Discussion Paper

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Financial Services Authority

Trading transparency in the UK secondary bond markets

September 2005

Contents

The Financial Services Authority invites comments on this Discussion Paper. Please send us your comments to reach us by 5 December 2005.

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1 Overview

Our reasons for issuing this Discussion Paper

1.1 We are issuing this Discussion Paper to help us develop our policy on trading transparency in the secondary bond markets. The Markets in Financial Instruments Directive (MiFID)[1] will introduce, with effect from April 2007,[2] a comprehensive pan-EU transparency regime for the trading of shares admitted to trading on EU Regulated Markets.[3] Although these requirements will initially apply only to shares, Article 65 of the MiFID requires the European Commission to report, by April 2007, on whether or not their scope should be extended to other asset classes, including bonds. Box 1 describes in more detail the MiFID transparency regime for shares.

1.2 Given the UK's significant interest in the trading of bonds, both from an investor and issuer viewpoint and as a leading trading centre, we are keen to ensure that the UK contributes constructively to the Commission's review. Although this is the primary reason for examining bond market transparency at this time, there are additional factors that make a review timely.

- In a global context, the International Organisation of Securities Commissions (IOSCO) issued a report in May 2004 calling on member country regulators to assess the appropriate level of transparency for their corporate bond markets and what impediments existed to the consolidation of trade data.[4] More recently, in the context of its work on strengthening capital markets against financial fraud, IOSCO has said that it will review the progress that member countries have made in this area since then.[5] Box 4 gives more background to that work.

1 The Market in Financial Instruments Directive [2004/39/EC]. http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/l_145/l_14520040430en00010044.pdf

2 This is the new deadline proposed by the Commission in the context of their proposal to extend the implementation deadline for MiFID by 12 months.

3 A Regulated Market is an EU-defined term for a market that complies with the requirements set out in the Investment Services Directive (which will be replaced by the requirements of MiFID). In practice, it is a market operated by an exchange, though not every market operated by an exchange is necessarily a Regulated Market.

4 'Transparency of Corporate Bond Markets', IOSCO, May 2004. http://www.iosco.org/pubdocs/pdf/IOSCOPD168.pdf

5 'Strengthening Capital Markets against Financial Fraud', IOSCO, February 2005. http://www.iosco.org/pubdocs/pdf/IOSCOPD192.pdf

- There have also been developments on the demand side. Several IOSCO members reported increased retail interest in their bond markets. There has been some indication of this in the UK too, at least in the form of rising investment in bond funds. Probably of greater significance in the UK has been long term investment funds' reweighting of portfolios in favour of bonds. In part, this has been a response to the bear market in equities that ran from late-summer 2000 to the spring of 2003. But for some investors, and in particular pension funds, the increased focus on bonds has been reinforced by other factors, including the impact of accounting standard FRS17[6] and the need to moderate risk exposure as funds become more mature.
- Finally, regulatory interest in bond market transparency has also been stimulated by the implementation in the US of a post-trade transparency regime for corporate bonds using the Trade Reporting and Compliance Engine – TRACE. This is discussed in Box 6.

1.3 Your responses to the questions in this paper will help us develop our policy and, we hope, prove useful in broader EU discussions on these issues.

Scope

1.4 This paper focuses on the **cash** markets for bonds – both the government and non-government sectors. It does not directly consider transparency in related derivatives markets. However, we recognise the strong inter-relationship between trading in the cash and derivatives markets, and consequently the importance of trading information flow between the two. We invite comments on the role of transparency in that inter-relationship, and we will consider extending our review to cover derivatives at a later stage.

FSA/Industry Working Group

1.5 The paper has been prepared by the FSA with the help of a small industry working group. The group, whose members participated on a personal basis rather than as representatives of particular institutions or firms, included representatives of the buy- and sell-sides, as well as issuers, the operator of an Alternative Trading System (ATS) and an academic. The composition of the group was also designed to give the discussions a broad international perspective (see Annex 2). We are very grateful to members of the group for their contributions and for the time and effort they gave in attending meetings and reviewing papers. However, the Discussion Paper itself is the work of the FSA and the paper should not be taken as representing the views of any individual group member.

6 Financial Reporting Standard 17 requires companies to measure pension scheme assets using market values and liabilities using a projected unit method and discounted at an AA corporate bond rate. Companies must recognise the pension scheme surplus (or deficit) in full on their balance sheets. See www.asb.org.uk.

Risks and risk mitigation issues discussed in this paper

1.6 This paper is concerned with risks and risk mitigation issues relevant primarily to our statutory objectives relating to market confidence and investor protection.

1.7 First, we wish to assess whether there is a market failure in the UK secondary bond markets. If that is the case, we then need to establish the causes, including whether current transparency is insufficient, and, if so, what kind of additional transparency would be useful. This assessment will provide our starting point for contributing to the Commission's review.

1.8 At this point, we have reached no conclusions on whether any failure exists in these markets. Indeed, a major purpose of this Discussion Paper is to gather additional information that will enable us to complete an assessment. If there is any market failure, we would expect it to manifest itself in one of two ways:

- *Inefficiency in the price formation process.* For instance, information on current buying and selling interest may be difficult and/or expensive to gather. This may result in some types of participant being unable to trade effectively and pricing that may fail to reflect buying and selling interest efficiently.

- *A failure of best execution.* It may be difficult for investment firms to ensure that they are delivering best execution for their clients, and for clients to judge whether they have obtained it. As a result, clients may face a greater risk of receiving prices that are not the best available in the market at the time.

1.9 There may be further avenues of market failure that we have not identified in this paper. We would be interested in hearing about, for instance, any barriers to entry to the market, or any other types of potential informational inefficiencies that we have not considered.

1.10 Our discussions with industry participants in recent months, including those with the FSA/Industry working group, suggest that there is probably no material market failure in the UK bond markets, at least at the wholesale end. Several members of the group were less certain about the retail end of the market. While it is not part of the regulator's role to promote retail participation as an end in itself, we are interested in whether any aspects of the bond markets' operation (as opposed to non-market factors) may be deterring retail involvement.

1.11 As we have yet to determine whether a market failure exists, we make no policy recommendations in this paper in respect of transparency. Nonetheless, we do need to gather views on whether present transparency in the UK markets is optimal. We also need information on the practical issues that would arise if the Commission proposed any extension of the scope of the MiFID transparency provisions for equities to cover trading in bonds.

1.12 At present, there is considerable pre-trade information available to professional participants in the UK markets. Some post-trade data is also available on an end-of-day basis, but relatively little in real time. For the most part, this transparency is market-led: *regulatory* requirements governing pre- and post-trade transparency are limited. They apply only to trades on exchanges and ATSs, and exchange rules focus more on liquidity commitment than visibility of that liquidity. Over-the-counter (OTC) trading in bonds, the predominant trading space for non-government bonds, is not subject to transparency requirements, reflecting the predominantly professional nature of that trading.

1.13 In section 3 we discuss the role of transparency, drawing on the extensive academic literature, much of which we review in Annex 1. We note how important sufficient transparency is in facilitating market efficiency, fostering investor confidence and supporting investor protection. And we suggest that relative simplicity in establishing the intrinsic value of an instrument, such as a plain vanilla bond, does not detract from the benefits of the marketplace having sufficient information on buying and selling interest for trading to take place efficiently.

1.14 However, we also recognise that transparency should be viewed as a *facilitator* of market efficiency and investor protection, not an end in itself. 'Maximum' transparency is not necessarily optimal. The level and type of transparency that delivers efficiency and investor protection in any particular market needs to take into account the liquidity characteristics of the asset, the market microstructure and the experience and market power of the market's users.

1.15 In the case of the bond markets, there are a number of characteristics that differentiate bonds from equities and which we consider to be particularly relevant to any assessment of appropriate transparency. These include:

- the very large population of less liquid or illiquid bonds;
- the relatively large average trade sizes and low trading frequency; and
- the short life liquidity of many bonds (with relatively active turnover in the first few days or weeks following a new issue but a rapid decline in trading activity thereafter).

1.16 These differences appear to explain, in the main, why the trading methods in UK bond markets are substantially different from those in equities. Whereas the major part of (though not all) trading in UK equities has gravitated to electronic order-book trading. So far this is not the case in UK bond markets. Dealer-provided liquidity remains a central feature of the market and the majority of bond trading in the UK remains dealer-based. This is an important factor when considering the appropriateness of transparency arrangements.

1.17 Given current levels of market-driven pre-trade transparency, industry members of the FSA/industry group could see no case for regulators to mandate

transparency in this part of the trading process. However, some members considered that improved *post-trade* information might assist at the margin in a number of areas, from more efficient portfolio valuation to improved calculation of transaction costs. Some members also thought that greater transparency might encourage more retail participation. However, the group as a whole concluded that transparency was only one of a number of factors determining retail participation, and unlikely to be among the more significant.

1.18 In any event, a major concern of the group was that greater transparency could add significant direct and indirect costs. The group also observed that the fall in transaction costs in the US attributed by a number of studies to the regulatory introduction of post-trade transparency may have resulted from a number of other factors (e.g. greater scope for dealers to hedge their positions). The group pointed out that it was often difficult for studies to isolate the impact of regulatory change from other factors.

1.19 In Section 6, we relate our work to the review that the Commission will undertake next year in the broader EU context. We suggest that review should first identify what problems – if any – exist in the EU secondary bond markets before determining whether additional transparency is required. We then outline the potential practical issues that would arise if there were to be any proposal to replicate any of the MiFID's transparency requirements for equities in the bond markets. It is important that we are able to make an informed and balanced assessment of any new proposals that might be made. This requires us to have sufficient information to be able to assess in some detail the areas where regulatory intervention may potentially be beneficial for those using UK bond markets and those areas where regulatory intervention would be more likely to harm the market (for instance by creating costs disproportionate to any likely benefits or by unreasonably impeding competition or innovation).

Who should read this paper?

1.20 This paper is addressed primarily to investors using UK bond markets; to trading venues, intermediaries and dealers involved in trading in those markets; to bond issuers; and to bond market analysts and commentators. We are interested in the views of non-UK users of, and participants in, the UK secondary bond markets, as well as those of entities and individuals resident in the UK.

Questions

1.21 We have invited responses to a number of questions about issues raised in this paper. We have listed these questions at the end of relevant sections. We have also listed all the questions in Annex 4, where we have regrouped and numbered the questions. It would be helpful if respondents used the Annex 4 numbers when preparing responses.

Box 1: The MiFID requirements for equity market transparency

EU member states are required to implement MiFID with effect from April 2007. The directive introduces comprehensive transparency requirements for all EU trading of any share admitted to trading on an EU Regulated Market. The directive significantly increases the minimum transparency standards for trading these shares compared with those prescribed under its predecessor directive – the Investment Services Directive. Some of the new requirements largely codify higher standards already operating in most Regulated Markets (whether as a result of national regulation, exchange regulation or market forces). However, the MiFID makes a significant new departure for most EU countries in establishing transparency requirements when shares are traded outside Regulated Markets.

The main reason for this extension is to create a transparency regime that addresses the possibility of greater competition between trade execution venues. The directive seeks to ensure consistent minimum transparency standards across the EU for trading the same share, while recognising that the nature of transparency must vary according to the trading methods being used.

The MiFID pre-trade transparency provisions require market operators running continuous order-matching systems to make public aggregated information on orders at each of the five best price levels on each side of the book (if there are orders at those levels). In the case of quote-driven markets, the operator must publish the best bids and offers (price and volume) of all designated market makers. The directive's major innovation in the pre-trade area is the introduction of quoting obligations – in liquid shares – for investment firms that execute client orders as principal on 'an organised, frequent and systematic basis' outside a Regulated Market or Multilateral Trading Facility (MTF). These latter provisions have proved particularly contentious in the market. First, they require Systematic Internalisers to maintain quotes in liquid shares on a continuous basis. Second, they restrict the circumstances in which they may offer price improvement. Systematic Internalisers may not offer any improvement on their quoted price in a share for any retail trade up to the specified Standard Market Size in that share (which seems likely to be in the €50,000 – €100,000 range for the most liquid UK shares) or for any professional trades up to a 'customary retail size' of €7,500.

The directive's post-trade transparency provisions also extend publication requirements beyond Regulated Markets and MTFs. For the first time, EU regulation will require all EU investment firms to publish the price and volume of all completed trades which they undertake outside a Regulated Market or MTF. The directive requires firms to publish the size and price of completed trades as close to real-time as possible (or, at most, no more than three minutes after the trade). The main exception to this is for large risk trades. Here, the directive permits member states to allow deferred publication on the basis of common EU-wide standards.

2 Bond markets in the UK

2.1 In this section, we describe some of the key features of the UK bond markets and identify a number of characteristics central to any discussion of transparency. We note the main segments of the bond markets operating in the UK, the size of the markets, the profile of bond investors, the key liquidity characteristics of bonds and the methods of secondary trading.

The role of bond markets

2.2 Bonds are debt instruments denoting the obligation of an issuer to satisfy a holder's claim to capital repayment (normally at a specified future date) and to interest until repayment occurs. Some bonds are plain vanilla (e.g. a ten year bond with a 5% coupon), but bonds can be structured in many ways – some of them highly complex – to satisfy a wide range of issuer and investor objectives. (See Box 2).

2.3 The bond markets are a core sector of the capital markets in the UK and the rest of the EU. Bonds are the key form of medium and long term financing for governments and, alongside equity, a major financing tool for the private sector. Bonds provide issuers with a means of raising finance for set periods of time, usually at a predictable cost. Issuers use bond financing for both general purposes and to finance (or refinance) specific projects and assets.

2.4 For investors, bonds provide a core savings product. The essence of most bonds is that they offer investors an investment with a higher return than a cash deposit but with lower risk than an investment in equities. The predictable and relatively secure cash flows also make bonds a key asset for investors, particularly insurance and pension funds, needing to hold assets that they can match accurately to their liabilities.

