trading the bonds after issue.
  - More generally, there is heavy segmentation according to the structure of the bond and the market in which it trades. Trading on multilateral venues is only feasible where the bond in question enjoys relatively high turnover, which requires it, amongst other things, to be relatively vanilla in structure. More highly structured bonds, those from smaller issues or less significant issuers, and those that are not denominated in a major currency will tend to be less liquid and thus traded solely on an OTC basis.
- 2.4. Some respondents commented on our reference in the DP to growing indirect retail investment in the bond markets. They felt that indirect participants had little or no interest in trading transparency around the bonds in which their investment vehicle (e.g. a pension fund) had invested. Rather, such participants were interested only in the overall performance of the vehicle. We note this argument, and certainly do not view indirect retail participation in the bond markets as being of key relevance to the transparency debate, as long as the firms acting on their behalf are able to obtain the transparency information they need to trade effectively.
- 2.5. Several respondents pointed out that liquidity in bond markets was not reflected by trading volumes so much as by the capital committed to the markets by dealers. It was this commitment that gave investors the ability to find prices and trade when they needed to do so. Liquidity in this sense also served to enhance the demand for bonds, as purchasers could have some confidence they would be able to sell reasonably easily if necessary. With this in mind, a number of respondents urged against any action that might impact the willingness of dealers to commit capital to the secondary bond markets.
- 2.6. A variety of comments noted that the bond markets were evolving in response to market and technological developments and it was important for regulators to recognise this dynamic and take these developments into account. Respondents pointed in particular to:
- *The ongoing evolution of new bond structures* (e.g. within the sphere of asset-backed securities). Some respondents argued that no regulatory action should be taken that might impede innovation and the availability of new products to investors. Concern was voiced that mandatory

transparency requirements might stifle the willingness of dealers to commit capital to the markets for fledgling products.

- *The growth of market-led transparency, delivered via electronic trading systems and quote screens.* We recognise the scale of transparency provision in the European bond markets is increasing, albeit at varying rates and from different starting points, depending on the particular market considered. This growth was highlighted in a report published last year by the Bond Market Association (BMA), which estimated that 80% of trading in European government bonds (as well as trading in a growing number of corporate bonds) took place electronically.<sup>7</sup>
- *The rising number of bond indices* – an industry-driven development that provides an additional tool to enable market participants to monitor market prices and developments. For example, the International Index Company's iBoxx indices provide composite quote information on a broad range of European investment grade bonds (much of it in real-time).

2.7. We have had very limited response to the DP from issuers, although we have considered the issuers' perspective in our wider discussions with market users. We take from this that, while many issuers are interested in the liquidity of the secondary markets in their bonds, they have no material concerns about the markets' efficiency. It is possible issuer views are influenced by whether they see retail participants as an important investor group for their bonds. Issuance trends suggest that a decreasing proportion of issues are being made available to retail investors. While most parties with whom we discussed this attributed the trend to the effects of Prospectus Directive requirements, one major issuer suggested retail investors needed a better developed secondary market structure, including appropriate transparency.

## **The impact of the growth of credit derivatives**

2.8. Many respondents commented on the growth in the credit derivatives markets and their impact on cash markets. These derivatives markets have grown hugely in recent years. For instance, data from the biannual Market Survey undertaken by the International Swaps and Derivatives Association (ISDA) indicate that the notional amount outstanding of credit default swaps stood at US\$17.1trn at end-2005, up from US\$8.4trn 12 months earlier and just US\$3.8trn at end-2003. Growth on this scale has had two major impacts on the price formation process for the cash markets in bonds:

- *Risk management and dealing:* The growth in the availability and diversity of credit derivatives has significantly improved the ability of market participants to manage risk. Notably, this has often made it less risky for dealers to make markets and provide liquidity and transparency (usually in

---

7 See: [www.bondmarkets.com/assets/files/pricetransparencystudy\\_april05.pdf](http://www.bondmarkets.com/assets/files/pricetransparencystudy_april05.pdf)

the form of indicative quotes). It is the drive to manage risk more effectively that has been a key motivation behind the growth of credit derivatives. This is particularly so in Europe, where highly innovative derivatives markets have developed in response to the diversity of the cash bond markets (in which, for instance, numerous governments issue in a common currency but at benchmark spreads differentiated by creditworthiness);

- *Price formation of cash bonds*: Perhaps more importantly for the transparency debate, derivatives are seen by many participants as an important driver of price formation in the cash bond markets. A number of respondents said it was in the swaps markets that many corporate bond prices were determined, and that price formation for government bonds was driven by the associated futures markets. In addition, some respondents noted that the ongoing emergence of indices for credit derivatives had helped the efficiency of cash market price formation (especially for issues around which there was some pricing uncertainty).

2.9. These comments are relevant for consideration of both the nature of the price formation process in the cash markets and the extent to which the markets may deliver transparency without the need for regulatory intervention. We discuss this further below.

## **Comments regarding market failure and transparency**

- 2.10. In DP05/5 we discussed whether market failures existed in the secondary bond markets, with a focus on those possible failures that might relate to transparency arrangements. We extend this analysis in section 4, *Evaluation*, but note here the key themes arising from the comments that DP respondents and others made on our MFA.
- 2.11. It is clear from the responses that access to transparency information differs significantly between different market participants. For instance, dealers tend to have more transparency information than most others as they generate information themselves (e.g. their own quotes), have access to privileged liquidity sources (i.e. the inter-dealer market), and receive orderflow information from the role they play for their clients. Similarly, many of their larger clients (e.g. major fund managers) have access to a high volume of information as they have relationships with numerous dealers and brokers, and may be users of several trading venues. Furthermore, these larger and more sophisticated participants may have better access to, and understanding of, the related derivatives markets, which, as we note above, can provide additional pricing information to users of the underlying markets.
- 2.12. But a number of respondents suggested that for smaller firms (particularly on the buy-side) the ability to access multiple sources of transparency information was not as great. Due to their size, such firms tend to have

significantly fewer broker/dealer relationships and may not be users of alternative trading systems (ATs). As a result, they will not necessarily be able to access as wide a range of quotes. In addition, many smaller firms will not be in a position to make as good use of information from the derivatives markets as their bigger counterparts. They may not be direct users of these markets (due to constraints on their investment mandates) or have the ability to analyse derivatives data. Nevertheless, they may benefit indirectly if their dealers are able to offer them better prices and provide more liquidity as a result of the dealers' access to credit derivative markets.

- 2.13. The occasional retail participant who invests directly in bonds may have little direct access to transparency information, although the extent to which this is the case differs by bond. For government debt, retail access to transparency is relatively high: information can often be obtained from official government sources or trading facilities, and end-of-day information can be gained via the internet. But for most other bonds, sourcing information is more difficult and retail investors may have access only to delayed information or that gained via a broker. Whether this poses any particular problem for the investor depends in part on whether the bond is bought as a 'buy and hold' investment or for other reasons. If the investor wishes to hold to maturity, knowing about short-term price movements may be of less interest than if the money invested is to be periodically moved (unless price movements reveal a risk of default).
- 2.14. Despite some disparities in the amount of information available to different market participants – which might in principle be a source of market failure – most respondents had no concerns about the quality of the price formation process in the secondary bond markets, as they experienced it (most being either wholesale participants or trade associations representing such players). Several commented that current transparency arrangements differed appropriately between market segments according to the nature of the market and the liquidity of the instruments in question. They added that a 'one-size-fits-all' approach to bond market transparency would be inappropriate.
- 2.15. Respondents who were broadly content with existing arrangements put forward a number of arguments against mandating greater transparency. These included the following:
  - Publishing the details of trades shortly after execution increased the risk to dealers who were left with positions as a result of those trades. This might lead to a withdrawal of liquidity provision, particularly with respect to less liquid bonds, for which transparency was currently relatively low. By extension, if some dealers chose to stop making markets in certain bonds, competition would be reduced, to the detriment of market users.
  - The benefits of mandating transparency requirements would be limited. Many respondents argued that the growth in the use of ATs and quote vendors meant that the markets were already delivering a satisfactory level

of transparency of their own volition. This was augmented by the growth in the availability of bond-related indices and pricing sources from the derivatives markets, which were significant drivers of price formation in the cash markets.

- It would be difficult to build a meaningful and sensible transparency regime for bonds. On the pre-trade side, mandated quoting requirements for dealers would be difficult to shape and risked dealers exiting the markets altogether. On the post-trade side, it would be hard to determine what to disclose to the market in a trade report and how rapidly disclosure should take place. Greater transparency may also risk the withdrawal of liquidity providers.
- 2.16. It was argued further that the lack of a need for mandatory pre- or post-trade transparency was illustrated by the fact that bid-offer spreads in the corporate markets were already tighter than in many other markets (including the US). The argument that spreads in European corporate bonds are relatively tight is supported by the conclusions of the research we discuss in Section 3 and Annexes 4 and 5.
- 2.17. Amongst the minority that argued for greater transparency, most felt that a light-touch regime (e.g. post-trade transparency delivered on an end-of-day basis) would address their concerns. Generally, these respondents were looking to improve either the marking to market of portfolios or their ability to judge the fairness of the quotes they received. However, three respondents argued strongly that there was a material market failure regarding price formation. These respondents felt that the disparity in access to transparency information was sufficient to undermine the price formation process and that, particularly with respect to retail investors, greater transparency was required if fair prices were to be obtained. While these respondents were clearly in a small minority, a number of wholesale participants also acknowledged that existing transparency arrangements might not be ideal for retail participants, where they existed.
- 2.18. Other concerns expressed about the secondary bond markets also tended to be retail-focused. A small number of respondents voiced the opinion that most dealers did not wish to make markets in retail size (i.e. to offer quotes in the sort of size at which a retail participant might want to invest). This meant that retail investors could not access the bond markets easily, irrespective of the level of transparency. A number of respondents also commented that the lack of retail awareness of bonds presented a *de facto* barrier to entry, as many did not understand what bonds were, their risks and rewards, and the markets in which they traded. These respondents commented that greater consumer education might help retail investors to make a more informed choice about the assets in which to invest.

# 3 Key themes from our extended analysis

3.1. In DP05/5 we undertook to extend our analysis of the bond markets beyond assessing the responses to the DP. Our aim was to draw on a broader range of information sources to form our judgement on the efficiency of the bond markets and the role of transparency within them. This section draws out the key themes emerging from the extended analysis. We have divided it into four components:

- an assessment of the academic literature on TRACE, including its relevance to the UK markets;
- a revisited review of the existing academic literature on the impact of transparency on securities markets, to test whether the conclusions of the review we set out in the DP (which formed Annex 1) need to be adjusted in the light of the literature reviews undertaken by others subsequently, which incorporate where relevant the TRACE literature;
- an overview of the findings of our work on price dispersion and dealer behaviour in the bond markets; and
- a summary of the key findings arising from the two CEPR reports on government and corporate bond markets respectively.

