Peter Brandner, Harald Grech, Kamran Kazemzadeh

Yield Differences in Euro Area Government Bond Markets –
A View from the Market
Yield Differences in Euro Area Government Bond Markets – A View from the Market

Peter Brandner *)
Harald Grech **)
Kamran Kazemzadeh *)

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Abstract:

The first part of this paper offers a brief description of the structure of the euro area primary and secondary government bond markets and shows that a full-fledged homogeneous market has not yet been achieved since 1999. The second part of the paper analyzes the views of selected market participants and provides evidence for the relative importance of macroeconomic fundamentals versus market-microstructure related variables as determinants of observed yield spreads in the euro area government bond market. Market participants judge credit risk factors as the most important factors, with current/future budget deficits, and debt levels exerting the strongest influence. Liquidity factors also seem to be of considerable importance, whereas regulatory factors play only a minor role. For short-term trading activities central bank policy decisions are apparently more relevant than the market's long term assessment of debt sustainability, which is reflected in the credit risk factors.

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*) Federal Ministry of Finance: peter.brandner@bmf.gv.at
kamran.kazemzadeh@bmf.gv.at

**) Oesterreichische Nationalbank: harald.grech@oenb.at
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Working Papers are composed by staff of the Federal Ministry of Finance and other experts. They intend to stimulate broad-based discussion on topical economic policy issues dealt with at the Ministry. Views expressed are those of the author and not necessarily endorsed by the Ministry.

Your comments and suggestions should be directed to:
Dr. Kurt Bayer,
Deputy Director General for Economic Policy and International Affairs
Phone: +43 1 514 33 / ext.
e-mail: Kurt.Bayer@bmf.gv.at
or
Dr. Alfred Katterl,
Division of Economic Policy Analysis
Phone: +43 1 514 33 / ext.
e-mail: Alfred.Katterl@bmf.gv.at

For complimentary copies of this Working Paper, please contact:
Federal Ministry of Finance,
HR Development and Internal Communications
Hintere Zollamtsstraße 2 b, A-1030 Vienna, Austria
Phone: +43 1 514 33 ext. 501127
Web: www.bmf.gv.at
1. Introduction

By eliminating exchange rate risk, the introduction of the euro in 1999 paved the way for a full integration of the euro area’s financial markets where government bonds would be perfect substitutes which could be traded on the same yield curve. In the first eight years of Economic and Monetary Union (EMU), however, euro area government bonds have exhibited considerable and volatile spreads vis-à-vis German government bonds, which are generally considered as being the euro area benchmark bonds, in particular in the 10 year maturity spectrum. In this paper, we analyze the determinants of these observed yield spreads by directly asking market participants, mainly market makers, for their opinion. We present the results of our questionnaire regarding the relative importance of macroeconomic fundamentals versus market-microstructure related variables.

In theory, spreads between government bonds may result from macroeconomic fundamentals (differentials in the credit quality of issuers due to fiscal variables, such as the budget deficit or the debt-to-GDP ratio)\(^1\) and/or country-specific microstructure-related characteristics (liquidity, taxation, regulatory framework, etc.). In terms of policy-making, it is important to know what lies behind yield spreads: Whereas the first case might call for macro-economic (fiscal) policy reforms (e.g. Stability and Growth Pact), the second case might point to institutional barriers in financial markets (market integration, competition, efficiency) which need to be tackled (e.g. improvement of debt management policies in primary and secondary markets).

Government bond yield spreads are not only a matter of concern to policymakers, debt managers or central banks, but also to portfolio managers when it comes to asset pricing and risk management. Yield spreads represent an additional form of risk that has to be taken into account when pricing or trading, for instance, spread options that explicitly refer to observed yield spreads.\(^2\) Another example: Since euro area government bonds are regarded as being virtually default-free, they are frequently used as benchmarks for the pricing and hedging of other fixed income securities.

This paper is organized as follows: Section 2 deals with structural issues of government bond markets. Section 3 briefly describes the main characteristics of the primary and secondary

\(^1\) The market participants’ perception of a country’s fiscal vulnerability may be of particular relevance for countries with high debt levels like Belgium and Italy, where, for instance, an increase in the government bond yield spread (versus Germany) of 10 basis points leads to a rise in debt servicing costs of around 0.1% of GDP; see Codogno, Favero and Missale (2003).

\(^2\) Another example are portfolio managers who invest in euro area government bonds with higher yields and hedge their long positions by selling German Bund futures, and thus have to bear the remaining yield spread risk (Geyer, Kossmeier and Pichler, 2004).
euro area government bond markets. Section 4 describes the questionnaire and analyzes the answers of the respondents, and section 5 concludes.

2. Structural Issues in Government Bond Markets

In addition to macroeconomic fundamentals as mentioned in the introduction market microstructure characteristics could indeed have a considerable influence on government bond yields (in the context of the questionnaire, see section 4.3). For example, liquid markets provide better opportunities to trade positions at low transaction costs and with minimum price changes. Market liquidity may be determined by differences in debt management policies and other features of the market microstructure, such as the auction mechanism, the issuance calendar, the efficiency of the primary and secondary market, the trading venues, trading sizes, etc. (for specific examples, see section 3.3). In the following subsections, we briefly discuss key aspects of trading platforms, liquidity and transparency in order to have a better understanding on the results of our questionnaire, see section 4.