Box 2: Variations in bonds' structures

Bonds generally have three basic features: the par value (which will normally also be the redemption value); the coupon, or interest rate; and the length of time to maturity. But the specific characteristics vary greatly from bond to bond, and in recent years increasingly complex structures have appeared. This means that bonds are often a more complicated asset class for many investors to understand. This box highlights a selection of variations in bonds' structures.

Most bonds provide a fixed rate of interest but a significant minority offer a floating rate, normally set at a pre-determined margin over a specified money market rate. Zero coupon bonds make no interest payments at all. Instead, the investor buys the bond at a (deep) discount to the bond's par value and obtains the equivalent of an interest payment as the discount to par narrows over the life of the bond. A further variation is the step-up bond. As the name implies, such bonds pay a given coupon during an initial, specified period and a higher coupon in following periods. This allows the issuer to defer some interest payment, while rewarding those investors who retain the bond beyond the initial period.

Maturities also differ widely. Most bonds have an original maturity of at least a year, but this can range up to 30 years, and more for some issues. The maturity will depend on the nature and objectives of the issuer. Bonds with an original maturity of less than five years are often issued as medium term notes (MTNs), each tranche drawn down from a broader MTN programme. At the opposite end of the scale, governments and supranational organisations are common issuers, offering long-term debt via very large issues.

The presence of covenants may change the risk and/or payment profile of a bond. Restrictive or negative covenants are employed to limit the future actions of the issuer – e.g. by placing a contractual requirement on the issuer to limit future debt issuance or dividend payments. This aims to protect the bondholders' stream of income. Another type of covenant used is an acceleration covenant, which requires the issuer to repay bondholders early if a default or downgrade in credit rating occur. Bonds may also include provisions to protect the issuer. An extendable bond, for instance, gives the issuer the option to extend the bond's maturity. This will be of value if interest rates rise during the lifetime of the bond and the issuer wishes to continue paying the existing coupons rather than refinancing at a higher rate.

Asset-backed securities (ABS) make use of a pool of loans, leases and/or other assets to provide the income streams out of which bondholders are paid. Mortgage-backed securities do the same with real estate debt. Such securities provide investors with diversified credit risk through the pooling of the underlying assets, although the pools themselves (or tranches within them) may differ in maturity and/or quality. Alternatively, a synthetic product can be created that is backed by a pool of credit derivatives.

Other, complex structures may also be employed to change the risk/reward trade-off associated with a bond, or to vary its characteristics in some respect. An example is the convertible bond. This provides for the bond to be converted into a given quantity of the issuer's shares on set dates, usually at the option of the bondholder. Alternatively, the bond may allow the issuer to force conversion.

Other options may also be built into a bond. Callable, or redeemable, bonds allow the issuer to redeem the bond before it matures. This usually involves a premium being paid to the bondholders (known as a soft call provision) or the issuer paying a lump sum to compensate holders for the loss of future coupon payments. Alternatively, holders may have a put option, allowing them to force the issuer to redeem on given, specified dates.

Market segments and size

2.5 The UK bond markets can be divided into three main segments:

- the UK government securities market (the gilt market),
- the domestic corporate bond market, and
- the international bond market – or, more precisely, the UK share of that market.

2.6 Some market participants prefer a simple segmentation of the non-government markets between the sterling and non-sterling markets, with bonds in the sterling segment including issues by foreign as well as domestic entities. However delineated, the international market is a market for bonds issued into the international marketplace. Generally, they are issued by supranational organisations (such as the European Investment Bank) or corporate issuers wishing to make an issue outside their home country. They are usually issued in a currency other than the issuer's home currency, but this distinction has become increasingly blurred since the introduction of the euro.

2.7 Outside the government sector, the sizes of both outstanding issuance and trading volumes in the different market segments are difficult to measure precisely. We have drawn on a number of different sources of market data, including the Bank for International Settlements (BIS), the UK's Debt Management Office (DMO) and the International Capital Market Association (ICMA). But it is important to bear in mind that the sources compile their data in different ways (including the currency equivalent in which they are expressed). So, the information is not necessarily directly comparable. There is, in addition, an issue of how best to express statistics in terms of currencies for the purposes of this paper. To provide more meaningful comparisons, it has often been practical to use dollar or euro equivalents, rather than sterling figures.

2.8 Data compiled by the BIS puts outstanding UK government securities issuance at a nominal value equivalent to $602.6bn at the end of the third quarter of 2004 (see table below). BIS data logged by issuers' country of residence puts the outstanding value of bonds issued by UK non-government issuers into the domestic market at some $825bn. Even combined, these two segments' outstanding issuance of $1,427.6bn was smaller than the outstanding issuance of UK residents in the international bond market, which stood at $1,721.7bn.

2.9 But this latter figure significantly underestimates the full scale of the UK's share of the international bond market, given that many issues underwritten and traded here are from issuers resident elsewhere. The UK is the major issuance centre for this international market, which the BIS calculates as having outstanding issuance equivalent to some $13.9trn at the end of 2004. Estimates reported by International Financial Services, London (IFSL) suggest that financial firms based in London account for approximately 60% of the book-running of all international bond issues, as well as about 70% of secondary market trading. In addition, UK-based firms are commonly estimated to account for 80% or more of inter-professional trading.

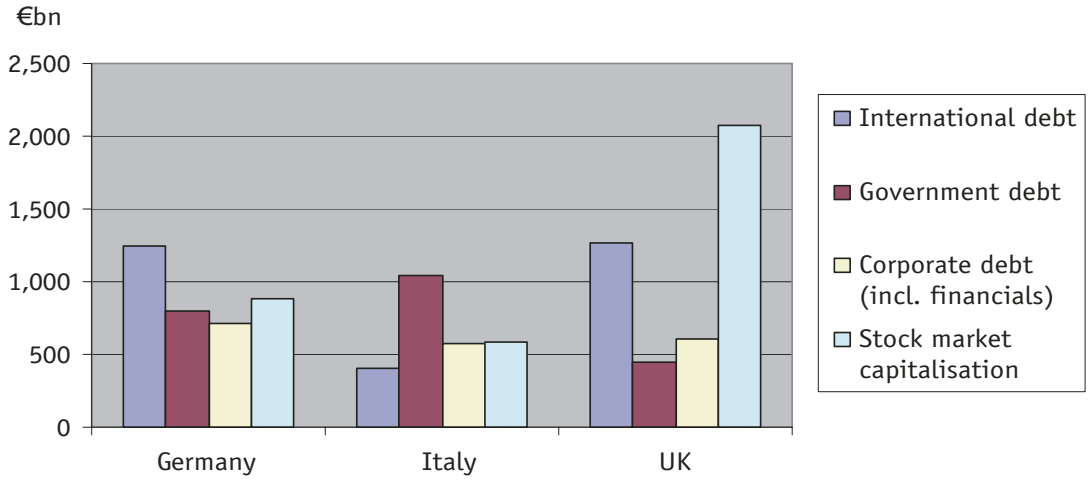
	Total amounts outstanding by residence of issuer (converted to US$bn)				
	Domestic debt securities (September 2004)				**International debt securities (Dec 2004)**
	Governments	**Financial institutions**	**Corporates**	**Total**	
France	1,064.6	597.8	235.6	1,898.0	902.9
Germany	1,078.4	850.7	116.9	2,046.0	1,682.8
Italy	1,414.4	565.0	214.5	2,193.9	549.6
UK	602.6	406.0	419.0	1,427.6	1,721.7
Sub-total	**4160.0**	**2419.5**	**986.0**	**7565.6**	**4857.0**
Japan	6,231.2	1,180.1	726.7	8,137.9	144.1
United States	5,398.7	10,669.7	2,578.9	18,647.2	3,355.7
All countries	**20,161.0**	**16,287.1**	**5,244.2**	**41,692.0**	**13,928.0**

Source: BIS Quarterly Review, March 2005

2.10 In the UK, the purely domestic corporate bond market – and even the total domestic market combining corporate and government issuance – remains smaller than the market value of UK equities. However, this largely reflects the exceptional size of the UK domestic equity market and is not typical of most EU countries. As the chart below (expressed in euros) demonstrates, the balance in Germany and Italy is very different, largely reflecting smaller equity markets.[7]

7 France is excluded from the comparison as the Federation of European Stock Exchanges does not provide market capitalisation data for the individual national markets within the Euronext group.

Debt outstanding versus stock market capitalisation (end-December 2004)



Source: Bank for International Settlements, Federation of European Securities Exchanges

2.11 The overall rate of new issuance in bond markets continues to be substantial. Data from Dealogic show that issuance volumes in the Europe, Middle East and Africa zone (EMEA) reached $1.9trn during 2004 compared to $1.6trn in 2003 – a rise of 15% (in dollar terms[8]) – continuing a period of ongoing growth since 2000. Of total EMEA volumes, 14% was made up of government and supranational issuance. But this was much smaller than corporate issuance, as the table below indicates. Issuance in Europe by non-government entities has increased by about 50% since the introduction of the euro, aided in part by the rapid growth of the credit derivatives markets.

Issuance type	Percentage of total issuance volume
Governments and supranationals	14
Investment grade corporate bonds	36
High yield corporate bonds	2
Asset-backed securities	9
Mortgage-backed securities	11
Agencies	5
Other (Pfandbriefe, medium term notes, etc)	23
	100

Source: Dealogic

8 Note that the euro appreciated against the US dollar by about 8% over the same period.

Investors

2.12 In most countries, by far the largest holders of bonds are institutional investors, particularly insurance and pension funds. In the UK, institutional investors dominate the market. Some 60% of UK gilts (by market value) are held by UK insurance companies and pension funds, with foreign investors the second largest holders (some 24% at end-March 2005).[9] Recent research by the Investment Management Association (IMA) indicated that bonds made up 37% of assets managed by IMA members in the UK, with managed pension funds and insurance funds allocating 35% and 51% respectively of their total funds to bonds. The research also indicated that these funds have continued to increase their investment in bonds.

2.13 By contrast, bonds are a less common direct investment for UK retail investors. It is estimated that just 1% of UK households are direct holders of UK government securities (gilts), and even fewer directly hold corporate bonds. This compares with an estimated 20-30% of households that own shares.[10] However, UK indirect retail participation in the bond markets has been growing. IMA figures indicate that funds under management in most types of bond funds have been rising. Between 2001 and 2004, unit trusts and open ended investment companies (OEICs) increased their funds in UK corporate bonds from £12.9bn to £23.0bn, in UK gilts from £2.8bn to £3.5bn, and in other UK bonds from £5.3bn to £8.9bn.

2.14 Direct retail holdings of bonds appear to be significantly more extensive in a number of other EU countries, reflecting different domestic factors. For example, data from the European Retail Savings and Investments Databook 2004 indicates that Italian households' direct investment in bonds accounted for 42% of total Italian retail savings and investments during 2003. This made Italian households the biggest direct retail investors in bonds in Europe. The Argentine default of December 2001 was estimated to have affected 450,000 Italian retail investors, who between them held 15% of the $102.6bn of debt in default. In Denmark, where retail mortgages are pooled and a mortgage-backed bond issued, there is also significant retail investment in bonds. Direct household investment in the asset class accounted in 2003 for nearly 20% of total Danish retail savings and investments. However, the fact that retail investors have a relatively large proportion of their savings in bonds does not necessarily mean that they are also active or significant users of the secondary markets. In the US, there is certainly some indication that retail investors may be more active than previously supposed. TRACE statistics show that trades valued at less than $100,000 account for 65% of the total number of trades in the corporate bond markets. Even so, these trades still represent less than 2% of total trading value in that market.

9 Data from Office for National Statistics.

10 Office for National Statistics.

Trading volumes and liquidity characteristics

High overall trading value

2.15 There is a common perception of bonds as 'buy and hold' investments that are seldom traded. While this is often so, it does not hold in all cases. Certain sectors of the bond markets and certain issues are heavily traded. In general, government bond markets are considerably more liquid and active than corporate bond markets. This reflects not only the natural, ongoing investment interest in top credit quality, but also the central role of government debt in liquidity management and as prime collateral in financial markets. Some corporate bonds are also actively traded, but not on the same scale as liquid government issues.

2.16 The table below provides data from ICMA's bond trade reporting system, TRAX, and gives an indication of the full scale of member firms' European bond trading activities.[11]

	Secondary market turnover (US$trn)	
	Total excluding repos[12]	Total including repos
2001	24.6	126.1
2002	26.9	127.7
2003	34.7	144.1
2004	40.7	163.3

Source: ICMA

2.17 Overall, the value of secondary bond market turnover in Europe comfortably outstrips equity market turnover. Data from the Federation of European Securities Exchanges indicates that the value of equity trading on its members' exchanges during 2004 totalled €11.2trn, or the equivalent of approximately US$13.9trn – much lower than the bond turnover data in the table. In the UK, gilt market turnover alone outstripped trading in UK equities at the London Stock Exchange (LSE) in 2004 – £2.9trn compared with £2.3trn for the equity market.

2.18 Although the high value of bond market turnover suggests a highly liquid market, the liquidity profile of the market and the liquidity characteristics of bonds are significantly different from equities. These differences are important in any assessment of transparency. Below, we highlight three specific differences.

11 The TRAX system collects and stores reports of ICMA members' secondary market trading in bonds (although some small, retail trades may not be reported). We are grateful to ICMA for providing data from TRAX for this Discussion Paper.

12 A repo is a sale and repurchase agreement, under which bonds are sold to a counterparty but with an agreement for the bonds to be repurchased at a future date. These agreements are used to facilitate securitised borrowing and stock borrowing.