## **The academic literature on TRACE**

3.2. The introduction of TRACE has been one of the most significant changes in bond market transparency in recent years. Three papers have emerged so far that attempt to assess the impact of TRACE,<sup>8</sup> each of which uses somewhat different samples and timeframes for its analysis. Importantly though, they reach a broadly consistent conclusion: TRACE has reduced transaction costs

---

<sup>8</sup> The three studies are:

Bessembinder, H., W. Maxwell and K. Venkataraman (2005); Optimal market transparency: Evidence from the initiation of trade reporting in corporate bonds; *Journal of Financial Economics*, forthcoming

Edwards, A.K., L.E. Harris and M.S. Piwowar (2005); Corporate bond market transparency and transaction costs; Working paper, Securities and Exchange Commission

Goldstein, M.A., E. Hotchkiss and E.R. Sirri (2006); Transparency and liquidity: A controlled experiment on corporate bonds; Working paper

for most trades in the US corporate bond markets, although the *magnitude* of the impact is unclear.

- 3.3. Without equivalent access to the TRACE database, it has not been possible for us to undertake our own assessment of its impact. What we have aimed to do, however, is to assess the methodologies employed in the three research papers and to analyse the extent to which their conclusions may be relevant to the UK. We have done this in Annex 3. Two principal observations emerge from these two strands of analysis.
- 3.4. Firstly, it is our view that the TRACE studies are based on robust methodologies. The literature is able to isolate accurately the impact of the transparency measures on transaction costs in the corporate bond markets sampled. It should be noted that the reports focus mainly on investment grade bonds, and do not discuss in depth the impact of transparency on liquidity. But, given the scope of the reports, we believe the results they find are robust.
- 3.5. Our second observation is that there are significant differences between corporate bond markets in the US and those in the UK. Notably, there is greater pre-trade transparency in the UK – and generally in Europe – than there was in the US when TRACE was implemented (although this applies more to investment grade bonds than to high-yield bonds). This suggests that mandated post-trade transparency would be unlikely to have the same level of impact on price formation here as it had in the US. It is possible that greater post-trade transparency in Europe would improve pricing and reduce spreads. But it may also increase the risk faced by dealers. This could lead to some dealers exiting the markets, potentially reducing competition and the quality of prices. We discuss below the relative scale of spreads in the European and US corporate bond markets.
- 3.6. A further difference lies in the level of direct retail participation in the bond markets. In the US, this accounts for a greater proportion of total trading activity than in the UK. This is important because TRACE was implemented in part to help retail participants get better access to transparency information. As there are relatively few such investors in the UK, introducing such a system here would have a different cost-benefit trade-off with respect to retail investor protection.
- 3.7. Given the above points, it is probably reasonable to conclude that the impact on transactions costs of mandating post-trade transparency in the UK would be lower than in the US. More generally, given pre-trade transparency levels across Europe, it is difficult to draw any clear conclusion for European bond markets from the TRACE experience. Nevertheless, we have noted that a regime of greater transparency might have some benefits for retail participants that invest directly in bonds, and return to this issue later in the paper.

## A review of the broader academic literature

- 3.8. In Annex 1 to DP05/5, we identified a number of key messages from the academic literature on market transparency. In summary, we concluded that the literature was inconclusive about the impact of transparency on how markets operate. On the one hand, some studies suggested that greater transparency could increase liquidity by enabling dealers to manage their risks more effectively and by encouraging greater investor participation. It might also help with the prompt incorporation of new information into prices, and to reduce search costs. On the other hand, some studies suggested that greater transparency reduced liquidity because it limited the ability of dealers to exploit the benefits of the information they gained in trading, and increased the risk associated with taking on positions. We concluded that it was important to consider the microstructure of the particular market when determining the optimal level of transparency.
- 3.9. Both of the CEPR reports and the CEPS study have also reviewed the academic literature, including (where appropriate) the TRACE papers we discuss above, as well as several other papers not included in our survey. We note that these reports came to conclusions on the literature that were broadly similar to our own: that the impact of transparency on price formation and liquidity depends crucially on the structure of the market in question and the assets traded. These reports' assessment of the academic literature raise the following key points:
- Theoretical studies indicate that increasing trading transparency may or may not increase market efficiency. Much depends on the market in question and how it operates in practice. Greater transparency may boost liquidity by reducing information asymmetries, encouraging new participants into the market and making it easier to share risk. Alternatively, it may reduce liquidity if dealers think there is greater risk of prices moving against them as they try to unwind positions.
  - Empirical studies – of markets for bonds and other assets – also produce ambiguous overall results. There is some indication that different markets will react differently to transparency changes. Liquidity may rise or fall, as may transaction costs. Notably in the context of the bond markets, trading in lower liquidity instruments may benefit from some degree of opacity.
  - Market efficiency is not just about the tightness of spreads. The sizes quoted are also of importance. Where competition exists between dealers pricing improves. But prices and quote sizes may react differently to increases in transparency, with quoted spreads tightening while the size quoted falls.
  - Markets may react differently to pre-trade transparency compared to post-trade. Some studies find that markets benefit from both; others find

that one form of transparency may bring costs or benefits that the other would not.

## Price dispersion and dealer behaviour

- 3.10. To examine pricing and dealer behaviour in the European bond markets, we analysed a dataset of information provided to us by ICMA. This covered 28 large, mostly investment grade issues from the first half of 2005, 21 of which were from corporates and seven from governments. The dataset covered the first few weeks of trading in each of the bonds. We examined dealer round trips: an analysis of pricing where a dealer buys and sells the same bond within a given time frame (we use two: within one day and within five days). We also analysed the trading data for major dealers' activity to observe whether there was a clear trend of buying and selling at materially different prices on a day-by-day basis. Our results are set out in Annex 4, the key points from which are as follows:
- There are very few smaller/retail-sized trades in the sample (defined as trades of less than €50k). This may be due to the underlying dataset used, which may under-represent retail participation. However, it would tend to confirm that retail participation is very limited.
  - Measured on a round trip basis, spreads in Europe look tight, averaging just 0.023% for our sample when employing the five day round trip methodology. For corporate bonds, the average spread is just 0.057%. This compares to an average of 0.27% in the US corporate bond markets found by Goldstein *et al*, although the differential may be due to significant differences between our sample and the US sample (notably, that we examined recently-issued bonds).
  - Spreads for government bonds are, unsurprisingly, tighter than those for corporates. The 0.057% spread for corporates compares to an average of just 0.009% for European government debt.
  - As found in the US corporate bond markets, we find spreads that tend to decrease with the size of the trade. Retail-sized trades tend to face the widest spreads. However, even then the average retail spread is just 0.086% on the five day round trip method.
  - Our analysis, while limited, does not provide any particular indication that dealers are able to systematically buy bonds at one price and sell at a notably higher price.
- 3.11. These results support the picture emerging from our discussions with market participants that there is little evidence of major inefficiency resulting from the level of transparency in the bond markets. Prices for the same bonds bought and sold within a short space of time do not appear to be widely

dispersed (noting also that dealers do not charge commissions, but rather build any margin into the spread). We summarise below the key conclusions arising from the CEPR reports and the extent to which these correspond with our own findings.

## **Conclusions from the CEPR reports**

- 3.12. The CEPR reports examine the relationships between transparency, liquidity and efficiency in Europe's government and corporate bond markets, with their focus largely on the wholesale end of those markets. This summary of their findings draws on the material from Annex 5.
- 3.13. In the government bond markets study, the researchers argue that EU market structures have evolved over time to generate the present coexistence of electronic and OTC markets, which offer different environments that seem suited to different types of transactions. The study concludes that these markets do not function ideally. There is evidence of a winner's curse for dealers. This emerges, for example, when a number of dealers are involved in providing quotes to buy-side participants through a request for quote system. The winner is immediately at a disadvantage, as other dealers know that some dealer has acquired a position he/she will want to share in the inter-dealer market on the basis of a quote which was better than those they were prepared to provide. As might be expected, the study suggests this problem appears to be more prevalent in markets that are more transparent and less fragmented.
- 3.14. The study suggests that market distortions also arise from the relationship between government bond issuers and the primary dealers who provide most of the liquidity in the secondary market. Government issuers often impose conditions on the secondary market activity of primary dealers, or at least monitor their performance in this area. Spreads in the secondary markets are sufficiently tight that it is not a very profitable activity for the primary dealers. They accept these obligations in return for privileges such as access to recently issued stock at preferential prices and lead management roles in syndications. In support of this, the study finds evidence of a strong correlation between the amount of trading done on transparent MTS platforms and the extent of the obligations which issuers place on primary dealers. Where transparency is high, trade size tends to be low. However, the study does not look at dealer-to-investor markets.
- 3.15. The study concludes that it is not clear that mandatory transparency would improve the functioning of the markets. Changes in transparency could have profound effects on the risks borne by dealers, and this in turn may adversely affect the complex relationship between government issuers and primary dealers. It is not easy to predict the impact of trying to mitigate some market imperfections through greater transparency. The conclusion is that regulators

should be cautious and let markets evolve further, at least for some time, under influences of technical change and changes to market structures.

- 3.16. In the report on Europe's corporate bond markets, the researchers again highlight the unique nature of the markets' structure. They note that a large proportion of many issues are bought and held by the likes of insurance companies, and point out the importance of dealers providing liquidity to markets where trading tends to be infrequent. The research highlights that the relatively high degree of competition between European dealers and the large number of participating institutional investors results in average spreads that are tighter than those that are generally observed in the US. In addition, effective spreads in Europe are even tighter than those quoted. However, they add that it takes on average over a day for the information held within an individual trade to be fully incorporated into the market price of the given bond. They suggest this may be due to the lack of post-trade transparency.
- 3.17. The researchers found that most market participants were satisfied with the efficiency of the corporate bond markets. However, they note that retail investors are not active in these markets and that high transaction costs make them unattractive to the clients and the financial intermediaries that serve them. The researchers suggest that developing a retail orderbook might be of benefit. More generally, the researchers warn against the imposition of extensive transparency requirements, and note the key importance of fostering competition and liquidity provision. They argue against mandating pre-trade transparency, but suggest that a regime of limited post-trade transparency might deliver benefits (subject to its not leading to a withdrawal of dealer liquidity).
- 3.18. Overall, we note that the conclusions from the CEPR reports are similar to our own. This may be because we have analysed similar sets of data and have talked to a common group of market interlocutors. Nevertheless, two broad messages clearly emerge: there is little evidence of significant inefficiency in the operation of the European bond markets; and great care must be taken when considering mandating transparency requirements.

# 4 Evaluation

- 4.1. There are a number of issues for our analysis of trading transparency that arise in the key themes outlined in Sections 2 and 3. As we recognised in DP05/5 – and saw reiterated in many of the responses to the DP – it is important to bear in mind that bonds and shares differ hugely. The nature of the products and their markets, how they trade, the users of the instruments and their reasons for participating all differ. With this in mind, our focus below is on the MFA we set out in initial form in DP05/5, rather than on the issue of whether transparency requirements similar to those set down in MiFID for markets in shares should be introduced to the bond markets.

## Market Failure Analysis

- 4.2. This section pulls together our view on what we consider to be the key question: is there a market failure in our secondary bond markets? In the DP, we set out an initial MFA that put forward two avenues through which we thought a market failure might manifest itself:
- *that there might be inefficiency in the price formation process*, with some participants being unable to judge at what price to place orders and whether it was appropriate to hit/lift quotes; and
  - *that there might be a failure of best execution*, if those who owed a duty of best execution failed to find the best obtainable prices for their clients.
- 4.3. Further, we suggested a number of ways that such failures might be reflected:
- *wide spreads* might indicate insufficient competition (although we recognised in the DP that determining the size of spread in a given bond that would indicate a market inefficiency would be very difficult);
  - *a wide dispersion of prices* for very similar trades in the same instrument and around the same time (this might reflect an informational inefficiency,

with some participants materially better placed than others to judge at what prices to trade);

- *low participation rates* might reflect a lack of confidence on the part of some types of investor to trade in these markets, or that some form of barrier to entry might exist; and
- *a high level of user complaints* might reflect that a market failure of some form existed.

4.4. Contrary to the impression given to some respondents, we did not mean to imply that a market failure would necessarily be reflected via these indicators, nor that a failure could not be reflected via other mechanisms. Rather, we intended to suggest that, if a market failure did exist, we thought it probable that some indication of it would be manifested via one or more of these four avenues. Further, we recognise that, while the above avenues may offer an indication that a failure exists, some of them – the first and second – may also reflect an efficiently functioning market. For instance, in a high-risk, volatile market, the optimal behaviour of dealers may be to maintain wide spreads, thereby still offering liquidity to the market but without adopting excessive levels of risk. In such circumstances, and with market users potentially hitting bids and lifting offers, it would be reasonable to expect a level of price dispersion to be observed.

4.5. As already discussed, most respondents to DP05/5 did not feel a material market failure existed in the secondary bond markets. The concerns of these respondents tended to focus more on the risk that regulatory intervention in these markets might damage liquidity levels and innovation. However, the comments of the minority of respondents who felt otherwise are also of importance to our MFA.

4.6. Regarding the four particular indicators noted above, we conclude the following:

- Examining dealer ‘round trips’ – situations where dealers buy and sell the same bond within a limited timeframe – in new, large European bond issues, we find spreads that are narrow (averaging just 0.023% during our sample period) and that are sometimes negative. While the samples analysed are different in several respects from those used for studies of the US markets, our findings suggest that corporate bond spreads in Europe are noticeably tighter than those in the US. This is also supported by the evidence presented in the CEPR report on Europe’s corporate bond markets, and with the comments we have received from market participants. Tighter European spreads are observed across all trade sizes, including for smaller, ‘retail-sized’ trades.
- Spreads tend to decrease with the size of the trade, although the relative price dispersion – as measured by standard deviation – appears to be

reasonably similar across trade sizes. The spreads faced by retail participants are considerably wider than those for big players. Again, this is also supported by the evidence from the CEPR reports, and to some extent may reflect the fixed costs of dealing. While volatility in bond prices can be significant, there is no indication of this being the result of dealers systematically buying bonds at one price and selling them at another, higher price.

- In terms of participation rates, our key interest relates to retail investors. We recognise that retail investors are not as well positioned as institutional participants to gain trading information. If this were to be a problem for retail participants, it is likely to be more significant in the investment grade markets, as this is where retail interest is likely to be concentrated. However, we have not come across any hard evidence that difficulty accessing transparency information frustrates retail demand for bonds, and believe the very low levels of direct retail participation are due to other, more structural, factors that are unlikely to change rapidly. These include poor investor knowledge and understanding of bonds and the relatively low level of interest among UK brokers and dealers (perhaps related to fixed costs) in offering comprehensive bond-related services to retail investors.
- We are not aware of any complaints arising that relate to the level of transparency in the bond markets (although there have, of course, been problems with other aspects of the bond markets – e.g. surrounding the sale of precipice bonds to some retail investors). Some respondents to the DP said they had some concerns about the primary market, relating to how new issues were allocated between clients. We remain open to receiving further information about specific instances or practices in this area. We have received no indication to date of grounds for complaint about secondary market transparency.

4.7. Very few respondents suggested that there were significant best execution concerns currently in the UK in bond markets. Since we published DP05/5, the MiFID Level 2 provisions, relating to the new pan-EU regime that MiFID will introduce, have been further developed. As we noted in DP06/3 (*Implementing MiFID's best execution requirements*),<sup>9</sup> there is a need for further debate with the industry about how firms will comply with these provisions. As the DP makes clear, there could be an important role for the use of existing transparency information in helping firms comply with the MiFID obligation. As a consequence, there may be further market-led enhancements to available transparency information.

4.8. We believe it is fair to conclude that the anecdotal, empirical and theoretical evidence do not provide absolutely clear conclusions about the efficiency with which all the various segments of the secondary bond markets operate

---

9 [www.fsa.gov.uk/pubs/discussion/dp06\\_03.pdf](http://www.fsa.gov.uk/pubs/discussion/dp06_03.pdf)

and, more specifically, the extent to which current levels of transparency are deficient. However, overall, we do not see any evidence of substantial market failures related to transparency in wholesale bond markets – government and corporate – based in the UK. We agree with the view of the majority of respondents that a combination of competition, market-driven transparency, the interaction between cash and credit derivatives markets, and regulation (including best execution and the transparency requirements for operators of bond ATs) seems sufficient, in general, to deliver efficient pricing and fair executions.

- 4.9. We believe that extreme caution needs to be exercised in considering mandating greater transparency in the UK and European contexts. In particular, we agree with many respondents, and with the conclusions of the CEPR research, that mandating pre-trade transparency is likely to impact on the existing complex market structures, in potentially significant but unknown ways. We also note that these markets are still relatively dynamic, and continuing to evolve. Changes to post-trade transparency may have less impact on market structure but, nevertheless, it is unclear whether greater transparency would tighten spreads further or only serve to reduce dealer returns, resulting in a decrease in the provision of liquidity. The impact that TRACE has had on transactions costs in the US is unlikely to be mirrored to the same extent in the UK or Europe.
- 4.10. The trade-off between transparency levels and liquidity provision was highlighted by many respondents, and by much of the academic literature. More analysis is needed of this trade-off, particularly for less liquid bonds, before any regulatory action is contemplated. Such analysis would need to bear in mind also that the trading pattern of many bonds sees even those that are liquid trade less frequently over time. We recognise the importance, in illiquid markets, of dealers committing capital to help investors acquire or liquidate positions. We would not wish to see regulatory action adversely impact liquidity provision.
- 4.11. However, we recognise that the evidence we have gathered suggests that some participants may find transparency deficient within the secondary bond markets. The two notable groups are smaller fund managers and retail investors. We provide below a number of comments on these two groups.

### **Comments on challenges faced by some buyside participants**

- 4.12. As discussed in Section 2, some institutions have concerns about price formation or their ability to mark some bonds to market. We believe the increase in market transparency brought about by the growth of electronic trading, coupled with dealers' increased ability to offer finer prices (aided by the growth in derivatives), has helped. In addition, the development of bond indices – such as the iBoxx suite – has given users new pricing reference

points. To that end, it would seem that the market is helping to provide transparency information to its users.

- 4.13. We are not clear that existing differences in the availability of trading information to different types of institutional participant reflects a market failure *per se*, as in any market there will be those participants with better access to information than others. This is a consequence of how markets function, and the nature of the role that particular participants play. Furthermore, best execution provisions are designed to protect participants (including buy-side firms) who are less well positioned to find the best prices. To the extent that there is a deficiency for certain fund managers, we consider that the issue is largely one of access to information that is already provided to others, rather than of a need to generate additional information. In other words, the markets as a whole already generate the information these players say they need to have confidence in the price formation process, and to mark portfolios to market.
- 4.14. On that basis, to the extent that groups of participants within the bond markets are keen to obtain more trading transparency, we believe a market-driven rather than regulatory solution would be preferable. Those that see value in more data ought to be prepared to pay for it, in line with that value. Participants may consider pooling and collating their own data, or acquiring data from the various sources that are, or are becoming available. Where appropriate data is already generated and disseminated to some participants, the further costs of wider dissemination ought to be relatively low.
- 4.15. In addition, the industry might consider what additional transparency information it could provide to these participants to assist them. A market-driven initiative in this context is preferable to a regulatory approach as it is likely to be more sensitive, tailored and cost-effective. We welcome the indications from a number of trade associations that they will explore the extent to which greater transparency, possibly targeted at particular participants or segments of the bond markets, could be introduced by their members. We will be monitoring developments with respect to this.

### **Issues facing direct retail participants**

- 4.16. We recognise there are very few direct UK retail participants in the secondary bond markets. We conclude that this limited participation is due mainly to a number of structural features of the bond markets that are unlikely to change in the near term. There is no doubt that trading information on bonds is, in general, considerably less easy for retail investors to access than information relating to equities. But access to transparency information does not appear to be a critical factor in determining participation. We note that those retail investors that do buy bonds tend to hold them for the long term, rather than trading them actively. To the extent that issues have been raised about retail

participation in bond markets, we think they relate primarily to matters other than market transparency.