Liquidity concentration

2.19 Governments, which are almost exclusively dependent on debt issuance for medium and longer term finance, are normally large and regular borrowers. They also need the markets in their bonds to be liquid, both for the smooth running of the financial system generally and to ensure that sufficient stock is available at critical points of the yield curve to allow orderly interaction with related futures markets. The largest gilt outstanding at 30 June this year, Treasury 8% 2021, had a nominal value of £17.2bn. There were a further 16 gilt issues with nominal values outstanding in excess of £10bn. Some of these larger issues can be heavily traded. Invariably, the government stock that is cheapest to deliver into the long interest rate future enjoys exceptional activity. In 2003–2004, trading in Treasury 8% 2013 accounted for approximately 17% of total gilt trading for this reason.

2.20 Some supranationals (such as the European Investment Bank) make sterling denominated issues of several billion pounds, but corporate sector issues above £1bn (or its equivalent) are in the minority. One of the fundamental differences between corporate bonds and equity is that of issue size. Whereas, a corporate normally has only a single fungible class of equity (which can be added to or partly retired over time), it may make multiple issues of bonds, for different time periods, for different purposes and with different characteristics. It is not uncommon for larger companies to have tens of bonds outstanding, and some financial groups may have hundreds or, in some cases, several thousand. While there are some 8,000 listed equities in the EU, ICMA's TRAX database contains more than 200,000 bond issues. This results in a very long tail of relatively small, and generally highly illiquid, issues – an important point in any transparency discussion. Data from ICMA, in the table below, reflect this. The figures are for trading on a typical day in June 2005. The data indicate that, of 5,273 issues traded that day – discounting domestic government issues and repo-related trading – fewer than 500 traded ten times or more, and fewer than 40 traded 50 times or more.

Number of trades on given day	Number of issues trading within that range
400+	1
300-399	2
200-299	3
100-199	7
50-99	25
10-49	434
4-9	1,197
2-3	1,713
1	1,891

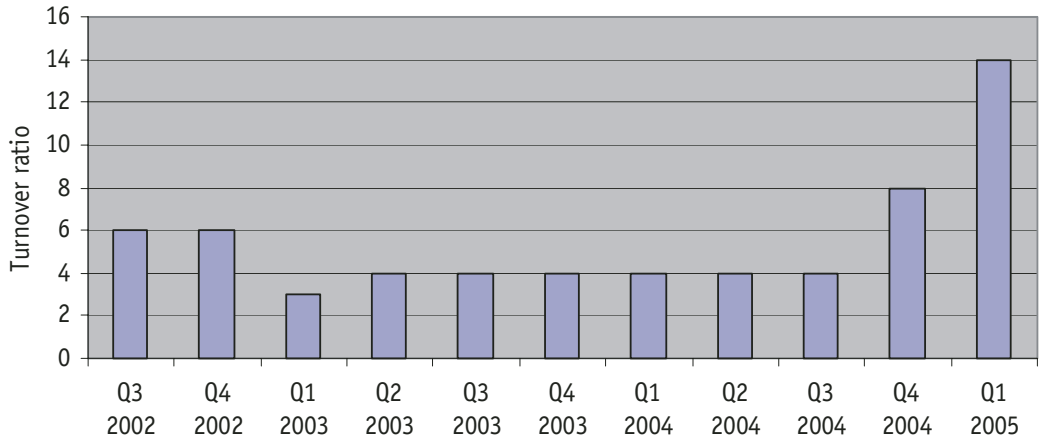
Source: ICMA

Short life liquidity

2.21 A second characteristic of the bond market is that not only is there a high concentration of liquidity among a relatively small number of issues but that the liquidity profile of many issues changes far more dramatically over time than that of most equities. This reflects the fact that although some bonds are actively traded on a regular basis, the market overall is much more of a 'buy and hold' market than the equity market. While most equities experience trading spikes around financial announcements and corporate events, many, especially index stocks, also see material levels of daily trading on an ongoing basis. By contrast, many bonds trade very actively during the first few days after issue but then trade very little over the rest of their lives.

2.22 The chart below shows the turnover ratio in the Treasury's 5% 2014 gilt, issued in July 2002. The ratio shows the nominal value of trading (excluding repo) over each quarter relative to the nominal amount outstanding of the issue at the end of that quarter. The ratio, published by the UK Debt Management Office, indicates that liquidity remains high, with the ratio never falling below three (i.e. the quarterly value of trading does not fall below three times the amount outstanding of the issue). The upswing in the turnover in the most recent two quarters reflects something special about the issue: in this case, the stock was becoming the core stock for delivery into the 10 year gilt futures contract.

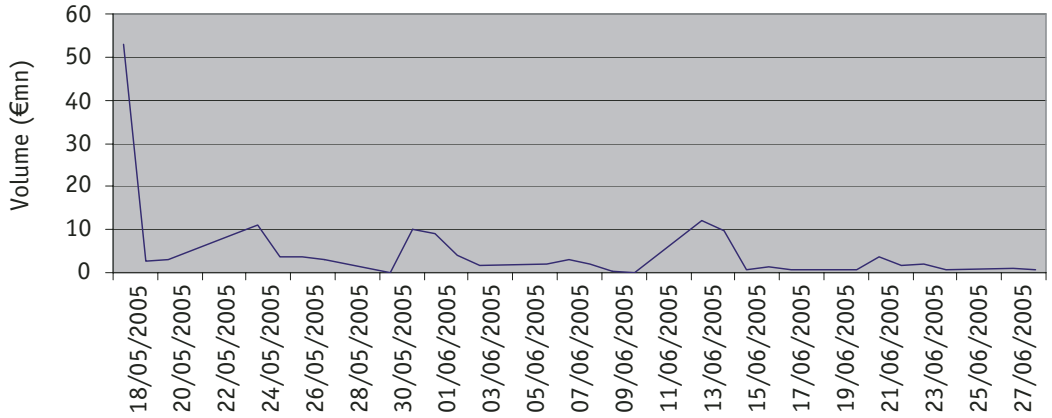
UK Treasury gilt (5% 2014): Turnover ratio



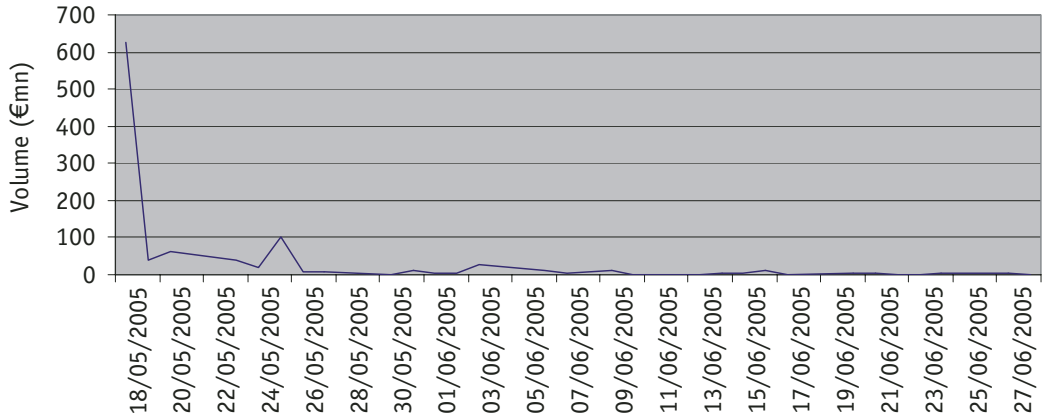
Source: Debt Management Office, using London Stock Exchange data.

2.23 By contrast, the two charts below show the first few weeks of trading in two non-government bonds issued this spring - a five-and-a-half year, 7.375% Bank of Moscow Eurodollar bond and a 4% General Electric Capital medium term note, announced on 17 and 18 May, respectively. As the charts indicate, the profile of trading in these bonds is heavily skewed towards the first day or two of trading. Very quickly, however, the volume of trading plummets and then tends to stay low. While this trend does not hold for all non-government bonds, we believe it is representative of the trend for the vast majority of corporate debt.

Bank of Moscow bond (7.375% 2010): Volume of trading



General Electric Capital medium term note (4% 2008): Volume of trading



Source (both charts): ICMA

Large trade size/ low trading frequency

2.24 Even when a bond attracts a high value of trading, this does not mean that it trades in the same way as a liquid equity. Institutional dominance of the market and low levels of active retail participation in secondary trading mean that the average size of a bond trade tends to be substantially greater than that for an equity. For instance, statistics from the LSE indicate that, during 2004, the average trade size for gilts was £5m, compared with an average trade size in UK equities of some £43,000. The table below shows data from ICMA's TRAX system on the dispersion of trades by size on a typical day in June this year. The data groups trades by size and currency, with the trade size bands in euros (or equivalent thereof). The data indicates that average trade sizes are of between €1m and €2m. Trades in excess of €2m, or even €5m, are not uncommon.

Trade size (€ or equivalent thereof)	Number of trades by currency of issue			
	Euros	US dollars	Pound sterling	Other
5mn+	1,163	667	218	98
2-4.99mn	1,141	1,256	265	97
1-1.99mn	1,194	1,167	290	136
0.5-0.99mn	941	1,104	246	199
0.25-0.49mn	754	897	284	170
0.1-0.249mn	1,536	1,205	327	318
0.05-0.099mn	1,040	1,063	227	359
Below 0.05mn	2,203	2,271	735	1,119
Total number of trades	**9,973**	**9,630**	**2,592**	**2,496**
Average trade size (€ equivalent)	**1,587,353**	**1,794,931**	**1,962,042**	**1,087,710**

Source: ICMA

2.25 Not only are average trade sizes larger than equities but trading frequency is significantly lower. Even the most heavily traded issues in the gilt market seldom trade more than 200 times a day – compared with at least ten times that figure for the most liquid equities. Similarly, the ICMA data show that, on a representative day in June this year, only about six non-government bonds (from a total of over 5,000 that traded that day) experienced 200 or more trades (excluding repo-related trades). This reflects the different investor profile in the bond markets compared with the equity market, with fewer active investors overall and a far higher proportion of institutional investors.

Trading mechanisms and trading venues

2.26 The predominant form of trading in UK bond markets is based around the bond dealer. Dealers trade with clients either on a purely bilateral basis or, increasingly in some market segments, via multi-dealer trading platforms. There is also significant inter-dealer trading, either directly or, more commonly, through inter-dealer brokers, who provide dealers with anonymity. Open order-book trading, as used in equity markets, has yet to establish a place in the UK bond markets.

2.27 Institutional investors normally trade directly with dealers. UK retail investors typically buy and sell bonds through a broker, in the same way as they buy and sell equities. In the case of gilts they also have the option of dealing through the DMO's Gilt Purchase and Sale Service.[13]

13 www.dmo.gov.uk/gilts/buysell/f1buysell.htm.

The dealer market

2.28 The predominance of market making as the preferred trading structure for bonds is for the most part a direct reflection of the liquidity characteristics of most bonds – high average trade size and relatively low trading frequency.

2.29 As bond dealers are not in general rewarded via commission, market users pay for this access to dealer liquidity through the dealer's bid-offer spread. In markets for government securities the bid-offer spread is, effectively, the market makers' charge for providing liquidity. In the markets for corporate bonds, where there is a greater possibility that some participants may hold private information about a security's fundamental value, the bid-offer spread may additionally include a premium to give the market maker a degree of protection from being targeted by better-informed participants.

2.30 Nevertheless, where dealers compete to make markets the bids and offers quoted still need to be sufficiently competitive to attract order flow. As we note in section 4, the spread is not necessarily sufficient to cover the costs associated with making markets. While firms try to make money from market-making, for some firms it is an activity that is less important as a profit centre in itself than for providing clients with access to a full range of services.

2.31 Although there are a large number of investment firms providing dealing services in the bond markets, most parts of the market are dominated by the larger bond dealing houses, most of whom are also significant players in the primary markets. In the UK gilt market, there are 16 market makers/primary dealers in government bonds (and four inter-dealer broker firms).[14] In the broader bond market, ICMA has approximately 40 reporting dealers. ICMA's analysis of dealers per bond (based on data from its reporting dealers) shows that indicative bid/offer quotes were available in June in more than 9,400 issues. Of these, more than 1,100 had ten or more dealers, nearly 1,800 had six to nine dealers, and more than 4,300 had between two and five dealers. About 2,200 had only one dealer.

2.32 Much dealing continues to take place by telephone. However, an increasing number of dealers also provide electronic, bilateral order-execution facilities. These operate either through proprietary systems or through arrangements with third party providers, such as data vendors. Three primary dealers provide a dealing service (through Bondscape) for retail size trades in government and a number of other bonds. The service shows brokers the best bid and offer in these bonds currently available from the participating price makers.

14 Names of the firms are listed in the DMO Annual Review 2004/05.

Multilateral dealer platforms

2.33 While some data vendor facilities bring together a wide range of quotes, they do not provide a formal marketplace. However, the number of organised marketplaces has been increasing. The LSE has traditionally provided the principal organised marketplace for securities trading in the UK. The gilt market, in particular, operates largely under LSE rules, with all Gilt-Edged Market Makers (GEMMs) obliged to make quotes on request and to deal. The LSE also provides a marketplace for corporate bonds. This also operates on the basis of bilateral trading and market maker obligations. However, most corporate bond trading takes place off-exchange.[15]

2.34 More recently, other organised trading venues have developed. These multilateral dealing platforms provide electronic trading with participants able to execute against quotes – displayed or requested – from a number of dealers and trade at the most competitive price. Some of these platforms operate on a business-to-business basis, with participation confined to dealers. Others operate business to customer models with dealers providing trading to a wide range of professional customers.