- 4.17. One important issue is that many retail investors have very limited knowledge of the bond markets. Nevertheless, we feel that there are sufficient sources of information available to investors – particularly via the internet – to learn about bonds for there to be no obvious need for an FSA-led consumer awareness campaign in this respect. We would encourage retail participants that have invested or are considering investing in bonds to make use of these sources.
- 4.18. Given the complexity and widely differing risk profiles of many bonds, the investor protections afforded by suitability requirements are also of primary importance. These provisions (set out in the Conduct of Business Sourcebook) require investment firms providing personal recommendations or discretionary services to private customers to take reasonable steps to ensure that the advice given and transactions undertaken are suitable for the client. Under MiFID, firms offering investment advice or portfolio management services will continue to face such requirements. Where a retail client participates in these markets on a non-advised basis, the firm will still be required to assess the client’s relevant knowledge and experience, subject to limited exemptions (e.g. certain execution-only trades in ‘non-complex’ listed bonds). These provisions are designed to afford protection to retail investors who have limited understanding of the financial products available to them.
- 4.19. As noted above, MiFID also introduces a new pan-EU best execution regime. If it is implemented effectively, it should address a key concern for retail investors in relation to bond markets. Best execution requirements are, by their nature, designed to protect those participants that are less well placed to obtain transparency information and judge prices. The publication of DP06/3 in May was designed to open the debate on how best to handle best execution across a range of financial instruments. We would encourage industry participants to help us shape our implementation of MiFID’s best execution requirements.
- 4.20. We conclude that no case has been made for mandating greater transparency to address potential problems raised for retail investors in the UK. To the extent that additional transparency may be desired, we think an industry-led initiative to deliver targeted enhanced transparency would be a more effective solution than regulation.

# 5 Conclusions

- 5.1. We believe from a UK perspective that no case has been made, based on a clear market failure, for regulatory intervention on market transparency. Of course, we will assess any new research that emerges and any relevant lessons from the responses to DP06/3. We think great care should be taken where regulation impacts, or might impact, on the structures that a market has developed. While mandatory post-trade transparency might raise fewer concerns than pre-trade transparency about the affect on market structure, we are not convinced that regulation in this area would necessarily deliver net benefits, given the possible trade-off in many bond markets between transparency and liquidity provision.
- 5.2. Rather, we believe there is scope for the development of trading transparency to be market-led, and we note the growth in the provision of transparency over recent years. To the extent that concerns have been raised about the deficiency of transparency in certain areas, we believe we should look to the market to generate solutions in the first instance. We welcome the indications from trade associations that they will explore how transparency arrangements might be enhanced.
- 5.3. In terms of the process going forward, the European debate is already underway. The European Commission published on 12 June a call for evidence about transparency in markets for asset classes other than shares (pursuant to Article 65 of MiFID). The debate will run through to the publication of the Commission's review, due by end-October 2007. We will look to input both directly and via the Committee of European Securities Regulators (CESR). We will also be considering the issues related to trading transparency for credit derivatives. To this end we have begun a series of meetings with market participants and trade associations to gain their views.
- 5.4. We would ask that interested parties continue to consider what evidence they could provide to back up the opinions expressed in DP responses and elsewhere. We are keen to ensure that our position throughout the policy debate is as well-founded and evidenced as possible. In particular, we would welcome any data that supports respondents' views.

# List of non-confidential respondents to DP05/5

Association of British Insurers

Association of Corporate Treasurers

Association of Private Client Investment Managers and Stockbrokers

Baillie Gifford & Co

Bond Market Association<sup>10</sup>

Brewin Dolphin Securities Limited

British Bankers' Association

Cornelian Asset Managers Ltd

Edward Jones Limited

Financial Services Consumer Panel

International Capital Market Association (joint response with LIBA)

International Swaps and Derivatives Association, Inc.

Investment Management Association

London Investment Banking Association (joint response with ICMA)

M&G Investment Management Limited

Morley Fund Management Limited

National Association of Pension Funds

PricewaterhouseCoopers LLP

Schroders plc

---

<sup>10</sup> On behalf of The Bond Market Association, The European High Yield Association, The Trade Association for the Emerging Markets, The European Primary Dealers Association and The European Securitisation Forum.

Thomson Financial

United Kingdom Shareholders' Association

UK Society of Investment Professionals

Vidur B. Goel (personal response)

Virt-x/SWX Group

# Responses to questions in DP05/5

1. We received a wide and varied response to the questions set out in Annex 4 of our DP (reproduced below). The key themes that arose are summarised in Section 2 of this Feedback Statement. However, below we have provided greater detail on the responses, and a list of non-confidential respondents is provided in Annex 1. It is important to note that, while we posed ten questions to which we sought specific responses, many respondents did not deal with all the questions, or chose to respond through general comments rather than question-by-question answers.
  - Q1. Are there any market failures in bond markets? If so, what are they and how do they arise?
2. Most respondents did not feel that there was a failure in the UK secondary markets related to transparency, although a number noted they could comment only on their own segment of the markets. Nine respondents suggested that there were failures of one sort or another in these markets, varying in severity. Of these, three stated there were significant problems regarding the efficiency of the price formation process, given that some market participants had greater access to market information and transparency than others. The remaining six responses indicated that action could usefully be taken to help retail investors interested in the bond markets. Their concerns focused on three main issues:
  - the extent to which brokers can be certain of obtaining best execution for clients in the more opaque bond markets;
  - whether barriers exist to retail participation, inasmuch as many brokers and dealers do not offer retail-focused services; and
  - whether retail education and disclosure could be improved. This would include not only disclosure of information about the bonds being traded and associated suitability tests, but also more general education about bonds, their risks and rewards, and the markets in which they trade.

3. In addition, several responses suggested that greater transparency would help in fair value accounting or with the marking to market of bond portfolios.

**Our response:** We agree there is little evidence of a material market failure affecting wholesale participants in the UK's secondary bond markets. We recognise there are differences in the access participants have to transparency information, but we are not clear that this represents a market failure per se in this context. Most respondents were not concerned by this. We note that retail participants are not as well positioned to obtain transparency information as institutional investors, but also that retail makes up a small proportion of total investment in the bond markets, and our regulation must be proportionate. Regarding firms' ability to mark to market, we believe the growth of market-led transparency (for individual bonds and indices) has helped here and will continue to expand.

Q2. To what extent is the price formation process for different types of bond efficient or inefficient? Do you have evidence that would illustrate your view – for instance, regarding bid-offer spreads or price dispersion for trades in the same bond?

4. A little over half of all respondents provided a specific answer to our second question. Of those that did, most felt that price formation was better for government bonds and more liquid corporates, with the greater competition between dealers and the higher levels of transparency surrounding the trading of such debt being important. Price formation was weaker for smaller issues, those of lower credit quality, and older/less liquid issues. One response suggested that price formation was better for the highest and lowest rated bonds, with pricing around issues rated A to BB- less certain.
5. Of the remaining responses, five or six felt that price formation worked well for all bonds. Two or three felt that price formation was, at least occasionally, poor for all bonds.

**Our response:** We had expected most respondents to suggest that price formation was better for bigger, more liquid and higher rated issues, and so it proved. It is unsurprising that issues not meeting these characteristics have fewer quotes made available for them, and thus that pricing is less certain. However, respondents did not in general suggest that price formation was inefficient given the characteristics of the particular bonds. The evidence provided by respondents was heavily anecdotal, with little data to back up the assertions made, but since the responses largely fitted with our expectations we are comfortable that the responses reflect the true state of play. For less liquid issues, greater transparency around quotes may not improve price formation if the problem is one of liquidity (in terms of the number of quotes available) rather than the visibility of these quotes.

Q3. Do you currently perceive any difficulties or concerns surrounding best execution in bond markets? If so, to

what extent would these concerns be alleviated by greater pre- or post-trade transparency, or should another approach be adopted?

6. A frequent comment with regard to this question was that the concept of ‘best execution’ in bond markets was unclear. Several respondents felt that the structure of the market for many bonds – with dealers providing liquidity and brokers bringing together buying and selling interests – meant it was not as easy to identify the best price (one but not the only component of best execution) as might be the case in the equity markets. Others mentioned that finding any price at all for a bond sometimes posed difficulties, and that best execution requirements had to take into account this sort of challenge.
7. Nevertheless, within the constraints of the structures of the bond markets, the majority of respondents had no concerns regarding best execution. Most felt that processes were in place to achieve the best result for clients, given the circumstances of the individual transaction. Outside this group, only a few thought there were significant problems surrounding best execution – largely on account of the problem of access to transparency information discussed above. Six respondents suggested that greater transparency might have some benefits for best execution (e.g. to improve a client’s ability to judge whether best execution had been obtained for a given trade).

**Our response:** We note that, within the constraints of what is achievable given how most bonds trade, most firms are comfortable that the current best execution requirements can be met. MiFID will introduce a new pan-EU best execution regime, which will apply to all MiFID instruments, the details of which have been further developed since we published our DP. We have set out in DP06/3 some of the issues which arise in applying the MiFID requirements to bond markets, and laid out some options for consideration. We are keen not to prejudge our broader discussion on best execution following the publication of DP06/3 and will report back more fully in due course.

Q4. Do you think that retail investors face any particular difficulties in participating in bond markets? If so, to what extent do these stem from transparency-related issues, and to what extent from other factors?

8. Most respondents provided a specific answer to this question and a wide range of issues were highlighted that affected the ability of retail investors to participate in the bond markets. Six respondents noted specifically that the lack of transparency information provided to retail presented something of a barrier to entry (with some feeling this was a crucial factor in explaining the lack of retail investment). But many other issues were highlighted that limited retail involvement. These were:

- the relatively low number of retail-size quotes available, and thus the lack of speed and certainty with which retail orders are executed;
  - the wider spreads that retail investors tend to experience (noted also by the research outlined in Annex 3);
  - the level of brokerage charges, and the relatively few brokers and custodians that offered bond-related services to retail investors;
  - the lack of retail access to the primary market in many bonds (including legal/regulatory restrictions regarding the marketing of bonds, the willingness of issuers to have their bonds held by retail, and the perceived impact of the Prospectus Directive in encouraging issuers to avoid issuing in denominations below €50k); and
  - the lack of ability among retail investors to understand bonds, assess their value and understand the price formation process.
9. In addition, a number of respondents commented that retail participation in the UK was limited for cultural reasons. The UK government had not pushed bonds as a retail asset class (unlike some other European governments), and the UK had developed an ‘equity culture’, based around government privatisations and the demutualization of building societies, etc. Several respondents commented that the complexity of bond structures and their markets meant that retail participants should not be encouraged to invest in bonds. Only one response stated specifically that there was frustrated retail demand for bonds in the UK, although two or three responses commented that developing a retail-focused orderbook might be of benefit.