Trends

2.35 The trend towards more automated, multilateral trading facilities has been driven by market pressures to reduce transaction costs – which it appears to achieve. In broad terms, the switch to this form of trading has been greatest in the more liquid sectors of the market. But even here the extent of the transition has varied considerably. While multilateral trading facilities have achieved a significant market share in the overall trading of EU government bonds, this has been far more pronounced in Eurozone than in sterling issues. A recent report by The Bond Market Association[16] indicated that average daily turnover during 2004 reached €25bn across the MTS Group's eleven cash markets (which specialise in Eurozone government issues) – with a further €60bn of repo-related trades. TradeWeb and BondVision had equivalent figures of €8bn and €3bn respectively. Multilateral dealer facilities have also made some inroads in the non-government market, but bilateral dealer trading continues to be the predominant form of trading, particularly in the less liquid issues.

15 Most issuers arrange for their bonds to be listed on an exchange, generally to enable institutional investors and fund managers that are subject to certain investment restrictions to purchase the bonds. Although these bonds are capable of being traded on-exchange, most trading takes place off-exchange.

16 http://www.bondmarkets.com/assets/files/PriceTransparencyStudy_april05.pdf.

Box 3: Some key differences between bonds and equities

There are significant differences in the characteristics of different assets that may influence the way in which they are traded and the transparency levels that support the market's efficiency. In the case of bonds compared with equities, one can observe that bonds:

- normally provide a much more predictable (nominal) return to the investor, but are much less likely to be bought for the purpose of capital growth;
- can be priced more easily, using fair value techniques (although this ability may be eroding);
- are less influenced by changes in an issuer's profits (unless this threatens the issuer's credit rating);
- can be priced relative to a benchmark;
- are more varied in their structures, even across bonds issued by a single issuer;
- probably have a wider variance in liquidity from the most liquid to the least, with a much 'longer tail' of less liquid issues which trade infrequently;
- are more likely to be 'buy and hold' assets, with most trading occurring within the first few days of issue;
- are traded in far larger transaction sizes and tend to have much larger denominations;
- have a lower direct participation by retail investors, at least in the UK;
- are often more likely than equity to be traded off-exchange;
- are more likely to have a listing outside the jurisdiction in which the issuer is located.

Summary

2.36 A number of broad conclusions emerge about the markets for bonds:

- The level of outstanding debt is huge, and has continued to grow in recent years. Overall secondary market trading volumes in the UK are significantly higher than those for equities.
- Liquidity tends to be concentrated in only a subset of issues. This is particularly true of corporate bonds. The profile of trading across the lifetime of a bond can also differ substantially from issue to issue.
- Trading takes place in much larger average size and with less frequency than in equities. Dealer liquidity plays an important role in the trading process.
- Trading is fragmented. OTC trading continues to dominate in most bond issues, although multilateral trading venues have made some progress in recent years to gain volumes in the very most liquid issues.
- The profile of investors differs between countries, with retail participation in some jurisdictions being considerably higher than in others, such as the UK.

3 The role of transparency in secondary bond markets

3.1 This section sets out our general approach to transparency and summarises the role that transparency can play in secondary markets.

3.2 Trading information has both a pre-trade and a post-trade dimension. Pre-trade information relates to current trading interest. Transparency of orders and/or dealer quotations provides the marketplace with information on the quantities in which market participants are willing to trade, and at what prices. Post-trade information relates to the prices and volumes of completed transactions. Transparency in this case informs market participants and investors about the most recent trading, helping them to assess both market trends if they are intending to trade and the quality of trade execution they have achieved once they have done so.

3.3 The extent to which market participants are willing to reveal their trading interest, and to whom, varies considerably. The same applies for trades they have completed. This can raise issues of the balance between individual participants' desire not to reveal this information and the wider demand for access to information in the interests of pricing efficiency and investor protection.

The FSA's general approach

3.4 We think that in most circumstances transparency facilitates market efficiency, fosters investor confidence and strengthens investor protection. But we recognise that transparency is not an end in itself. Total transparency is not necessarily optimal, and appropriate transparency levels may differ from market to market. We recognise also that there can be trade-offs between transparency and liquidity, and that in some cases access to liquidity pools may be at least as important as what is published and when.

3.5 The importance of sufficient levels of market transparency is widely recognised by securities regulators internationally. For example, IOSCO states that 'regulation should promote transparency of trading' (Principle 27) and expands on this by stating that 'timely access to relevant information about secondary trading allows investors to better look after their own interests and reduces the risks of manipulative or unfair trading practices'.[17] IOSCO's work on bond market transparency is summarised in the following box.

Box 4: IOSCO's work on bond market transparency

In May 2004, The Technical Committee of IOSCO issued a report, 'Transparency of Corporate Bond Markets'. The report discussed, among other things, the characteristics and structure of the secondary bond markets and regulatory reporting regimes in different jurisdictions. The report found some considerable differences in the way in which countries' bond markets were organised, with market infrastructure, existing levels of transparency and the types of direct participants all differing. You can access the full report at: www.iosco.org/library/pubdocs/pdf/IOSCOPD168.pdf.

The report noted the growth in corporate bond markets, the increased complexity of products being traded and indications in some countries of material retail interest. The Technical Committee put forward five core measures for regulatory authorities to note. These addressed both transparency to the regulator (through transaction reporting or equivalent data collection) and transparency to the market. With respect to the latter, the report proposed that:

1) regulatory authorities determine the appropriate level of corporate bond market transparency to facilitate price discovery and market integrity (Core Measure 4);

2) where transparency of trading data existed, any impediments to its consolidation be identified and, if appropriate, regulatory action be taken to remove them (Core Measure 5).

In considering the appropriate level of transparency, the report stated that regulatory authorities should take into account factors including:

- size of the market;
- frequency of trading of particular bonds or groups of bonds;
- participants in the market;
- credit ratings of the issues;
- trading methodology;

17 IOSCO Objectives and Principles of Securities Regulation (IOSCO, September 1998), Principle 27, as expanded upon in paragraph 13.5.

- potential effects of disclosure on the liquidity of the market; and
- whether the bonds were listed and subject to the existing exchange transparency standards.

In February 2005, IOSCO issued a further report, 'Strengthening Capital Markets against Financial Fraud' (www.iosco.org/library/pubdocs/pdf/IOSCOPD192.pdf). The work underlying the report was prompted by a series of financial scandals arising around the world. The Technical Committee observed that in many countries the price-setting mechanism in bond markets was less transparent than in equity markets and that opacity in the bond markets may disguise issues that might otherwise be noted by investors. IOSCO will now be reviewing the progress which members have made in implementing the recommendations of the May 2004 report discussed above.

The main economic arguments

3.6 A considerable body of research exists on the impact on markets of transparency, although this has, until recently, focused heavily on equity markets. Annex 1 summarises the academic literature we have reviewed.

3.7 In general, the academic case for transparency is that it:

- increases the efficiency of the price discovery process;
- stimulates more competitively priced quotes/orders; and
- reduces transaction costs.

3.8 Improvements in any of these areas, if achievable, may consequently attract greater participation in a market by fostering confidence among existing and potential participants that the market operates fairly and efficiently. To the extent that increased participation and activity reduces any liquidity premium demanded by market users, it should also reduce the cost of capital for issuers. In any event, transparency is likely particularly to benefit uninformed market users, increasing their ability to assess market activity and to trade more effectively.

Transparency and liquidity

3.9 However, the academic studies demonstrate that the relationship between transparency on the one hand and participation and liquidity on the other is complex. On the positive side, if greater transparency attracts more investor activity, dealers may find it easier to manage their inventories. This may enhance their capacity to make markets, creating a virtuous circle of both dealer- and investor-driven liquidity increases. In addition, transparency may help dealers who are less well-informed than some other participants to price more efficiently and better control their risk. This too has the potential to enhance liquidity provision.

3.10 On the negative side, transparency may in some cases reduce participation. This may occur if transparency excessively erodes the returns available to better informed market participants, or if the risk/reward ratio for some market makers becomes unacceptable. The latter could occur in several ways. For instance, any requirement for a firm to maintain a public quote (i.e. to commit capital) in significant size inevitably increases that firm's risk. This would also be the case if firms had to publish the full details of all larger risk trades before they had an opportunity to lay off the position. Without a delay, the market maker would be exposed to responsive action by other market participants, increasing the risk that the position could only be unwound at a loss. (These considerations become relatively more important when the market for a particular bond is thin, i.e. when there are few active dealers, infrequent trades and less scope for dealers to lay off their risk.)

3.11 In addition, some studies demonstrate that firms that make markets primarily to obtain trading information may have less incentive to do so if transparency increases. When a firm makes a market largely to obtain order-flow information that it can subsequently exploit in its trading, that information is only of value if it is not widely available. If post-trade transparency is required, revealing the nature/scale of the firm's dealing (via the detail of the trades that take place), the value of the information to the firm would diminish and the firm would have less incentive to make a market.

3.12 Whether higher levels of transparency deter liquidity provision in practice depends on the balance of the above factors. Of particular importance to market makers is the extent to which any reduction in (traded) spreads is adequately compensated by an increase in clients' trading volumes.

3.13 Clearly, there are costs and benefits in all scenarios, and this implies that optimal transparency differs from *maximum* transparency. At the extreme, the degree of transparency that might seem optimal for gauging best execution will be counterproductive if it also reduces the opportunities to trade. In most cases, appropriate transparency levels need to be a function of the demand for liquidity and the microstructures by which it is delivered. This may mean, for instance, that in some markets pre-trade transparency has the more important role to play; in others, post-trade transparency may be more important.

Significance of trading transparency in bond pricing

3.14 Discussing appropriate transparency for any particular market often includes debate on the importance of trading transparency to the 'correct' pricing of the asset in question. The argument is sometimes made that trading transparency is less essential for bonds than for equities because there is more information available to assess the intrinsic value of bonds. However, the apparent ease with which some assets can be valued does not necessarily

remove the importance of the marketplace having sufficient information as to the prices and in what quantities market users are prepared to trade, or have recently traded. Moreover, there is not always a single or constant view of value, and a variety of factors may influence the trading price for a security at any one time. Box 5, below, discusses in greater detail the valuation of bonds and how this may interact with transparency information.

Box 5: Bond valuation and secondary market pricing

The intrinsic value of a bond is normally assessed by calculating the present value of the bond's future cash flows, including both the periodic interest payments and the final repayment of principal. The present value depends on, and therefore varies with, the rate of return at which the market discounts those cash flows.

In the government bond market, the rate of return is influenced largely by macroeconomic trends and investor views on factors such as the inflation outlook. Normally, macroeconomic information that is likely to affect the value of government bonds is widely available. Where the government of a developed country is issuing bonds in its own currency, credit risk is not normally a factor (although a government can effectively default by destroying the real value of bonds through inflation). As a result, government debt is usually easier to price than many other financial instruments, including equities.

Valuing corporate bonds is more complex. Here, credit risk becomes a significant factor, with respect both to the issuer generally and to the given bond issue. In the latter case, factors that may affect the credit risk include the priority ranking of the bonds, the nature of any security backing the bonds and the terms of the covenants attached to an issue. Many institutional investors monitor closely the credit status of issuers, but for the most part the market relies heavily on the credit rating agencies (CRAs) to provide investors with an independent view of the credit quality of bonds and their issuers on an ongoing basis. The ratings they assign provide investors with a tool to compare the creditworthiness of one issuer (or issue) to that of another. Investors then determine the additional return they require over the risk-free rate of return for the life of the bond to compensate for the credit risk. This is often expressed as a yield spread (e.g. 75 basis points) over the yield of a similarly dated ('risk free') government bond.

Pricing will be further influenced by several other factors. Investors normally require a higher return where the bonds are less liquid and cannot be readily sold. They may also require higher returns for issues where there is less information about the issuer in the public domain and they may have concerns about potential information asymmetries.

Although overall there is more certainty attached to much of the information needed to value bonds compared with that needed to value an equity, structural complexity makes some bonds more difficult to value. In these cases, current information on the way the market is pricing them tends to become relatively more important. Pricing has in any event come to be increasingly influenced by developments in the interest rate and credit derivative markets. Interest rate derivative markets, in particular, are hugely liquid markets and the interest rate swaps curve has a major influence on cash market pricing. In addition, the availability and pricing of credit default swaps (CDS) may affect how willing some investors are to buy a given corporate bond and the price at which they will trade. It could be argued that, at least in some circumstances, the level of transparency in the *derivatives markets* is at least, if not more significant for pricing in the cash market than the cash market's own transparency levels.

Questions (See also Annex 4)

Q 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?

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

4 Existing transparency in UK secondary bond markets

4.1 This section describes the extent to which the UK bond markets are transparent. In broad terms, the three main features of present secondary market transparency are that it:

- derives more from market forces than regulatory intervention;
- is characterised by more pre-trade than post-trade transparency; and
- consists largely of dealer quote information (as opposed to public limit order information that characterises most equity trading).

Regulatory requirements

4.2 The main focus of UK market regulation currently falls on organised marketplaces, notably those operated by exchanges. The Recognition Requirements for Recognised Investment Exchanges (RIEs) require them 'to ensure that business conducted by means of their facilities is conducted in an orderly manner and so as to afford proper protection to investors.'[18] Our guidance on complying with this requirement states that, in determining whether an exchange is compliant, we may have regard to whether the RIE's arrangements and practices ensure:

- sufficient pre-trade transparency taking account of the practices in those markets and the trading systems used; and
- sufficient post-trade transparency taking into account the nature and liquidity of the specified investments traded, market conditions and the scale of transactions, the need (where appropriate) to preserve anonymity for members and clients for whom they act, and the needs of different market participants for timely price information.'[19]

18 See The Financial Services and Markets Act 2000 (Recognition Requirements for Investment Exchanges and Clearing Houses) Regulations 2001 at: http://www.legislation.hmso.gov.uk/si/si2001/20010995.htm

19 See Section 2.6 of the Recognised Investment Exchanges and Recognised Clearing Houses Sourcebook (REC), at: http://fsahandbook.info/FSA/handbook.jsp?doc=/handbook/REC

4.3 As described in section 2, the LSE provides markets in UK government and other bonds based on a market maker system. The LSE requires designated market makers to make firm quotes on request but does not require them to maintain public quotations.

4.4 In respect of post trade transparency, the LSE publishes immediately the price and size of trades in gilt-edged securities up to a consideration of £50,000 (£50,000 being the threshold below which a bond trade is deemed to be of retail size).[20] Larger trades are considered wholesale and are protected by not being published. In the case of non-government bonds, the LSE publishes immediately details of all riskless trades that a member crosses between clients, regardless of size. It also publishes, the following business day, the price of risk trades (where the member executes the trade against its own book) but not their size.

4.5 Beyond the exchange environment, we introduced in 2004 a regulatory framework for the operators of Alternative Trading Systems (ATSs). The ATS Standards differentiate transparency requirements by asset class and, to an extent, according to the nature of the trading system in place at the ATS.[21] Broadly, the transparency requirements placed on the operators of bond trading ATSs require them to:

- make available to users sufficient information about quotes and orders to allow fair and orderly trading; and
- publish information on completed trades in benchmark bonds (e.g. debt issued by EU governments, supranationals and AAA-rated corporates with an original issue size of €1bn or more) within 30 minutes of the time of trade.

4.6 There are no regulatory requirements for over-the-counter (OTC) trading in bonds. That is the case whether or not the trades are in bonds that are subject to transparency when traded on an RIE or ATS.

4.7 Regulatory requirements and transparency levels vary across other EU member states. This reflects different regulatory approaches, different market structures and a different mix of trading methods. The NASD's introduction of post-trade transparency in the US corporate bond markets is discussed in box 6. The development of transparency in the US government bond markets has been very much market-driven.

20 LSE rules require trades, once agreed, to be reported within three minutes. Details are then published immediately.

21 See Chapter 5 of the Market Conduct Sourcebook (MAR5) at: http://fsahandbook.info/FSA/handbook.jsp?doc=/handbook/MAR/5, and the associated Policy Statement at: http://www.fsa.gov.uk/pubs/policy/ps153.pdf

Market-driven transparency

Pre-trade transparency

4.8 Although current UK regulation does not prescribe any specific public disclosure requirements for pre-trade information, in practice considerable pre-trade transparency exists in the bond markets, and this has been increasing. Members of the FSA/industry group attributed this to the market pressures to exploit today's hugely increased scope to disseminate information rapidly, widely and cheaply. The buy-side has demanded more pre-trade transparency, and dealers have been under greater competitive pressure to supply it to remain on institutions' dealing lists as the latter impose more rigorous controls on their dealing costs.

4.9 Dealing firms that operate other business lines – as most of the larger dealers do – have additional incentives to provide an active dealing service in the secondary markets. Issuers see the availability of a secondary market as an important consideration for potential buyers of their debt, and its absence as likely to increase their cost of funding. According to our industry group, larger, more influential issuers (including governments) often consider a dealing firm's share of the secondary market to be a key factor in the allocation of primary market and other business. This gives firms a considerable incentive to compete in the secondary market and be more pre-trade transparent, even to the extent of operating their cash market activity at low levels of profit or a loss.

4.10 Pre-trade information arrives in the marketplace largely through the various arrangements of individual dealers. In broad terms, dealers have three channels (over and above the telephone) to disseminate prices. They can:

- use proprietary systems to which their clients have access;
- use a third party to 'host' their data display (and in some cases provide automated order-routing as well); or
- participate in a trading platform where they provide quotes in competition with other dealers under the rules and procedures of the trading platform.

4.11 The use of data vendor facilities to display quotes (and offer automated trading facilities) has become increasingly common in recent years. For example, more than 90 dealers advertise quotes in Europe via Bloomberg, whose functionality allows users to view a wide range of these quotes on a bond-by-bond basis. The screen shows (among other things) the names of the quoting firms, their bids and offers and, in many cases, the volume available on either side. Each dealer determines the nature of its quote (e.g., its size), whether it is firm or indicative and whether, and if so how, it can be executed against.

4.12 Reuters, too, provides an electronic trading service in Europe – Reuters Trading for Fixed Income (RTFI). RTFI provides access to real-time data and prices in more than 12,500 instruments, including government and corporate debt, as well as news and analysis tools. Liquidity providers can post prices on a firm or indicative basis, with RTFI providing the ability to view a montage of all quotes for a given instrument. Users can also make use of the system's request-for-quote functionality, on a single- or multi-dealer basis. Other providers, such as Thomson and Telerate, offer similar services.

4.13 The development of multilateral trading systems in recent years has been driven as much by market pressure for greater efficiency as for greater transparency. Most of these systems focus on government bond markets but some, such as MarketAxess, provide trading in a wide range of corporate bonds. The nature of the pre-trade transparency varies to suit both trading methods and the nature of the participants permitted access. Most systems are multiple dealer platforms, providing users with current bid and offer prices, usually with some indication of the volumes available at these prices. Some quote-driven trading involves posting indicative rather than firm quotes, with the system making use of 'request for quote' functionality when a user indicates an interest in a quote that has been posted. However, a major difference between the systems are the users. Some systems, such as EuroMTS and BrokerTec, provide trading facilities for the dealer community, while others, such as TradeWeb and MarketAxess, are dealer to client platforms with a wide range of fund manager users.

4.14 In addition to information on individual quotes and orders, several parties provide various forms of pre-trade information based on average prices. This is made available to the data contributors and, in some cases, to clients of the contributors and other interested parties. In the government sector, the DMO provides a screen showing the real time average mid-price and yield of certain benchmark gilts, along with the changes from the previous evening's GEMMA reference prices. The DMO calculates this from closing prices the GEMMs send it.[22] In the commercial sector, the International Index Company (IIC) offers average prices for a range of bonds. IIC's iBoxx service consolidates prices from contributor banks' trading desks for each bond covered, calculates an averaged price (discounting outliers) every minute and disseminates it instantly. Bloomberg, Fides, Reuters, Telerate and Thomson all carry real-time iBoxx prices, subject to subscription. IIC's focus is on investment grade euro- and sterling-denominated issues. Additionally, MTSNext, the index company controlled by MTS, provides access to real-time index information to the general public free of charge and at a cost for commercial users.

22 See www.dmo.gov.uk/gilts/data/f2dat.htm.

Post-trade transparency

4.15 The amount of post-trade transparency widely available to the market is low. However, many ATSs offer their users post-trade data exceeding that required by our ATS standards. Sometimes this extends to providing near real-time information and covers a broader range of bonds than the benchmarks. Some make this data more widely available on a commercial basis. EuroMTS, for instance, makes available nearly all (anonymous) post-trade information to commercial market users, and it also provides post-trade information to academic research institutions.

4.16 In addition, some investment firms provide selected institutional and private clients with post-trade data based on the trades that the firm has undertaken itself (either on its own behalf or for other clients). This gives the recipient additional information and market colour on which to base trading decisions. But providing such information to only a limited set of clients gives them an informational advantage over other market users, including less privileged clients of the same firm.

4.17 A number of third party organisations collate and make available post-trade data on an end of day basis. In particular, ICMA makes available data based on the bond trade reports it receives from all UK members, all its reporting dealer members, and some others. These reports must be submitted to ICMA's TRAX system within 30 minutes of the trade taking place. The data collected is used for market monitoring purposes by ICMA, us and (for some subsets of data) by some other regulators, and can be used to obtain an overview of the scale and diversity of the bond markets. A number of data vendors carry end-of-day data from TRAX.

Box 6: TRACE – the experience in the US and its impact

In July 2002 the National Association of Securities Dealers (NASD) launched the Trade Reporting And Compliance Engine (TRACE). This provides a consolidated tape of intraday post-trade data for corporate bond trades[23] in the US over-the-counter market. NASD rules, approved by the Securities and Exchange Commission (SEC), require all broker-dealers regulated by the NASD to report their trades in eligible bonds to TRACE. The aim of the TRACE system is to provide investors in corporate bonds with greater trading transparency and the NASD, as market overseer, with a comprehensive picture of trading.

23 TRACE does not cover debt issued by government-sponsored entities, mortgage or asset backed securities, collateralised mortgage obligations or money market instruments.

The evolution of TRACE

The TRACE system has been introduced on a roll-out basis. While dealers have been required to submit reports for all secondary market transactions since the system started, onward dissemination of this data to market users has been subject to phased implementation. At first, publication was confined to trades in investment grade bonds with an original issuance size of $1bn or more, plus trades in a representative sample of 50 high yield bonds. This captured just 500 issues (albeit a significant part of the market by value). Publication took place within 75 minutes of the time of the trade.

The second phase, which began in April 2003, extended trade publication to all issues with a credit rating of A or better and which had a nominal value of $100mn or more. Phase two also included 120 representative triple-B bonds and 50 representative high yield bonds. Together, this raised the number of issues subject to publication to 4,600 issues.

Subsequently, the scope of the publication regime has been extended twice. In October 2004 trades in a further 12,400 issues became subject to publication and, in February of this year, the regime was extended to the full universe of US corporate bonds – approximately 29,000 issues. The delay in data dissemination has also been reduced, first to 45 minutes, then to 30 minutes, and now to 15 minutes. This now applies to 99% of all trades, longer delays being permitted only for trades in some highly illiquid issues.

The NASD has noted since TRACE was implemented that the US corporate bond market is more actively traded than had previously been thought. In testimony last year to the US Senate Committee on Banking, Housing and Urban Affairs, the NASD's Douglas Shulman said approximately 25,000 transactions took place on an average day, with about 500 broker-dealers reporting at least one trade per day. Mr Shulman added that, of the 23,000 publicly traded corporate bond issues in the US at that time, 20% traded at least once a day and 5% traded at least five times a day.

Studies on the impact of TRACE

Studies aimed at gauging the impact of the increase TRACE has brought to market transparency are discussed in Annex 1. In summary, the literature has been broadly positive, though the research has had to contend with the complications of isolating transparency from other effects and of the limited and irregular trading in some bond issues. A recent study by Amy Edwards, Lawrence Harris and Michael Piwowar entitled "Corporate Bond Market Transparency and Transaction Costs" (published in September 2004) found that the effective spread facing retail investors purchasing corporate bonds averaged 1.4% of price for a representative retail trade of $20k. Greater transparency in the US corporate bond markets lowered transaction costs and, as a result, the cost of capital to corporates might have been reduced too. Greater transparency was expected to stimulate retail activity in the bond markets and boost liquidity.

Similarly, a January 2005 paper by Hendrik Bessembinder, William Maxwell and Kumar Venkataraman concluded that transaction costs in the US corporate bond markets had reduced significantly in the period since TRACE had been introduced. Using a sample of trades undertaken by insurance companies, the authors found that execution costs for trades in bonds eligible for reporting to TRACE decreased by six to seven basis points, or the equivalent of about 50% of the execution costs before TRACE. Even for trades in bonds that were not eligible for TRACE reporting, execution costs declined by about 20%. The authors suggested this may have resulted from better pricing information in TRACE-eligible bonds having a knock-on effect on the valuation of bonds that were not eligible for reporting to TRACE.

In April 2005, three consultants working for the NASD, Michael Goldstein, Edith Hotchkiss and Erik Sirri, published draft findings based on a controlled experiment in which trade data for a set of bonds was made transparent through TRACE while data for another, similar set of bonds was not published. They found that the effect of transparency varied substantially by trade size. Intermediate trade sizes of between 51 and 100 bonds showed the biggest decline in spreads as a result of transparency. However, they found that transparency had no effect, positive or negative, for thinly traded bonds. They also found that transparency did not lead to greater trading interest, as measured by trading volume or number of transaction per day.

In several tests, Goldstein *et al* found that bonds subject to transparency had lower trading interest than non-transparent bonds but that, in most cases, these differences were not statistically significant. However, one test performed on a group of thinly traded bonds provided an exception – the average daily trading volume of the transparent bonds was found to be lower and this difference was statistically significant.

Some market participants on our industry group were doubtful that the reduction in spreads (either in part or in whole) could be attributed to enhanced transparency rather than other factors, such as the increasing ability to hedge as the credit derivatives market has developed. Others have pointed to indications that transparency at the high yield end of the market appears to have reduced firms' willingness to act as liquidity providers in those bonds.

Annex 1 discusses the methodologies of the TRACE-related studies in greater detail.

5 Is there a market failure?

5.1 The European Commission's forthcoming review of the possible extension of the MiFID transparency provisions to instruments other than shares means transparency must be the central issue in this paper. But any discussion of the role of transparency needs first to consider whether there is any market failure in the way in which bond markets operate, and, if so, whether transparency levels are a cause.

5.2 At this stage, we are still gathering information to enable us to form a view on whether any such failure exists in the UK bond markets. The rest of this section outlines where and how any failures might manifest themselves and provides a basis around which you can focus your comments. In addition, your comments on the initial market failure analysis (MFA) outlined below should help us to understand why, if failures do exist, market forces fail to supply a solution of their own volition.

Where market failures may occur

5.3 Market failures, if they exist, may arise as a result of 'externalities' and 'information asymmetries'. Externalities arise where the economic decisions of one market participant impose costs or benefits on another market participant. External costs and benefits are also know respectively as 'negative externalities' and 'positive externalities'. Because market participants tend to take into account the impact on themselves only of the decisions they take (and not external costs and benefits), the existence of externalities may mean that the decisions taken by individual market participants do not lead to the best outcomes from society's perspective. Information asymmetry describes a situation where one group of market participants has more or better information than another group and the former group has incentives to exploit that advantage to the detriment of the latter.

5.4 Both of these concepts could be relevant when deciding whether there is a market failure in the bond markets. For instance, the costs of market transparency may be borne by dealers while the benefits flow to other, less-

informed investors (as some of the evidence referred to in Box 6 above suggests). Dealers may therefore provide less transparency than would be ideal from society's perspective because they do not take into account the positive externalities additional transparency would create for other market participants.