**Our response:** Clearly there are numerous reasons, of varying significance, why retail investors in the UK do not often choose to invest in bonds. We agree with respondents that the main factors would appear to be structural, relating for example to culture, the nature of bonds as investments, and distribution channels and costs. The lack of availability of transparency information does not appear to be a major factor, and we doubt that enhanced transparency would increase retail participation significantly. It would be interesting to hear the industry’s reaction to the suggestion that a retail orderbook be established (in terms of whether this would be valuable and viable).

Q5. If there are other material market failures, to what extent might greater transparency be a solution? Would it be pre- or post- trade? Or should a different solution be used to correct the failure?

10. Most respondents did not address this question or felt there were no market failures they would draw to our attention. Amongst the remainder, one respondent suggested that, in the absence of proper market transparency, efficient capital allocation across the economy would be more difficult.

Another noted that it would be harder to identify abusive and fraudulent activity. Both recommended an increase in market transparency to deal with these problems.

11. Two further responses focused on the primary bond markets and issuers. One commented that there was a growing tendency on the part of corporates to issue in denominations of €50k in order to avoid Prospectus Directive obligations. This limited retail access to the primary markets, and reduced further the number of quotes that were available in the sort of size in which the average retail investor might want to trade. The same respondent also felt there was a tendency by the managers of issues to encourage investors to oversubscribe, meaning it became more difficult to obtain the quantity of bonds wanted (especially when some subscribers were favoured by the issuer over others). The second respondent argued that, for retail investors, the ability to gain information on issues (e.g. regarding covenants) and to receive ongoing disclosures from issuers was poor, and that this stifled retail investment. However, the respondents did not suggest that these problems related to secondary market transparency.
12. The final failure suggested was about the efficient clearing and settlement of trades in government debt. The respondent's comments were brief but noted that the European Commission was considering a directive in this area that might aim to address such problems.

**Our response:** Two of the failures discussed above relate to transparency in the secondary bond markets. With respect to the efficient allocation of capital across the economy, we believe that an efficient price formation process should address this. The growth of market-led transparency discussed above helps here, and most respondents considered this was delivering efficient pricing. Regarding possible abuse, the development of market-led transparency again is of importance as it helps market participants to spot unusual trading behaviour. In addition, we are improving our ability to monitor for abusive trading with the development of new FSA transaction reporting systems that will help us to more actively monitor the bond markets.

Q6. What is your view on the relationship between transparency and liquidity in bond markets, distinguishing between liquidity provided by market makers, wholesale/institutional participants and retail investors? Does your answer differ according to the characteristics of the bond?

13. This question produced a wide range of views, with most respondents offering an answer. Some respondents chose to comment on the existing relationship between transparency and liquidity, but the good majority

preferred to comment on the impact that any change to transparency requirements would bring.

14. Of those that offered an answer, four argued that greater transparency brought benefits to all bonds markets as it offered a signal that liquidity was available to those who wanted to trade. This encouraged investors into the markets. One respondent noted that pre-trade transparency in particular was important as it helped to reduce search costs.
15. The remaining respondents to this question were fairly evenly split between two groups. One group, dominated by sellside firms, noted that any mandated increase in transparency would be harmful to liquidity. These respondents felt that optimal levels of transparency were already being delivered, and were suitably differentiated according to the bond in question. Any increase in transparency – and particularly post-trade transparency – might reduce dealers’ willingness to provide liquidity. Two respondents from this group noted also that any increase in investor participation brought about by increased transparency would not compensate for a withdrawal of dealers as it was only dealers that were prepared to stand by to provide liquidity when the market needed it. Institutional and retail investors would not undertake such a role.
16. The other group suggested that, for liquid bonds, it was unlikely that greater transparency would reduce liquidity as transparency was already high. But this group added also that mandating greater transparency for less liquid bonds would lead to dealers withdrawing liquidity.

**Our response:** We believe that concerns regarding the impact of greater transparency on less liquid bonds are probably well founded: most respondents suggest that a trade-off between transparency and liquidity exists here. We tend to agree, and think further research may be needed to identify the precise nature of this trade-off. The market has delivered greater transparency for liquid bonds of its own volition, but that provides little indication of the impact of mandating more transparency.

Q7. To what extent do you think that pre- or post-trade transparency requirements for a defined set of benchmark bonds (e.g. the most liquid corporate issues) would have beneficial spill-over effects for other types of bonds?

17. Approximately half of respondents offered an answer to Question 7. Of these, the vast majority felt the spill-over effects of mandating transparency for a limited set of benchmark bonds would be negligible or non-existent. A number within this group noted this was because transparency around such bonds was already high. Two added that bond indices had also developed to provide such a benchmarking role.

18. Of the remaining respondents, three felt that greater transparency around the trading of benchmark bonds would provide significant benefits. A further three respondents felt there might be some positive spill-overs, although more for bonds with a similar credit rating to the benchmarks than for other debt.

**Our response:** We tend to agree with the majority of respondents that greater transparency for benchmark bonds would offer little additional benefit. Such bonds tend already to be the subject of considerable trading transparency. In addition, we recognise the role the growing number of bond indices plays in providing benchmarks for pricing.

Q8. Would greater transparency in the bond markets bring any wider benefits, for example in aiding the pricing of bond portfolios and credit derivatives? Would pre- or post-trade information be of greater value?

19. Most respondents addressed this question. Ten respondents commented that an increase in market transparency would, to a greater or lesser degree, benefit portfolio valuations and fair value accounting. Of these, most commented that post-trade transparency would be of greater benefit, although two felt that pre-trade information would be useful too. However, several noted that such benefits could not be justified if the transparency from which they resulted also caused a reduction in market liquidity. Liquidity was considered key, with valuations a secondary consideration. In addition, a small number of respondents said bond indices could be used to value portfolios, and thus there was no need for mandated transparency for this purpose.
20. Only three respondents felt that transparency might be of benefit to derivatives pricing. Several respondents felt it more likely that derivatives would drive cash market pricing than the reverse.
21. Seven respondents felt there would be no particular additional benefits from mandated transparency.

**Our response:** We feel that the key message from the responses is that greater transparency would help with marking to market, but that no action should be taken to secure this benefit at the expense of liquidity provision. We were surprised by the number of respondents who thought portfolio valuations would benefit more from greater post-trade transparency than from an increase in pre-trade information. We expect valuation difficulties to affect mainly less liquid bonds. That being the case, we thought respondents would prefer pre-trade data indicating where the bond could be traded now to post-trade data that might relate to a transaction that took place some time ago. However, the weight of responses was clearly with the latter, and, more significantly, with the importance of preserving market liquidity. We recognise that for market participants liquidity is paramount, and agree that the benefits discussed above should be viewed against the broader need to maintain efficient and liquid markets.

Q9. How does the inter-relationship between trading in the cash and derivatives markets affect the consideration of these issues?

22. A little over half of responses to the DP addressed this question. Of those that did, most said the development of the credit derivatives market had improved liquidity and/or price formation in the underlying markets. Respondents felt that the increased ability of dealers to hedge risk helped them to provide liquidity in the cash markets, and that this, combined with information on the prices of the derivatives themselves, helped to improve cash market price formation. However, a couple of responses noted that credit derivatives were available for only a limited number of reference bonds, and thus the scale of the benefits would differ according to the bond in question. Only two responses suggested that the derivatives markets had little impact on activity in the cash markets.
23. A further comment made by three respondents was that the development of the credit derivatives markets had opened new opportunities for more sophisticated investors. Such investors could move seamlessly between markets to create the right exposure to optimise their risk/return profiles.

**Our response:** The responses to this question fell largely within our expectations. We had anticipated positive comments about the impact of derivatives on liquidity provision and price formation. We note also the comments on the ability of participants to move easily between cash and derivatives markets, and recognise the importance of bearing this in mind when designing suitable and consistent regulatory measures. For this reason, and as part of our broader preparations for the Commission's review, we are undertaking meetings with market participants to obtain their views on the functioning of, and the transparency within, the derivatives markets.

Q10. What practical issues do you think are important for regulators to consider in formulating policy in relation to transparency in bond markets? What costs would you foresee in any extension of transparency requirements to the UK bond markets? Are there particular practical issues that would have to be borne in mind in developing a pan-European approach to transparency?

24. The key concern of respondents, echoing earlier comments, was that no reporting system should be introduced that affected market liquidity. Respondents suggested that, if a transparency regime were introduced, we should give careful consideration to the bonds made eligible for reporting and to the information that would be included in a trade report. On the latter, a number of respondents commented that the size of a trade should not be reported, or should be protected if above a certain size. Following a

similar theme, several respondents argued that the introduction of a transparency regime should only occur on a phased basis, so its impact could be assessed at each step.

25. Many respondents were concerned about the possible systems costs of introducing mandatory transparency. Several argued that, if transparency had to be delivered, it should be via existing structures and mechanisms (e.g. through existing links to trading venues or data vendors). One respondent added that to allow reporting via several different mechanisms would make any regime easier and more cost-effective. Only a couple of respondents argued for new market structures, suggesting that the establishment of a dedicated orderbook for highly liquid bonds or for retail investors might be of benefit.

**Our response:** Our aim in asking this question was to ensure that we covered in a single DP all issues that were, or might become relevant to the debate. Given we are not minded to recommend mandatory transparency, however, this question is of less significance than it might otherwise have been. Nevertheless, we take on board the comments regarding the practical challenges that introducing any regime of mandatory transparency would involve.



# A review of the TRACE literature and its relevance for UK markets

1. In July 2001, the NASD implemented the Trade Reporting and Compliance Engine (TRACE), a system for the reporting and public disclosure of trades in US corporate bonds. The speed of dissemination of trade reports was reduced gradually over time from 75 minutes to 15 minutes, with the number of bonds subject to public trade disclosure (known as TRACE-transparent or TRACE-eligible bonds) steadily expanded to cover the entire universe of approximately 29,000 issues.
2. The introduction of TRACE forms a natural test-bed for determining if transparency is important to market efficiency, as there was a significant shift from relatively opaque bond markets to a phased public dissemination of trade data. Unsurprisingly, the availability of such data has spurred some early US-based literature testing for the impact of transparency on liquidity and transaction costs. There are three papers that empirically test for the impact of TRACE: Bessembinder, Maxwell and Venkataraman (2005); Edwards, Harris and Piwowar (2005); and Goldstein, Hotchkiss and Sirri (2006).
3. We were keen to assess the validity of this research and to draw out any implications it had for the UK bond markets. In the absence of access to the TRACE database, we have focused on assessing the robustness of the research methodologies employed by the three reports.
4. While the three papers use somewhat different samples and time-frames,<sup>11</sup> they use broadly similar methodologies and arrive at a similar conclusion that transparency has had a positive effect in increasing market efficiency and reducing transaction costs. Therefore while the *magnitude* of the impact may be uncertain, the papers reach the same conclusion regarding the *direction* of the impact of TRACE.
5. Our further analysis of this literature is set out below. We draw two main conclusions from it:

---

11 All studies, however, appropriately exclude outliers (such as 'reversal trades'; excessively large spreads etc). Also newly issued bonds are removed because there is typically an abnormal amount of trading activity in the first few weeks of issuance.