5.5 If there are information asymmetries – for example, with some participants being consistently better informed about market developments than less-informed investors – less informed investors may face a systematic disadvantage when trading. This may undermine confidence in the fairness of the market and reduce the willingness of the less-informed to participate.

5.6 We think there are two main ways in which any market failures in the bond markets might manifest themselves, although there may be others that you wish to draw to our attention:

- *Inefficiency in the price formation process.* Some types of participant may not be in a position to judge at what price to place orders and whether it is appropriate to hit/lift given quotes. Alternatively, it may be difficult or expensive for participants to gather the information needed to trade. As a result, the market price of an asset may fail adequately to reflect overall supply and demand, or be slow to incorporate new information. This in turn may widen spreads and discourage some participation in the market.
- *A failure of best execution.* It may be that restricted access to trading information or the prohibitive cost of obtaining such information means brokers fail to find the best trading opportunities for their clients. Similarly, they and their clients may have insufficient information to establish the quality of execution achieved.

5.7 If there is some form of market failure taking place in a secondary market – whether in bonds, equities or most other assets - it may be reflected in one or more ways. These symptoms are likely to include at least one of the following:

- *A wide dispersion of prices* for very similar transactions taking place at or around the same time and in the same security would tend to point to an inefficiency in the market. This may be caused by some information problem in the market, with some participants better placed than others to know at what prices to trade. In a competitive market with good information flow, the prices of very similar goods should be very similar as prices are bid down to cost.
- *Wide spreads* may be a further indicator of a market inefficiency, in particular of a failure (for whatever reason) of competitive forces to work efficiently. However, the size of spread that might indicate an inefficiency is complex to assess (especially for infrequently traded bonds), and in any event spreads vary considerably between instruments and over time. In the bond market, the position may be further complicated by any cross-subsidisation between firms' market making and other business lines (as described in section 4).

- *Low participation* in a market may indicate that potential participants lack confidence in the market for some reason (e.g. the extent of information asymmetries). This could apply to all types of potential participant, or it could apply to a particular segment of potential participants (for example, retail investors).
- *A high level of user complaints* would be expected if there were a serious market failure. For instance, there might be a significant number of complaints about brokers failing to obtain best execution for their clients.

5.8 If there are symptoms of market failure present, the next step is to identify the cause. Any failure may or may not flow from transparency arrangements, and changes in those arrangements may not necessarily provide the best remedy.

Observations on how the market operates at present

Price formation

5.9 As noted above, we have not yet fully assessed whether any failures exist in the UK secondary bond markets, and it is too early for us to draw any conclusions. But our initial observation of the UK markets tend to suggest that:

- there is no immediately apparent evidence of material market failure; but
- there are some indications that additional transparency in selected areas might provide benefits.

5.10 Industry members of the FSA/industry working group considered there to be no evidence of market failure, at least at the professional end of the market. However, several members thought that whether there was satisfactory information for smaller institutions and retail investors was less clear-cut.

5.11 Anecdotal evidence suggests that larger investors (e.g. major fund managers) and intermediaries have no issues with the quality of market pricing. Preliminary indications certainly suggest that the liquid segments of these markets are tightly and competitively priced. But we so far have little information on trading in less liquid bonds or on how spreads in UK markets compare with those in overseas markets. We have received no indication that spreads on UK retail trades are a cause for concern.

5.12 Generally speaking, it appears that institutional investors have ready access to pre-trade information, although some firms have commented to us that transparency is noticeably higher in the euro-denominated bond markets than in the sterling markets. Additionally, a number of firms have told us that quotes are more plentiful for AAA- and AA-rated bonds and some high-yield debt than for A- and BBB-rated bonds – though this may simply reflect investor preferences for dealing in higher grade bonds.

5.13 Despite already having greater access to post-trade information than many other investors, some fund managers believe that additional data would be of some value to them. However, they felt any arrangements bringing that about should not damage liquidity. Several managers pointed variously to the value of more post-trade data for pricing both bond portfolios and credit derivatives. This would enhance efficiency, reduce the potential for abuse and assist transaction cost analysis. This implies that there could be beneficial spillover effects if the level of transparency in the bond markets was greater. However, we have little feel for how material this benefit would be and would like to receive readers' views on this.

5.14 For retail participants, the availability of pre-trade information is generally limited and post–trade data (other than a limited range of end-of-day prices carried in newspapers and on some broker websites) is hard to come by. In general, it is more difficult for retail investors to obtain information on bond than equity trading. However, strictly in terms of overall market efficiency, the low level of retail participation in the UK means this is not significant. We consider whether it adversely affects the quality of retail order execution (or deters retail investors from participating in the market) in the following sub-section.

Best execution

5.15 We are not aware of any complaints from retail investors regarding best execution in UK bond markets. This provides some comfort that there are no material best execution concerns, although we should not overlook the possibility that retail investors are not in a position to judge whether they have received best execution. Similarly, we have little information on the views of smaller institutional investors and corporates about the quality of execution they obtain in the bond markets.

5.16 From our discussions with market participants it seems that, at present, achieving best execution for a client is generally simpler in a liquid security, where price information is normally far more visible and there are more opportunities to poll for competitive quotes. On the other hand, for less liquid bonds, there may be fewer quotes, prices may vary more and retail brokers (and smaller fund managers) may in any case have limited dealer relationships. In these circumstances, the ability to judge best execution may be reduced. While this does not mean that best execution is not achieved, the absence of publicly available post-trade information provides little scope for checking whether a fair price was obtained.

5.17 Discussions between regulators have raised the issue of whether losses experienced by retail bondholders during recent scandals might have been reduced had prompt post-trade information been made available to the market. While we have not seen the evidence in these specific cases, we are aware that retail trading arrangements vary considerably within the EU.

So it is important that in its review the Commission examines whether any issues raised in relation to retail investors derive from a lack of transparency in the market generally or, rather, from some other failings in the arrangements through which retail investors deal in bonds.

5.18 We find it difficult to judge, from the information currently available to us, whether there should be concerns about the delivery of best execution in the bond markets. Given that the number of UK retail investors participating directly in the secondary bond markets appears to be small, it may be that the cost of providing these investors with better information is disproportionate to the benefit. On the other hand, if significant numbers of non-UK investors depend on pricing generated in UK trading, or if there are failures occurring in the bond markets that are artificially restricting the level of retail participation, the position might look rather different. It would be useful to receive investment firms' thoughts on whether they could deliver better execution for their clients, or could do a better job of demonstrating that they are delivering good executions, if transparency increased.

Questions (See also Annex 4)

Q Are there any market failures in bond markets? If so, what are they and how do they arise?

Q 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?

Q 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?

Q 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?

Q 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?

Q 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?

Q 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 Practical considerations for policy development

6.1 We have not yet formed views on the central issues raised in this paper. Consequently, we are not in a position at this stage to make any policy proposals – whether for change or for maintaining the status quo. As we noted earlier, the first step is to establish whether there is any market failure and, if there is, to identify what lies behind it. That will inform our view on how best to develop policy.

6.2 If we were to identify any market failure in the UK, any regulatory intervention to correct it would need to be justified by a cost-benefit analysis. We would expect the Commission to adopt a similar approach. That being so, it would be helpful to receive views on what practical issues would arise at the detailed implementation level if the Commission put forward any proposals for mandatory transparency. This will help in the development of a more informed cost-benefit analysis, if it is needed. The rest of this section indicates what kind of issues might arise in applying a transparency regime to bond markets.

6.3 Any proposal to enhance transparency would have to consider:

- whether intervention was needed to address pre-trade transparency, post-trade transparency, or both;
- the boundaries of any new requirements in terms of the bonds and trading venues to be covered.

6.4 It would also need to consider:

- The most effective means of applying any new measures in an international and predominantly OTC marketplace;
- Whether enhancements to transparency should be led by regulators, or whether there is appetite and scope for the industry itself to develop new arrangements.

6.5 It is also important to bear in mind here that there are a number of regulatory initiatives already underway which will have an impact on bond markets and the protections afforded to investors. These initiatives are discussed in greater detail in Box 7.

Box 7: Regulatory initiatives underway in the bond markets

The key points of regulatory initiatives that are close to or have reached fruition, as they impact on the bond markets, are as follows:

- Article 21 of MiFID obliges investment firms to take all reasonable steps to obtain the best possible result, when executing orders, on behalf of clients. The best execution obligation extends to all investment firms and financial instruments covered by MiFID. So an investment firm executing orders in the bond market on behalf of clients who benefit from the protections of Article 21 will owe those clients a duty of best execution. The European Commission is currently finalising the Level 2 measures and once complete, we will be in a better position to address questions of application to particular markets. However, the Level 2 measures are likely to indicate that the duty of best execution applies also to investment firms that manage client portfolios or receive and transmit client orders. All of these firms will rely on transparency to find the best possible execution opportunities for their clients and to evaluate the quality of the results they achieve. Indeed, MiFID will require all investment firms that are subject to a duty of best execution to review their execution results and correct any deficiencies they note. We will consider how the high level obligations of Article 21 will apply to the bond markets as part of the ongoing MiFID implementation work.
- Article 19 of the same directive requires firms that provide investment advice or portfolio management to gather information about their clients' knowledge and experience, financial situation and investment objectives so they can recommend suitable investment services and financial instruments. Factors they may have to consider include, for instance, the client's attitude to and appetite for risk.
- In addition, greater parts of the fixed income market became subject to UK market abuse provisions on 1 July, when the Market Abuse Directive (MAD) was implemented. This requires that the provisions apply to all investments admitted to trading on a regulated market – potentially much broader than the previous requirements, which applied only to investments traded on a prescribed market. As a result, all bond issues that are exchange-listed are covered, even if they tend to trade over the counter, and are rarely, if ever, traded on an exchange. Similarly, issues listed outside the UK (i.e. in another EU Member State) will also be covered.

- The Transparency Directive, which is due to be implemented by January 2007, imposes obligations on all issuers to disseminate their regulated information (as defined under the directive) in a manner ensuring fast access to such information on a non-discriminatory basis throughout the EU. This information includes inside information as defined by MAD. Note that the Transparency Directive differentiates between different types of issuers (for example, issuers of equity and issuers of exclusively debt securities). The implications of this difference on this requirement will be determined when the Transparency Directive is implemented.

Pre-trade transparency

6.6 Any proposals for mandatory pre-trade transparency would be designed to address any identified weakness in the price formation process by ensuring that a greater proportion of overall buying and selling interest was readily visible to interested parties.

6.7 The potential benefits – such as lower search costs – would need to be weighed against the costs of the changes. The direct costs of providing or enhancing pre-trade delivery mechanisms could be significant, depending on the nature and scope of the pre-trade transparency required. Supplying liquidity, for instance, would probably be a significant cost in terms of capital commitment by market makers. Whether or not that turned out to be a significant net cost would depend on a range of variables (discussed in section 4).

6.8 Any proposal for mandatory pre-trade transparency would have to address the following details.

- The **universe of bonds** to be covered. Here, it might be sensible to require more transparency only for the most liquid bonds – i.e. essentially those in which market participants were most interested in trading.[24]
- The **trading venues** to be covered. Any extension of transparency requirements beyond Regulated Markets and MTFs, i.e. into OTC space, would have considerably greater implications for the bond markets than for equities because of the relatively high proportion of trading that takes place OTC. For the purpose of regulating OTC trading activity, MiFID already identifies systematic internalisers (defined in box 1) as significant trading 'venues'. In the case of bonds (and other asset classes), there would be a question of whether the approach should be similar. An alternative approach would be to apply any requirements only to firms seeking to do business with retail clients. This would require some definition of retail clients, or retail order size.

24 MiFID Article 27 requires systematic internalisers to make and publish quotes only in shares 'in which there is a liquid market'.

- The **quoting requirement**. In terms of the **nature of the quote**, there might be a requirement to make a continuous quote in a minimum size (which would have to be determined). However, it seems likely that any quote obligation for bonds would need to be significantly different from those being put in place for equities. The different trade sizes, liquidity patterns and participants would all need to be taken into account.
- **How pre-trade information should be published**. Consideration would need to be given to how accessibility and consolidation of quote and displayed order information would most effectively contribute to improving price formation.

Post-trade transparency

6.9 In terms of benefits, a regime of mandatory post-trade transparency might help to remove any market failure in the price formation process by increasing the speed with which information is incorporated into current prices. Best execution might also benefit through the provision of reference points against which the fairness/value of quotes could be compared. And, on a similar basis, the marking to market of bond funds and credit derivatives, together with transaction cost analysis, might be made easier. Greater post-trade transparency might also reduce the scope for abuse, or act as a disincentive to abuse if those considering such activity thought they were more likely to be caught.

6.10 The associated costs would probably fall broadly into two categories:

- Explicit costs, particularly technology costs associated with the delivery of transparency to the markets. This would involve systems development for firms. It would also require the collators and disseminators of aggregated data to enhance their systems, and any barriers (e.g. of a legal or regulatory nature) to their performing a consolidation service to be removed. However, consolidation costs might be reduced significantly if existing data gathering systems, such as ICMA's TRAX, were used.
- Implicit costs if changes to transparency requirements decreased liquidity, widened spreads and increased opportunity costs. This would occur if market makers reduced the capital they were prepared to commit to the market and this was not offset by an increase in investor liquidity. This may be a greater risk in less liquid issues where there might be a greater likelihood of market maker costs rising as a result of transparency making their positions more expensive to unwind.

6.11 Any proposal for a mandatory regime of post-trade transparency would have to address at least the following issues:

- The **universe of bonds** to be covered. One option might be to apply publication requirements to benchmark vanilla issues of both government and corporate bonds, as the most liquid and heavily traded sub-set of the bond markets. There is some evidence that enhanced transparency in one group of bonds can have beneficial spillover effects to bonds not covered by that regime. Another approach – with a wider coverage, which would mirror MiFID - might be to apply requirements to all bonds listed under the Consolidated Admissions and Reporting Directive (CARD) or admitted to trading on a Regulated Market.

- The **trading venues** to be covered. A read-across from the MiFID approach to equities would apply post-trade transparency requirements to all EU investment firms that execute trades in bonds admitted to trading on a Regulated Market, whether those trades take place on a Regulated Market or elsewhere.

- The **publication times for bonds of different liquidities**. Trades in relatively liquid bonds might be published quickly (e.g. within minutes of agreeing terms), while those in less liquid bonds might be subject to delayed publication (e.g. end-of-day, or noon the following day). Such an approach, though, would require the construction of some measure of liquidity or an appropriate proxy.

- **The publication times for trades of different sizes**. To protect those engaging in larger risk trades, trades over a certain size could have delayed reporting times relative to the norm. Alternatively, a single volume indicator might be used for all trades over a certain size. For example, all trades over £Xm might be published as being £Xm+ (or comparable figures in the currency of the issue).

- The **contents of any trade report** to be published – such as a bond identifier and the size, price and the time of trade.

- **How trade reports should be published** and disseminated (i.e., who would undertake this task). MiFID allows investment firms to print trades in shares through an exchange or MTF, through a third party (such as a data vendor), or through their own proprietary arrangements (such as a website). MiFID does not create a framework for data consolidation (as regulation provides for in the US, for instance). But it requires investment firms to make information public 'in a manner which is easily accessible to other market participants', emphasises the desirability of consolidation and recommends that Member States should remove obstacles that prevent consolidation at a European level.[25]

25 MiFID, Recital 34 and Article 28.1.

- **Possible exemptions to trade publication.** It might be undesirable for all trades to be published within the standard publication time, for instance during the stabilisation period directly after a bond's issue.

Other implementation issues

6.12 In addition to the detailed regulation described above, there would be several big picture issues to address. We see the key considerations here as including the following:

- A UK or a multilateral approach? The nature of bond market trading, especially the large cross-border and OTC elements, would make a consistent approach within the EU desirable. This is provided that it could be achieved in a way that appropriately balances the needs of wholesale and retail investors and accommodates different market microstructures.
- A 'big bang' or phased approach? A notable feature of TRACE implementation in the US is the care that has been taken in implementing it in stages. If any new measures appear necessary in Europe, a staged roll-out programme would seem to have considerable merit. It would allow the industry time to adapt and would enable observations to be made on the effects of the programme as it evolved. These might include the degree to which a limited enhancement of transparency produced beneficial spill-over effects elsewhere in the markets.
- Action taken by the industry or by regulation? It is often preferable if the industry itself takes action to introduce measures that enhance the marketplace. In the US, the industry took the initiative in bringing more trading information to users of the government debt markets through GovPx. TRACE, on the other hand, is a regulatory initiative, although it was developed in close co-ordination with the industry.

Questions (See also Annex 4)

Q On the basis of the discussion in section 6, 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?

7 Conclusions and next steps

7.1 We hope that the output of this work will be a useful contribution to the wider EU debate on bond market transparency, and in particular to the European Commission's review under Article 65 of MiFID. It will also play a central role in the further development of our own policy on transparency in the secondary bond markets. However, we would propose introducing new transparency requirements for the trading of bonds in the UK only in response to an identified market failure. And in any event we do not intend proposing changes to our regulations ahead of the outcome of the Commission's review.

Next steps

7.2 We would be grateful for readers' comments on the issues raised in this paper. The full list of questions is summarised in Annex 4. Please send us responses no later than 5 December 2005.

7.3 After publishing this paper, we will continue our own discussions with market participants, both bilaterally and on a roundtable basis. We also plan to organise a seminar to bring together interested parties from around Europe and elsewhere, including counterpart regulators and the European Commission, to discuss the issues raised here.

7.4 We also note, and welcome, the fact that several UK trade associations and the Corporation of London have jointly commissioned two independent studies on the European bond markets, one on the corporate bond markets and the other on the sovereign debt markets. The aim of the studies is to assess: whether European bond markets deliver efficient market outcomes; to the extent that outcomes are not efficient, whether improved transparency would enhance efficiency; the extent to which greater transparency might occur as part of the natural evolution of bond markets; and the extent to which market participants can be encouraged to develop their own solutions.

7.5 For our part, we will be considering how we can extend our analysis by further analysing:

- the US experience with TRACE, including the robustness of the empirical evidence on the impact on transactions costs, and the extent to which that experience can be read across to the UK situation;
- the extent to which there is price dispersion in the market (with similar trades at the same time occurring at different prices), including whether dealing firms are able to buy bonds and sell them shortly afterwards at a significantly different price; and
- the level of retail interest in bond trading, and the channels by which retail investors currently access UK bond markets.

7.6 We will prepare a feedback paper, summarising the key points from respondents' comments and our own further discussions and work, by the end of the first quarter of 2006.

7.7 We anticipate that the European Commission will be preparing for the Article 65 review in early 2006. We will aim to input proactively to that review at the earliest opportunity.

Annex 1

The academic literature on market transparency

1. This annex surveys some of the academic literature examining the theoretical and empirical evidence on the effects of transparency on securities markets. Much of the literature is based either on the experience of equity markets or on theoretical models and trading experiments which do not seek to recreate all the features of the OTC bond market. But we also look at a number of papers specifically on transparency in bond markets. Three of these provide empirical evidence on the impact of the introduction of post-trade transparency in the US (as briefly summarised in Box 6).

2. A key theme of the literature is how the level of transparency interacts with the way market participants, and markets as a whole, collect, assimilate and act on information. It is useful to distinguish between two types of information: that relating to the fundamental value of a security (for example, information about an issuer's financial prospects); and that relating to trading interest, or order flow. Some market participants may have better information (of either type) than the rest of the market (often called "private" information) which, if they are rational, they will want to act on. Greater (or less) market transparency would give more (or less) information, potentially to the whole market, about trading interest or order flow. This would expose more (or less) private information, not just about trading interest or order flow, but also, indirectly, about fundamentals.

3. This leads to the second key theme of the literature: how a change in the amount of information available might impact on other variables such as liquidity, transactions costs, the speed with which prices incorporate new information, and the incentives on different players to participate in markets.

4. In general, what we learn from the literature is that the way these dynamics play out depends in part on the micro-structure of the market in question, because that affects the relative importance of the two types of information, as well as the ways in which it is processed and acted on. For quote-driven, multiple-dealer markets, the literature suggests the following.

- Greater transparency can increase liquidity through two channels: by enabling dealers to manage their risks more effectively against better-informed traders; and by inducing greater investor participation.
- But, offsetting that, greater transparency can also decrease liquidity because it might reduce the ability of dealers to exploit the benefits of the information they gain in trading with better-informed traders.
- Greater transparency can increase market efficiency, for example by enabling faster incorporation of new information into prices, and by reducing search costs for investors, prompting dealers to post more competitive quotes. On the other hand, greater transparency may reduce the incentive for market makers to obtain order flow by posting competitive bid-ask spreads in order to gain informational value.
- The balance of these impacts can be positive or negative, so there can be costs as well as benefits to transparency.
- It is therefore important to consider the micro-structure of any particular market when determining the optimal level of transparency for that market.

Transparency and liquidity

5. **Marco Pagano** and **Ailsa Röell's** 1996 paper, 'Transparency and liquidity: A comparison of auction and dealer markets with informed trading', supports the view that transparency in a market generally enhances liquidity. Pagano and Röell explain that, based on their model, greater transparency helps market makers to protect themselves against informed traders, allowing them to reduce the spreads they quote. They note that this is not universally the case (it being possible that prices would be less favourable for orders of certain sizes), but come to the broad conclusion that rapid publication of trade data would help to reduce trading costs for uninformed traders. In addition, they suggest that increasing the availability of pre-trade information would also be of benefit.

6. **Biais et al** note in their 2002 paper, 'The microstructure of stock markets', that the importance of this result – that greater transparency enables market makers to protect themselves against informed traders more effectively - depends on the extent to which private information (about fundamentals) is important in the market. Private information may play less of a role in some bond markets than equity markets, particularly where those bond prices are largely determined by publicly known variables such as credit rating, coupon, maturity and so on.

7. **Narayan Naik, Anthony Neuberger** and **S Viswanathan** in 'Trade disclosure regulation in markets with negotiated trades' (1999), also support the Pagano and Röell conclusion that greater transparency could reducethe risk that market makers might be exploited by better informed traders. But they also note that, in an opaque environment, market makers can potentially share some of the benefits of the private information they capture from trading with informed investors, by then going on to exploit it themselves in subsequent trades. The overall impact of greater transparency on liquidity would then depend on the overall balance between the two offsetting effects.

8. **Ananth Madhavan, David Porter** and **Daniel Weaver's** 2000 paper, 'Should securities markets be transparent?', examines changes to transparency in the Canadian equity markets and finds that increases in pre-trade transparency reduce market liquidity. This occurs because participants who make use of limit orders are unwilling to provide a free option (i.e. the option but not the compulsion to buy or sell) to other participants. However, the 2005 paper, "Lifting the veil: An analysis of pre-trade transparency at the NYSE", by **Ekkehart Boehmer, Gideon Saar,** and **Lei Yu** finds different results. The introduction of the New York Stock Exchange's OpenBook system, which allowed participants off the floor to obtain real-time access to depth information in the limit order book, resulted in an increase in the liquidity displayed in the book. While there was a decline in activity by specialists, the greater information led to investors becoming more active (inputting smaller orders and cancelling them both more frequently and more rapidly), and execution costs declined.

9. The conclusions of both of these papers may be of less relevance in bond markets, since trading is not generally based on limit order display.

Transparency and efficiency

10. **Robert Bloomfield** and **Maureen O'Hara's** 1999 paper 'Market transparency: Who wins and who loses?', makes use of 'laboratory' experiments to gauge the impact of pre- and post-trade transparency on the efficiency of markets, bid-offer spreads and the outcomes for different types of participant. They find that the disclosure of trade details has a beneficial impact on pricing by improving the informational efficiency of the markets and increasing the speed with which prices converge. But, conversely, the increase in transparency reduces the incentive for market makers to post competitive bid-ask spreads in order to gain order flow as its informational value is diminished. As a result, their opening spreads tend to widen and, in some cases, remain wider as a result of the increased transparency. Thus transparency may benefit market makers at the expense of other participants. Interestingly, Bloomfield and O'Hara find no discernable effects on the performance of the market from the introduction of pre-trade transparency requirements.

11. The Bloomfield and O'Hara paper illustrates the kind of simplifying assumptions that such analyses need to make. Their experiment fixes the 'true' value of a security at one of five discrete values. Thus their experiment does not seek to mimic the volatility and uncertainty of securities markets in all respects. This could affect some of their findings, including those on pre-trade transparency.

12. More generally, it has been argued that there is a tension between transparency and efficiency. For example **Grossman** and **Stiglitz** note in their 1980 paper, 'On the impossibility of informationally efficient markets':

    'The only way informed traders can earn a return on their activity of information gathering, is if they can use their information to take positions in the market which are 'better' than the positions of uninformed market traders. 'Efficient Markets' theorists have claimed that 'any time prices fully reflect available information'...If this were so then informed traders could not earn a return on their information.

    We show that when the efficient markets hypothesis is true and information is costly, competitive markets break down...When this happens, each informed trader, because he is in a competitive market, feels he could stop paying for information and do as well as a trader who pays nothing for information. But all informed traders feel this way. Hence having any informed fraction is not an equilibrium...'

13. For the efficient markets hypothesis to be true and information to be costly are, taken together, quite extreme assumptions. But, as **Naik et al** (referred to above) conclude, where investors have to spend effort to collect information about securities' values, 'a less transparent regime would provide an incentive to gather information as opposed to a more transparent regime which would offer little or no incentive.'

14. The relevance of this argument to bond markets is unclear. Information gathering may play only a limited role in the efficient pricing of some bonds whose prices are largely determined by publicly known variables such as credit rating, coupon, maturity and so on. It is also worth noting that regulation generally promotes the dissemination of price-sensitive information by issuers in a timely fashion, and to the whole market at the same time. However, most regulatory regimes recognise the need to expose larger orders to somewhat less transparency than other orders, so as to provide some protection for the trader from the information which a large order reveals being used against him or her.

15. A more positive view of the effects of transparency is found in a study that the FSA commissioned in 2001 from **John Board, Charles Sutcliffe** and **Stephen Wells** of the London School of Economics. The paper noted that the FSA might fail to meet its statutory objectives of maintaining market confidence, protecting investors, promoting public awareness and fighting financial crime if markets were opaque. The authors argue that 'post-trade information (time, price and quantity of each trade) is fundamental to investors' decision-making, market supervision and best execution.'[26] They note that, by requiring transparency information to be made available, the price formation process is made more efficient, investors' understanding of the markets improved and a systematic disadvantage to some groups of investors is removed. The consolidating force that transparency brings to fragmented markets also reduces the risk of failing to spot abusive practices. The improvement in price formation is particularly important, the study notes, when there is a fragmentation of trading across multiple venues (as is currently the case with respect to the bond markets).

16. Board *et al* add that retail participation in a market is only likely if that market is transparent – in other words, the level of retail involvement depends on the degree of transparency, rather than the reverse. This raises the important issue of the impact on liquidity of transparency changes and the associated implications for transaction costs. IOSCO has stated with respect to the argument that greater transparency has the effect of reducing liquidity: 'Although any comparison between bond and equity trading needs qualification, it should be noted that OTC equity dealers have made this argument prior to, or upon, the imposition of transparency requirements on OTC equity trading and these effects have not been observed.'[27]

17. **Ruben Lee's** 2002 paper 'Capital markets that benefit investors: A survey of the evidence on fragmentation, internalisation and market transparency', provides a useful and extensive summary of much of the transparency literature, albeit much of it not dealing specifically with bond markets. However, the conclusions in this literature vary enormously. What follows is a brief summary of the key points arising from Lee's survey of over two dozen studies.