- a. In our view, the TRACE literature results are based on robust analytical methodologies. The methodologies adopted are able to isolate the impact of the TRACE transparency measures on the corporate bond market. One caveat is that the conclusions from these studies cannot be extended to all corporate bonds, as the studies have mainly focused on investment-grade bonds (i.e. bonds with rating of BBB+ or higher).
  - b. There are two significant differences between the US and UK bond markets, which indicate a greater value of transparency to the US market, and which might imply lower potential benefits of any similar policy initiative in the UK market:
    - i. There is a high degree of pre-trade transparency in the UK, although this is the case primarily for investment-grade bonds.
    - ii. The US market has greater retail participation compared to the UK.
6. There are some further caveats to the literature, although we believe they do not affect the validity of the above conclusions:
- a. The literature does not inform the debate on the relative significance of pre-trade transparency compared with post-trade transparency.
  - b. The most robust results only apply to investment grade bonds. The studies do not directly comment on high yield bonds (defined as bonds with rating below BBB+), with the exception of Bessembinder *et al*, who find a larger reduction in execution costs after TRACE for high yield bonds. However, more analysis would be needed to draw a strong conclusion.
7. The evidence from these studies does not shed any light on the impact on the provision of liquidity in the high-yield market, which is a key concern for many market participants.

### **Measures of market efficiency**

8. The three studies use two complementary measures of market efficiency: trading activity and transaction costs. Literature predominantly defines spreads as a proxy of transaction costs, be they the quoted spread (the difference between bid and ask prices) or the effective spread (the difference between observed price and the mid-point of the quoted spread). One direct method of estimating spreads is the ‘dealer round trip’ method, which examines the difference in price between purchases and sales that a dealer undertakes within a limited timeframe. Due to the scarcity of detailed transaction data for many bonds, which is required for such an analysis, an alternative methodology of measuring effective spreads is used: indirect econometric estimation. Both the direct and indirect methodologies have been used in the TRACE literature, and have led to similar results regarding the impacts of TRACE on transaction costs.<sup>12</sup>

---

12 The three papers all use an econometric model known as an ‘indicator variable model’. Goldstein et al also employ the direct ‘dealer round trips’ to measure the effective spreads.

## **Isolating the impact of transparency**

9. To isolate the effect of transparency measures, all the studies employ a control group and treatment group methodology. For example, Edwards *et al* create a number of groups of bonds that were subject during 2003 to varying amounts of transparency (based on whether they were subject to transparency requirements throughout the year, for only part of it, or not at all). As trading in some of the bonds in their sample was transparent and for others it was not, they are able to test for the impact of transparency on transaction costs. They find a positive impact of the TRACE disclosure regime on costs (the scale of which differs according to a number of factors).
10. Bessembinder *et al* rely on a similar approach of comparing trade execution costs before and after the introduction of TRACE. They find that, following TRACE's implementation, transaction costs for TRACE-transparent bonds fell by 50%, and for other corporate bonds by 20%. This latter result suggests a positive spillover effect: that improvements in pricing information for TRACE-transparent bonds also improve the ability to value related bonds, too. Also, they find a larger reduction in execution costs after TRACE for non-investment grade bonds compared with investment-grade bonds.
11. An alternative methodology, used by Goldstein *et al*, creates a matched-pair sample of 90 bonds with similar characteristics, with one bond in each pair randomly selected for TRACE-transparency and the other not (i.e. assigned to a control group). As the bonds are matched into pairs by their characteristics, any difference in transaction costs that is found between the treatment and control groups cannot be attributable to any cross-sectional or time-varying effects at play. In other words, the study effectively controls for changing market conditions. But this study finds somewhat weaker results. It finds no significant impact of transparency on volumes. Effective spreads reduce most significantly for bonds with trade size between 51 and 100 bonds, with little impact on larger and smaller trade sizes. Therefore, this study provides a more neutral outlook on the impact of transparency. And it should be noted that the robustness of the above methodology may be questioned if spillover effects of the sort found by Bessembinder *et al* do indeed exist. If that is the case, the distinction between treatment and non-treatment groups would no longer hold, as transparency would affect both groups. Nonetheless as the studies arrive at similar results, this is not a key concern.

## **Impact of Transparency on Liquidity**

12. An important issue which has frequently been raised is that improved transparency brought about by TRACE may have increased dealers' risk and reduced their liquidity provision, especially for less liquid, high yield bonds. The Bond Market Association (BMA) found via a sellside survey that increasing price transparency for high-yield bonds raised liquidity concerns

for market participants. This is, of course, a concern, but we are not aware of any empirical work that supports this anecdotal evidence.

13. While the three studies examine the relationship between transparency and transaction costs, a key missing variable has been the direct impact of transparency on liquidity. Only Goldstein *et al* directly examine this link using data on daily trading volumes and average number of trades per day. Overall, they do not find any significant increase or decrease in liquidity as a consequence of TRACE. For thinly traded bonds they find only a weakly significant decline in liquidity after dissemination (statistically significant at only the 10% level), and for only one measure of volume.
14. Regarding this weak impact on liquidity, some anecdotal market evidence provided by US academics and practitioners suggests that, during the process of staged dissemination, liquidity declines have not become apparent. Clearly, though, there would be benefit in further study being undertaken on the impact of transparency on liquidity in the bond markets.

### **Relevance of the TRACE results for the UK markets**

15. It is important to consider the extent to which the TRACE literature may have lessons for the UK. If the characteristics of bond markets in the UK are similar to those of the US bond market, the results of the TRACE studies may have considerable relevance for the UK. This section compares the market structures in the UK and the US and identifies the implications for the relevance of the TRACE results to the UK.
16. Evidence from the markets suggests there has been ongoing growth in the levels of transparency in the UK corporate bond market. Aided by growth in the use of electronic trading platforms and quote screens among dealers, some pre- and post-trade price information is disseminated without significant delay, though mainly for higher quality (investment-grade) corporate bonds, and with some participants having considerably better access to this information than others. The BMA estimates that approximately 80% of trading in European government bonds (by volume and transaction numbers) and a smaller but rising proportion of corporate bond trades are done electronically.
17. According to market participants, there was notably lower pre-trade transparency in the US at the time of TRACE's implementation than there is today. They suggest also, albeit only anecdotally, that there exists a greater degree of pre-trade transparency in Europe now than there was in the US at the time TRACE was implemented. The decline in trading costs found for the US after the implementation of TRACE may have been achieved only because of the weakness in pre-trade price transparency. The greater pre-trade transparency in the UK means that introducing a system akin to TRACE may not have the same impact here on transaction costs.

18. A further consideration is the investor profile in the bond markets. The UK market is almost solely based around institutional investors, whereas the US market has higher retail participation. It therefore needs to be determined whether there is less retail participation in the UK due to a lack of transparency or because of other reasons. If the latter, there would be limited benefit of transparency measures for retail investors. However, if a lack of transparency is the reason for limited participation by retail investors, TRACE-type measures could have a stronger impact on the retail sector by encouraging new participants into the markets. Our work, described earlier in this paper, suggests that while transparency may be a factor in limiting retail participation, there are a host of other reasons that, combined, are probably much more significant in explaining the limited retail participation in UK bond markets.
19. Clearly, then, there are some significant differences between the US and UK secondary bond markets. Given this, we think that considerable caution needs to be exercised in taking lessons for the UK markets from the TRACE experience.



# Further analysis of spreads and dealer behaviour

1. There exists very little empirical analysis of the European corporate and sovereign bond markets, relative to the degree of work that has been produced in the US. To extend our understanding of market efficiency in European bond markets, we study trading activity in the first two months after issue for a sample of European corporate and sovereign issues from 2005. We use two approaches:
  - an analysis of spreads in the market by trade sizes; and
  - an analysis of whether dealers are able to buy at low prices and sell at higher prices.
2. While the time period and sample of our analysis vary significantly from that used in similar US studies, it still forms a useful and informative comparison to those studies.

## The dataset

3. The dataset has been supplied by ICMA and comprises data for individual transactions for 28 issues from 2005. We look at new issues data because it is the only period when all bonds show relatively high levels of trading activity; if we exclude this period there would be insufficient data for meaningful analysis. For each transaction the data provides information on the issuer, a dealer code (allowing us to identify dealers on an anonymised basis), position taken on the trade (buy or sell), the price, the trade's date and time, the trade value and the number of bonds traded. In aggregate we have data for 33,358 transactions with a combined value of €1.5 billion. The sample consists of 21 large corporate issues (mainly from investment grade blue chip companies) and seven government bond issues. While the sample appears to be skewed towards corporate bonds in terms of number of issuers, it is relatively even in terms of the number of transactions. There are approximately 16,000 transactions in the corporate bonds and 17,400

in the sovereigns. This is not surprising, given the heavier trading activity that characterises most sovereign issues.

## Methodology

4. We use ‘dealer round trip’ spreads as a measure of transaction costs. The methodology used by Goldstein *et al* in their analysis of the US bond market is replicated here. While more sophisticated statistical methodologies have been used to calculate transaction costs, the dealer round trip method is a fairly novel technique. It is also particularly advantageous as it provides a straightforward calculation of transaction costs, rather than using statistical ‘estimates’. A dealer round trip is assumed to be completed when a dealer buys and then sells the *same* bond within a short space of time. What qualifies as ‘short’ is debatable and, like Goldstein *et al*, to avoid market movement impacts we use different time periods of one calendar day and five days as relevant periods for the round trip. As we have data on both trade date and trade time we are able to put the data into chronological order. This is in fact a shortcoming in a US study by Bessembinder *et al*, where they do not have information on trade time, and so have to make a number of assumptions about the order of trades.
5. We identify dealers’ round trips within the dataset for each issue and then compute the difference between the prices at which the bond is bought and then sold, which is the measure of the spread. We impose the constraint that the quantity bought must be greater than or equal to the quantity that is sold. This is also the methodology used by Goldstein *et al*. On this basis, some round trips are excluded. There are other cases of round trips that this methodology does not account for which reduces the number of round trips identified. These cases are where the dealer buys a large quantity of bonds and sells them in several successive stages.
6. As a result while the methodology we use identifies a large proportion of the round trips it does not incorporate *all* cases, creating a small measurement bias which should be kept in mind when drawing conclusions from the results.
7. Finally, we supplement this evidence with graphical analysis of trading activity to complement the analysis on whether dealers are consistently able to buy at one price and sell at a higher price.