18. Lee highlights several arguments in favour of high market transparency. Market transparency increases the speed with which information is incorporated into asset prices, improving the efficiency of the price formation process. It also helps arbitrageurs to identify and exploit inconsistencies in prices, again improving pricing efficiency. Further, the exposure of quotes forces market makers to be competitive, narrowing bid-ask spreads and making it easier for participants to find the best prices. It may also improve

26 Board, John, Sutcliffe, Charles, and Wells, Stephen; "Orderly Markets: Regulation in a Changing Environment" (June 2001).

27 Report of the Technical Committee of the International Organisation of Securities Commissions; "Transparency of Corporate Bond Markets" (May 2004).

liquidity by increasing the willingness of less informed participants to engage in trading (a key criticism of opacity being that it perpetuates differences in the levels of information held by different types of participant).

19. On the negative side, Lee's paper identifies research that suggests order visibility reduces the willingness of some to participate in the markets. Indeed, one paper he examines states specifically that dealers would prefer opacity in the markets to transparency. A reduced willingness to participate may erode liquidity, widen spreads and impact the efficiency of price formation. It may also result in a notable reduction of market depth. The importance of anonymity is reinforced, too, with name exposure causing a decline in liquidity and (unsurprisingly) an increase in the cost of executing block trades in particular.

20. Lee summarises by suggesting that greater transparency improves the speed and efficiency of price formation but may also reduce the willingness of some to participate, thereby damaging market performance. This reflects the literature generally: the arguments for and against transparency are carefully balanced and the individual circumstances of the market in question may determine whether or not greater transparency would provide net benefits. Further, much of the research relates to equity markets rather than bonds, so even tentative conclusions have to be drawn carefully for our purposes.

Transparency in bond markets

21. **Toni Gravelle** in 'The market microstructure of dealership equity and government securities markets: how they differ' (2002) provides a useful overview of the likely characteristics of multiple dealer bond markets. Gravelle argues that the prime role of market makers in such markets is to intermediate imbalances between the total demand and supply of a security through time, in return for compensation collected through the bid-ask spread. Market makers must compete directly for their share of the order flow, but as well as interacting with customers, also often have the possibility of trading with each other, either bilaterally or via an inter-dealer trading mechanism.

22. Gravelle argues that the degree of private information market participants have about fundamentals – certainly for government bonds – is likely to be low. But market makers may well have private information about the state of the trading environment, such as order flow. And, unless the market is linked up electronically in some way, investors may have significant information collection costs if they want to discover which dealer is offering the best quote in a decentralised market.

23. **Arthur Warga's** 2004 paper, 'An overview of the regulation of the bond markets', discusses the circumstances in which transparency adds greatest value to trading in the US municipal bond markets. Warga notes that transparency is of importance to markets for instruments that trade

frequently, and acknowledges the argument that greater transparency might increase the willingness of some investors to participate in the markets. Conversely, he adds that lower transparency might come about if there is a fundamental lack of demand to trade (i.e. with little demand to trade little effort is made to provide trading information). This often applies in the bond markets, given the heterogeneity of the instruments and the fact that trading levels and liquidity for many bonds declines rapidly in the period after issue.

24. Warga notes that the benefits of introducing greater transparency to bond markets might prove most noticeable in the high yield sector. This is due to the greater degree of speculative trading in this sector's bonds and the associated higher price risk to investors. In addition, Warga highlights the benefits that greater transparency could bring to those using models to estimate prices for illiquid securities or for calculating the value of bond funds. Interestingly, Warga finds that the median bid-offer spread for retail-sized trades in the US municipal bond markets (trades of US$100k par value or less) is five times that for institutional-sized trades (trades of US$500k or more).[28] However, he does not comment on how this differential might be affected by further changes to market transparency requirements and he does not provide evidence on the impact of TRACE.

25. **Lawrence Harris** and **Michael Piwowar's** 2004 paper, 'Municipal bond liquidity', also examines differentials in spreads in the US municipal bond market. They examine average transaction costs across a range of trade sizes for nearly 170,000 bonds during a one-year sample period. Harris and Piwowar find that, for a representative $20k retail-sized trade, the effective spread for municipal bonds averages almost 2%. However, the spread declines steadily for larger trades. Harris and Piwowar attribute this differential to the low level of transparency in the municipal bond market, and suggest that the moves to increase market transparency would be of benefit particularly to retail investors.

26. The 2004 paper by **Amy Edwards, Lawrence Harris** and **Michael Piwowar**, entitled 'Corporate bond market transparency and transaction costs', also analyses the US experience of transparency in the bond markets. The aim of their study is to assess how the introduction of price transparency affected liquidity in the corporate bond markets, making use of data from the TRACE system (see Box 6). A key conclusion from the study is that the increase in market transparency lowered customer transaction costs by five basis points (and perhaps more), and that this might have the knock-on effect on lowering the cost of capital to corporates. It might also stimulate retail involvement in the bonds markets, if transaction costs have hitherto been perceived as a deterrent to participation: Edwards *et al* find that effective spreads in corporate bonds average 1.4% of the price for a retail-sized trade of $20k. By contrast,

28 Note that trades between US$100k and US$500k were classified as neither retail nor institutional by Warga.

institutions, which tend to be better informed than retail participants, already experience lower effective spreads (around 76bp for a $100k trade), meaning that increases in transparency will probably have greater benefits for retail investors than institutions. Further, Edwards et al suggest that benefits to investors would probably increase if reports of trades are made in a tighter timeframe than the 45 minute limit in place at the time of their study. The paper does not state, however, what the impact of greater transparency has been on the volume of trading in the corporate bond market.

27. The strongest argument identified in the study against increased transparency is that it may increase the dealers' difficulties in managing their inventories, thereby pushing up transaction costs. However, the authors note that credit risk can be hedged relatively easily in the equity markets, and believe it highly unlikely that greater transparency would have this effect on costs. This would concur with the observation of IOSCO, noted above, that increased transparency does not seem to impact on liquidity provision.

28. A further paper that examines the impact of TRACE was produced this year by **Hendrik Bessembinder, William Maxwell** and **Kumar Venkataraman**. Their paper, 'Optimal market transparency: evidence from the initiation of trade reporting in corporate bonds', focuses on bond trades undertaken by insurance companies before and after the introduction of TRACE. During their 2002 sample period, the reporting time for TRACE-eligible bond trades – at that time, 498 bonds with an original issue size of €1bn or more – stood at 75 minutes (as box 6 notes, it has been reduced significantly subsequently). But even with this longer reporting timeframe, Besseminder et al find that trade execution costs fell a full 50% (or six to seven basis points) for TRACE-eligible securities, and by 20% (or four basis points) for non-TRACE bonds too. The authors suggest the latter occurs from a knock-on effect: improving transparency for a subset of bonds enhances the ability to price and monitor execution costs for all bonds. They suggest also that, based on these observations, investors should achieve annual trading cost reductions somewhere in the order of $372mn.

29. Again, however, the authors do not opine on the impact that greater transparency had had on market volumes.

30. The 2005 paper by **Michael Goldstein, Edith Hotchkiss** and **Erik Sirri**, entitled 'Transparency and liquidity: A controlled experiment on corporate bonds', does consider the impact of TRACE on trading volumes. In this paper, the authors assess the impact of transparency on liquidity by comparing the trading in 90 BBB-rated bonds that were made transparent through TRACE to the trading of 90 very similar "matched" bonds not made transparent. They also look at a set of thinly-traded bonds, of which 30 were made transparent and 30 not. This "controlled experiment" approach aims to ensure that any differences in the transaction costs or trading activity between

the bonds can be ascribed only to the bonds' transparency and not their other features. Goldstein et al find that the impact of transparency varied considerably according to trade size but that greater transparency did not lead to an increase in trading volumes relative to non-transparent bonds. However, it did tend to lead to a relative narrowing of spreads (although by varying amounts according to trade size and calculation method). Trading costs were most reduced for trade sizes of between 51 and 100 bonds. For smaller and larger trade sizes than this, transparency did not lead to a decrease in costs, or even led to an increase. They also investigate impacts on trading activity as measured by trading volume or trade frequency. In one instance (for the 30 transparent thinly-traded bonds), transparency was associated with lower average daily trading volume and this finding was statistically significant. Given the shift in spreads but lack of impact on trading volumes, the authors conclude that transparency has a neutral or beneficial impact on liquidity.

31. It is worth noting that all three studies looking at TRACE use methods which seek to isolate the impact of transparency from other factors. However, some criticism has been voiced that the research on TRACE has failed to take into proper account the broader changes that have taken place in the markets over the last three years. A number of participants have noted to us that the provision of quotes in OTC space increased significantly during that period, in part due to the greater ease of hedging positions as the credit derivatives market grew, and it was as a result of this that pricing improved, not TRACE. However, Goldstein et al, for example, do not compare transaction costs before and after the introduction of TRACE. They compare the transaction costs of bonds (some transparent, some not) which traded simultaneously, so it is difficult to see how this argument would apply. Some added also that the profile of liquidity between US bonds had changed as a result of TRACE: liquidity had grown where it was already relatively high and transparency was good (e.g. in the largest and most recent corporate issues), but it had declined where it was already low (as participants were concerned about exposing the details of their trades in illiquid instruments).

TRACE evidence: methodology issues

32. When reviewing research such as this, it is important to consider the principles and methodology adopted, as well as the conclusions generated and a number of criteria for assessing methodologies have been put forward.[29] The research does not score perfectly according to these criteria. For example, none of the research has to date been published in refereed journals, although we note the Edwards and Bessembinder papers are going through the publication process for the *Journal of Finance* and *Journal of Financial Economics* respectively.[30]

29 See, for example, the decision of the US Supreme Court in Daubert v. Merrell Dow Pharmaceuticals (92-102), 509 U.S. 579 (1993).

30 As of June 2005 both papers were under revision for second round re-submission.

33. A second criterion is whether the methods used are tried and tested and were developed outside the context of the debate at hand. It is worth noting here that all the groups of researchers rely on a statistical methodology to estimate transaction costs which aims to some extent to get around two problems. The first is that quotation data do not exist for most of the corporate bond market, so studies cannot rely on standard transaction methods such as effective spreads based on benchmark prices. The second problem is that bonds trade infrequently, which can limit sample sizes.

34. A complex method might be considered more robust if it has been successfully applied in other contexts previously, rather than been newly-developed specifically for the purpose of assessing the impact of TRACE. Bessembinder *et al* state that their specification is nearly identical to one used by Huang and Stoll (1997). Edwards *et al* state that their methodology is the same as that used in an earlier paper by two of the authors (which focused on municipal bond liquidity). While the authors state the method used in that earlier paper does "differ substantially" from that used in an earlier related study, this paper meets the first criterion in that it has been accepted for publication in the *Journal of Finance*.[31]

35. Goldstein et al do not claim their method is new. One of their methods for measuring transaction costs involves identifying instances where a bond was bought and sold by a single dealer within a 5-day period and calculating the average difference in the dealer's buy and sell prices. They then apply a standard statistical test to see if these averages differ significantly for transparent and non-transparent bonds. They also employ a more sophisticated regression methodology in order to allow increased sample sizes, but this does not seem complex and is taken from a 2001 *Journal of Finance* paper by Paul Schulz and might be regarded positively as tried and tested.[32]

36. On this basis, our tentative conclusion is that the evidence that TRACE has reduced transaction costs does appear to carry some weight, but the studies do not show that the costs of this intervention outweigh the benefits in all market segments.

31 Green, Hollifield and Schueroff (2003).

32 The dependent variable of the regression is the difference between the price at which a customer bought or sold in a trade (the 'customer trade price') and the dealer 'bid price' of the bond taken from Reuters at the end of the day prior to the trade. This variable is then regressed on a constant and a dummy variable which indicates whether the trade was a buy or a sell. The intercept of the regression provides an estimate of the effective spread.

Annex 2

The FSA Industry Working Group on Bond Market Transparency

Individuals from the following organisations participated in the Industry Working Group. It should be noted, however, that with the exception of the representatives of the FSA, members participated in a personal capacity. The list of firms/organisations below is provided only to give an indication of the breadth of experience that members brought to the Group. We have identified in brackets the country in which members were based.

ABN Amro Management *(UK-based member)*

AXA Investment Management *(France-based member)*

Barclays Capital *(UK-based member)*

Barclays Global Investors *(UK-based member)*

Citigroup *(UK-based member)*

Deutsche Bank *(UK-based member)*

Dresdner Kleinwort Wasserstein *(UK-based member)*

European Investment Bank *(Luxembourg-based member)*

MTS *(Italy-based member)*

Financial Services Authority

ICMA Centre, University of Reading *(UK-based member)*

JP Morgan Chase *(UK-based member)*

Standard Life *(UK-based member)*

UBS Wealth Management *(UK-based member)*

Veolia Environnement *(France-based member)*

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Goldstein, M.A., E. Hotchkiss and E.R. Sirri (2005); *Transparency and liquidity: A controlled experiment on corporate bonds*; pending

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Harris, L.E. and M.S. Piwowar (2004); *Municipal bond liquidity*; American Finance Association 2005 Philadelphia Meetings

International Financial Services, London (2005); *Securities Dealing* (July edition)

International Organisation of Securities Commissions (2004); *Transparency of corporate bond markets*

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Annex 4

Summary list of questions

We would be very interested in readers' responses to the following questions. Our focus is in relation to UK markets, but we would also be interested in readers' views as to whether, and to what extent, the pan-EU perspective might be different. Statistical or similar information to support any answer would be particularly welcome.

Q1. Are there any market failures in bond markets? If so, what are they and how do they arise?

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?

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?

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?

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?

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?

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?

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?

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

Q10. On the basis of the discussion in section 6, 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?

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