## Results

8. Table 1 reports the results for all transactions by trade size where trade size is the quantity traded in Euros. The table provides spreads corrected for any abnormally high or low spreads. This is done by creating a distribution of the

observations and removing the values which appear to be outliers from the average case. We classify smaller/retail-sized trades as those under €50,000, medium sized between €50,000 and €9 million and larger institutional trades as those greater than or equal to €9 million.<sup>13</sup> To some extent, this classification of retail-sized trades reflects the provision in the Prospectus Directive that debt denominated below €50,000 attracts retail-style disclosure requirements. Of course, our data are in terms of trade size, rather than denomination of an individual bond. The disaggregation between large and medium-sized is on the basis of the distribution of data, so that we have an adequate number of observations in each category.

## Table 1 – All bonds

9. The table below, and all subsequent tables, computes spreads (in percentage terms) based on dealer round trips. The first panel computes the round trip with a restriction that a round trip must be completed within five days and the second panel computes the round trip with a restriction that a round trip must be completed within one calendar day. N refers to number of observations; SD refers to standard deviation; p1 is the first percentile; p25 is the 25th percentile; p75 is the 75th percentile; p99 is the 99th percentile.

	N	Mean	Median	SD	P1	P25	P75	P99
Five day round trips								
Retail<€50,000	68	0.086	0.035	0.239	-0.676	0.000	0.175	0.729
€50,000<=medium<€9mn	3,974	0.025	0.010	0.254	-0.836	-0.058	0.119	0.753
Large >=€9mn	2,049	0.019	0.000	0.210	-0.711	-0.040	0.080	0.680
<b>Total</b>	6,091	0.023	0.006	0.240	-0.792	-0.050	0.102	0.730
One day round trips								
Retail<€50,000	35	0.066	0.030	0.115	-0.100	0.000	0.090	0.433
€50,000<=medium<€9mn	2,143	0.019	0.005	0.157	-0.480	-0.034	0.070	0.514
Large >=€9mn	1,231	0.009	0.000	0.140	-0.440	-0.025	0.044	0.491
<b>Total</b>	3,409	0.016	0.000	0.151	-0.460	-0.030	0.060	0.511

10. Some of the results are surprising as there are many cases where we find instances of negative spreads. Goldstein *et al* also report negative spreads, but these are less common in their case, while Table 1 shows spreads that can be negative up to the 25th percentile of the distribution. This may be explained by the different sample used in our study. While Goldstein *et al* examine seasoned issues, excluding the few months after issuance, the sample that we examine looks exactly at this excluded period. As explained earlier, our

13 Some trades were in pounds, which we converted into Euros, using monthly exchange rates, for a consistent classification.

reason for the choice of this dataset is that we wanted to examine bonds during the period when most of their activity was concentrated. In addition, while our study looks at new corporate *and* sovereign issues for the year 2005, Goldstein *et al* look at corporate issues only between 2002 and 2004. For these reasons we are cautious about drawing any direct comparison between the two.

11. The results from the one-day and five-day round trips provide rather similar findings. We summarise the main findings below, looking at the five-day roundtrip<sup>14</sup>:
  - There are very few cases of retail-sized round trips in the sample, highlighting proportionately less retail investor participation in the bond market relative to other investors. We report these cases for completeness of analysis, but the number of observations is by far too low to draw any statistically significant conclusion.<sup>15</sup>
  - In line with *a priori* expectations, there is a declining trend in spreads relative to trade size. Based on the limited sample of five-day round trips in retail size, we find an average spread for retail investors of 0.086%. This is higher than that for medium and large institutional trades, although the standard deviations are similar in all three cases.
  - The size of the spreads at all levels is much lower than that found for the US by Goldstein *et al*. For instance, Goldstein *et al*, using five-day roundtrips, find that for institutional trades the average spread is 0.27% after TRACE, while in the European analysis we find average spreads of 0.019% using the five-day roundtrip. However, this may be explained by the markedly different study samples.
  - For retail investors the average spread we obtain is 0.086% (and maximum being 0.72%) for the five-day roundtrip, which is higher than that for institutional trades. One caveat for the reliability of the results for retail trades is that, as explained above, we have relatively few cases of such round trips, so the sample is not large or representative enough.
12. As a further step of the analysis and for clearer examination of the results we disaggregate spreads by corporate and sovereign issues. These are reported in tables 2 and 3, with spreads corrected for outliers as above. In the case of sovereign issues, we observe several cases of negative spreads, which may be explained by secondary market obligations being placed by issuers on their primary dealers. In the case of corporate issues, while the results from the entire sample broadly continue to hold, the average transactions costs rise to higher levels. The average retail spread rises to 0.115% (five-day) and for

---

14 We look at the five-day round trip results due to the greater number of observations, although the results are broadly similar to the one-day round trip results.

15 A note of caution: the number of cases refers to the cases of roundtrips in the dataset and does not refer to the number of retail-sized trades.

large institutional trades is 0.087%. In summary, spreads on average are higher in the corporate bond market than in the sovereign market, tending to indicate greater efficiency (or at least liquidity) in the latter.

**Table 2 – Sovereign bonds**

	N	Mean	Median	SD	P1	P25	P75	P99
Five day round trips								
Retail<€50,000	22	0.026	0.000	0.244	-0.676	-0.005	0.008	0.725
€50,000<=medium<€9mn	2,374	0.006	0.000	0.198	-0.594	-0.059	0.065	0.630
Large >=€9mn	1,889	0.013	0.000	0.204	-0.711	-0.040	0.070	0.630
Total	4,285	0.009	0.000	0.201	-0.640	-0.050	0.067	0.630
One day round trips								
Retail<€50,000	17	0.044	0.000	0.110	-0.050	0.000	0.008	0.380
€50,000<=medium<€9mn	1,351	-0.004	0.000	0.126	-0.437	-0.046	0.035	0.345
Large >=€9mn	1,132	0.005	0.000	0.138	-0.440	-0.027	0.035	0.490
Total	2,500	0.000	0.000	0.131	-0.438	-0.038	0.035	0.428

**Table 3 – Corporate bonds**

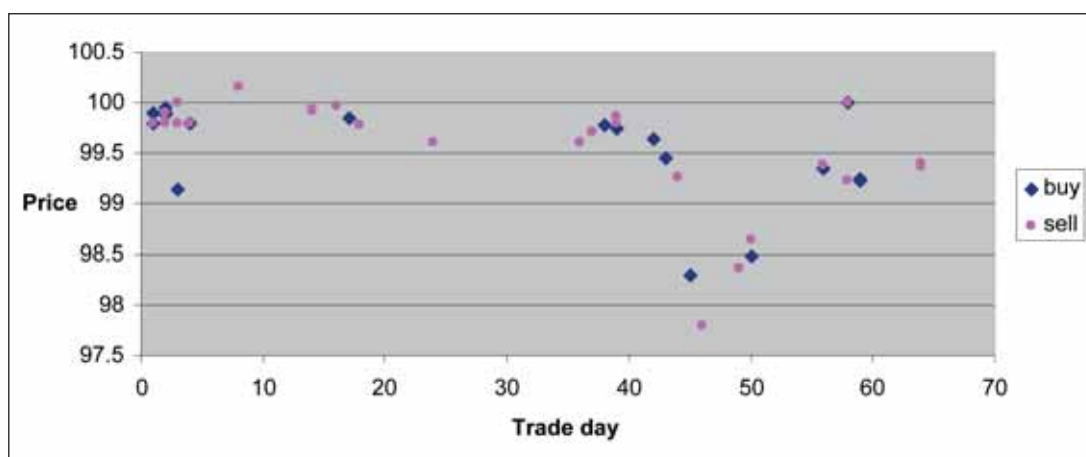
	N	Mean	Median	SD	P1	P25	P75	P99
Five day round trips								
Retail<€50,000	46	0.115	0.063	0.234	-0.307	0.000	0.254	0.729
€50,000<=medium<€9mn	1,600	0.052	0.046	0.317	-0.982	-0.056	0.192	0.835
Large >=€9mn	160	0.087	0.045	0.269	-0.891	0.000	0.158	0.870
Total	1,806	0.057	0.047	0.312	-0.968	-0.046	0.190	0.842
One day round trips								
Retail<€50,000	18	0.087	0.058	0.119	-0.100	0.030	0.100	0.433
_50,000<=medium<€9mn	792	0.058	0.041	0.194	-0.552	0.000	0.140	0.601
Large >=€9mn	99	0.058	0.037	0.157	-0.456	0.000	0.120	0.562
Total	909	0.058	0.041	0.189	-0.532	0.000	0.139	0.580

- In summary, three key findings emerge. Firstly, there is a decline in transaction costs as trade size increases - i.e. there are higher spreads for smaller sized transactions. Secondly, there is a paucity of retail trades (to the extent that they are reflected in round trips and our dataset), which corresponds with the anecdotal evidence of little retail investment in most European bond markets. And, finally, spreads are tighter in sovereign bond markets than in the markets for corporate bonds. However, the caveats given above regarding the size and composition of our sample and the focus on a limited set of round trips do preclude us from drawing any stronger conclusions from this data analysis.

## Dealer behaviour

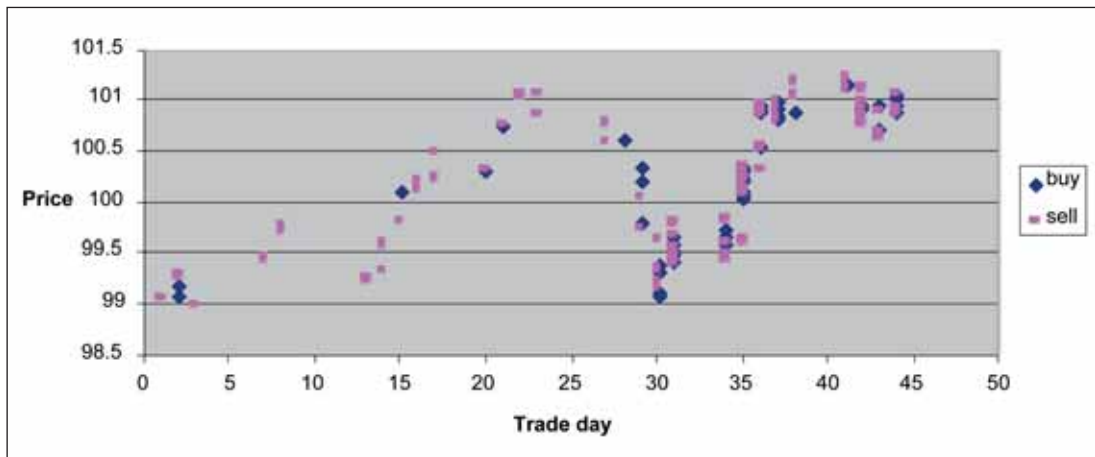
14. In addition to the analysis above, we selected a number of corporate and sovereign issues for which we undertook graphical analysis of the buying and selling behaviour of selected dealers. We focused on cases where the dealer selected had an almost even number of buys and sells in the given bond. We found some cases in our dataset where the dealer had only purchased or predominantly purchased (or sold) bonds for the selected time period and we are unable to explore much in these cases. We also did not look at cases with over 200 trades in a particular bond by a dealer, given the limited nature of graphical analysis.
15. However, we examined several cases where the data allowed some comparison of a dealer's buying and selling behaviour in a given bond and – on average, and within the limitations of our dataset – the picture that emerges is one of there being few instances where dealers can make systematic profits by purchasing newly issued bonds at one price and selling at a higher price. This may be due to the relatively high trading activity and stiff competition between dealers in secondary markets for bonds such as those in our sample (large, new, mainly high-rated issues). To illustrate our findings, we provide below two example graphs showing the buying and selling behaviour of a selected dealer with respect to a representative corporate bond and sovereign issue.

**Figure 1 – Dealer's activity in a representative corporate bond**



Note: 'Trade day' relates to the number of days after issue: Trade day 1 is the issuance day, and so forth.

**Figure 2 – Dealer’s activity in a representative government bond**



16. Figures 1 and 2 fit with our broad finding that, within our sample, the data does not indicate a systematic ability on the part of dealers to buy at low prices and sell at higher prices. We find cases where the buying price is higher than the selling price and vice versa. It should be noted though that this analysis does not control for the trade size which could have an impact on the price at which a bond is traded. We find tighter pricing in the sovereign issues (Figure 2), and somewhat more dispersed pricing behaviour in the corporate bond issues. These results fall in line with the descriptive statistics in Tables 1 to 4.



# A summary of the CEPR reports

1. This annex provides a summary of the CEPR research commissioned by the City of London and a number of trade associations that was published in May 2006. The research resulted in two separate but related reports. One examined European government bond markets, the other focused on Europe's markets for corporate bonds. Both aimed to assess the relationship between transparency, liquidity and efficiency in these markets (with their focus on the wholesale end). We have highlighted below what we consider to be the key points and conclusions arising from the two reports.

## **Research on European government bond markets**

2. The research on government bond markets<sup>16</sup> made use of market theory, interviews with market participants and empirical analysis (focused mainly on descriptive statistics) of data from the European and US government bond markets. In particular, the research focused on trading data from MTS's European inter-dealer bond markets and from eSpeed, GovPX and BrokerTec in the US (for comparison purposes). The aims of the research were to assess whether European government bond markets delivered efficient outcomes, the role of transparency, and how the provision of such information developed within these markets.
3. The conclusions from the research can be summarised as follows:
  - Where a European government issuer places secondary market obligations on a dealer (e.g. to make ongoing two-way quotes) and relies more on syndicate issuance its primary dealers make relatively heavy use of MTS's trading platforms. This assertion is based on comparing dealers' trading volumes on MTS to the level of outstanding issuance in the given bonds.

<sup>16</sup> Dunne, Peter, Michael Moore & Richard Portes (2006); European government bond markets: transparency, liquidity, efficiency; City of London: [www.corpoflondon.gov.uk/NR/rdonlyres/26DD01CC-684D-4312-B719-9C9A1F781766/0/BC\\_RS\\_TTGovernmentFULL.pdf](http://www.corpoflondon.gov.uk/NR/rdonlyres/26DD01CC-684D-4312-B719-9C9A1F781766/0/BC_RS_TTGovernmentFULL.pdf)

The use of MTS pools liquidity within a transparent trading venue, allowing dealers to advertise quotes and manage inventory levels, thereby helping them to meet their obligations. It also results in relatively tight bid-offer spreads. Italy falls within this category. The use of MTS is lower amongst dealers where the issuer has little or no reliance on secondary market obligations or syndication (which is the case in Germany and France).

- Higher transparency tends to be accompanied by lower trade sizes, which is reflected in the data from the MTS platforms. Medium and smaller sized trades tend to receive relatively good executions on MTS, but the dealer community's lack of willingness to trade in size on such a transparent environment means that executions for large trades are relatively poor, and such trades tend still to be undertaken away from MTS.
  - Some evidence exists, both in Europe and the US, of a winner's curse – in other words, a situation where a dealer, having offered a client a better quote than other competing dealers, wins the trade with the client but subsequently finds it hard to lay off his/her position in the inter-dealer market. This arises since other dealers have valued the bond differently (hence having not offered the original client as good a price).
  - Spreads in the US Treasury market are nearly always tighter than those in European government bond markets, regardless of trading method. The report suggests this is due to the relatively small and fragmented nature of the individual European markets when compared to the US Treasury market. For the same reason, spreads for gilts are wider than those for equivalent euro-denominated government debt.
  - Increasing pre-trade transparency may reduce the number of quotes requested by investors from dealers. The resulting reduction in information gained by dealers may increase their risk exposure, potentially resulting in bigger spreads and lower liquidity provision.
4. The report draws from these observations a number of conclusions for policy development:
- Considerable care has to be applied if mandatory transparency were to be introduced. Market structures differ between countries and have evolved over time. This, coupled with problems such as the winner's curse, mean that the imposition of transparency requirements may not succeed in bringing net benefits to the European government bond markets.
  - Against this backdrop, it might be wise to allow the markets to continue to evolve their own structures and transparency, and to reassess how they operate in the future.

## Research on European corporate bond markets

5. The research on corporate bond markets<sup>17</sup> focused on investment grade debt and aimed to assess the price formation and liquidity supply processes in these markets, and whether the market had evolved an efficient structure within which to operate. As with the sovereign-focused work, the researchers made use of theory, interviews and empirical study to form their conclusions, and considered how the European markets compare to those in the US. Their research suggested the following:
- The body of existing empirical literature regarding the US markets would tend to suggest that greater transparency has a neutral or positive impact on trading volumes and reduces spreads. Theoretical analysis suggests that greater post-trade transparency may reduce information asymmetries between dealers, thereby reducing the winner's curse (discussed above), improving both competition and reducing spreads. But, in addition, if the reduction in spreads compresses dealers' profits to an unacceptable level they may choose to exit the market – a particular risk for infrequently traded bonds.
  - Given the impact on dealer profits of reduced spreads, the sellside tends not to want greater transparency within bond markets. Nevertheless, dealers provide both direct transparency (by posting quotes on Bloomberg) and indirect transparency, submitting quotes for inclusion in bond indices (e.g. iBoxx indices). They are aided in the pricing process by the market for credit default swaps, which affords them information on the default risk of an issuer and the valuation attached to that risk.
  - Examining trading in investment grade corporate bonds during 2003-2005, spreads increase with default risk and maturity and decline with trade size (although the size of the decline seems notably greater for sterling bonds than for euro-denominated).
  - Spreads on euro-denominated bonds are tighter than those on sterling bonds – on average during 2005 an effective spread of 10bp versus 20bp. For both, effective spreads are about half of quoted spreads, implying that the average execution occurs at a noticeably better price than would be suggested by quoted bid and offer prices.
  - Spreads on euro-denominated bonds are also tighter than those for dollar-denominated debt, even allowing for the introduction of the TRACE trade reporting system discussed above. European BBB rated bonds in 2003, for instance, had an average effective half-spread of 95bps, compared to 135bps for dollar bonds. The suggestion is made that the tighter European spreads may be the result of greater competition between dealers in

---

17 Biais, Bruno, Fany Declerck, James Dow, Richard Portes & Ernst-Ludwig von Thadden (2006); European corporate bond markets: transparency, liquidity, efficiency; City of London: [www.corpoflondon.gov.uk/NR/rdonlyres/49EC04BD-D5BE-4B05-9182-3A8B9E75E0BA/0/BC\\_RS\\_TT\\_CorporateFULL.pdf](http://www.corpoflondon.gov.uk/NR/rdonlyres/49EC04BD-D5BE-4B05-9182-3A8B9E75E0BA/0/BC_RS_TT_CorporateFULL.pdf)

Europe than in the UK or the US, implying that transparency is only one determinant of spreads. Nevertheless, the researchers' interviews with market participants indicated that, while most were happy with how the markets operate, there was a mild preference across interviewees for more post-trade transparency.

- The detail of bond trades holds significant informational value, particularly for lower rated bonds. However, the report suggests it takes over a day for this information to be assimilated into the price – a delay that may be due to the lack of post-trade transparency.
6. The report notes also that direct retail participation in bond markets differs between European countries, but only in a few countries (Italy, Germany, Belgium) is it significant. In other European countries (including the UK and France) retail holdings of bonds are notably lower than 5% of households' total financial holdings. Retail's direct access to bond markets takes different forms, with banks, brokers and financial advisers all being used.
  7. The researchers use the above observations to make the following policy recommendations:
    - Competition is key to the functioning of the corporate bond markets, and regulatory attention should be focused there. Promoting an integrated EU market and minimising barriers to entry are important ongoing steps.
    - Mandating pre-trade transparency would be difficult to implement, but increasing post-trade transparency might be possible. To mitigate the risk of greater transparency reducing dealers' willingness to provide liquidity, the researchers suggest that such a regime would be limited and focused. They outline an illustrative framework. Post-trade information would be anonymous, would provide only an indication of size, and would be published after a delay of one hour for trades below €1mn, and one day for larger trades. Because of the time delay and the fact that the bond's price may have moved, the authors recommend the reporting of yield spreads rather than prices.
    - The researchers also suggest that retail participation could be made easier through the pooling of retail orders at an electronic, order-driven trading venue. This would allow them to interact directly, reducing the cost of trading compared to the existing situation of banks or brokers working retail orders.



**Pub Ref: 2669**

The Financial Services Authority  
25 The North Colonnade Canary Wharf London E14 5HS  
Telephone: +44 (0)20 7066 1000 Fax: +44 (0)20 7066 1099  
Website: <http://www.fsa.gov.uk>

Registered as a Limited Company in England and Wales No. 1920623. Registered Office as above.