2.1. Electronic Trading Platforms

Transactions can either be carried out through voice brokering or electronic trading. Electronic platforms are dealer markets and are hence quote driven in a sense that trades are effected upon quotes prevailing in the markets. Market makers act as counterparties thereby providing the liquidity by quoting bid and ask prices. The bid-ask spread depends primarily on the degree of asymmetric information between market makers, informed traders and investors as well as on inventory costs. Prices – other than quoted prices – can be obtained or negotiated as a result of a long-lasting customer-dealer relationship or quantity discounts. Such platforms are organized as single dealer platforms that comprise the banks‘ own systems,  

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3 In general, the market microstructure literature deals with three different types of traditional financial markets: dealer markets, auction markets and hybrid markets (Degryse, 2007). In contrast to dealer markets (see above), auction markets are order driven. Trades occur when new orders arrive at the markets and they are carried out directly between investors or with brokers acting as intermediaries. Orders which are not executed are collected in a limit order book and they provide the liquidity against which market orders are effected later on. Hybrid markets combine elements of quote- and order-driven markets. Other types include Alternative Trading Systems (ATSs) which enable buyers and sellers to meet on an agency basis (there are no market makers who invest their own funds or commit to provide liquidity). Within ATSs, Degryse (2007) distinguishes three groups of networks: Electronic Communication Networks (ECNs), which allow investors to clear trades through an open limit order book (traders trade with each other directly); Crossing Networks (CNs), which cross multiple orders at a single price and do not allow orders to be crossed or executed outside specified times; and Smart Order Routing Technology (SORT), with which – based on trading criteria (e.g. best execution) – orders are routed to centralized markets.
multi-dealer-to-dealer platforms, also referred to as interdealer or B2B platforms, and multi-dealer-to-customer platforms also known as B2C. B2B platforms are mainly used for government bond trading, whereas B2C platforms service government and corporate bonds with equal weight.\(^4\)

In the B2B segment, electronic platforms are more widely-used than in the B2C segment. Despite the ongoing shift to electronic platforms, voice communication or a combination of electronic and voice brokering still plays a considerable role. The reason is that the direct verbal interaction facilitates the formation of trust between trading partners, which is particularly helpful in recurring trading situations with exceptional trade sizes and frequencies or illiquid financial assets. In other words, voice brokering is more beneficial for the buyer and/or seller in terms of transaction costs, if the market liquidity is low and one broker is charged with the handling of a large volume order. If, however, the market liquidity is high, the trade sizes are small and standardized and there is little market volatility, market participants generally prefer electronic trading. Hence, in large and liquid markets with stable trading conditions, electronic trading offers the advantage of easy and fast trading, thereby promoting trading volumes and cutting trading costs. Electronic brokerage is therefore more common when trading “on-the-run” and benchmark issues, whereas voice brokerage is more popular in trading “off-the-run” issues and delicate large volume trades.

Both kinds of platforms (B2B and B2C platforms) provide market participants with pre-and post-trade pricing information. An interesting question is whether electronic or voice brokering would be more efficient in terms of price discovery. Dunne, Moore and Portes (2006b) point out that although electronic platforms are usually regarded as more transparent and voice brokering as more opaque trading venues, this does not necessarily mean that electronic trading would deliver the more efficient price, i.e. a price that best approaches the “true” price outcome. Anonymous electronic trading could produce a price which is only “on average” informative, since the price responds to all trades, whereas voice-brokering could result in a more efficient price as traders have a vital and sustained interest of being mutually reliable trading partners. Hence, the nature and extent of the information could be more precisely communicated in the market by voice-brokering. Put differently, there could be a trade-off between a more transparent trading platform offering a less efficient price and a more opaque trading platform with a possibly more efficient price setting.

Persaud (2006) points out that in the U.S.A. electronic trading is far more common than in Europe: In the U.S.A., electronic trading represents 98% of all “on-the-run” volumes, whereas in Europe, electronic bond trading amounts only to 65%. As a possible explanation, he

\(^4\) For a survey on electronic platforms in Europe, see TBMA (2005).
mentions the concern over liquidity market participants could have in Europe as only one specific platform (MTS, see section 3.2.1) dominates whereas in the U.S.A. a variety of different trading platforms exist.

Electronic trading has been growing in recent years and continues to grow in Europe. The report by TBMA (2005) expects a further expansion of European electronic platforms as the trading platform industry is currently being transformed and consolidated. In particular government and high-grade bonds will increase their shares of turnover on electronic platforms. By contrast, bonds with lower ratings, highly structured cash flows, unique features and large block trades are likely to reduce their trading share on electronic platforms.

2.2. Liquidity

Liquidity is one of the most important characteristics of an organized financial market and it is usually defined (e.g. Campell, Lo and MacKinlay, 1997) as the ability to buy or sell significant quantities of a security in a quick, anonymous way with relatively little impact on the price. The concept of liquidity comprises both price and quantity aspects. For the various dimensions of liquidity, see also BIS (1999).

2.2.1. Number of Trading Platforms

An important issue – in particular for regulators – is whether competition between different trading platforms would enhance liquidity and improve market quality. Earlier papers in the literature, for instance Pagano (1989), Chowdry and Nanda (1991) or Admati and Pfleiderer (1991), broadly acknowledged that as a result of liquidity externalities, trading generally tends to take place in those markets that are already most liquid. Hence, they argue, it is difficult to move liquidity from one trading system to another even when the new system is intrinsically better. Traders may prefer differently organized trading systems that correspond to their special needs. Differences in investors' tastes (willingness to trade, degree of immediacy, portfolio composition effects, informed versus liquidity traders) could also lead to heterogeneous order flows. As a result of increased market fragmentation, bid-ask spreads tend to widen, and price volatility is growing (see for instance Harris, 1993).

In the same vein, Stoll (2001) argues that a choice of different trading venues would trigger higher market fragmentation as it would lower the incentives for investors to submit orders to

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Market quality can be measured in terms of bid-ask spreads, depth of the market, informational efficiency and price discovery.
more than one platform by decreasing probability of order execution. Hence, liquidity would fall once more trading venues are available to investors.

Yet one could also argue that, since aspects of competition policy have been taken into account more recently, a higher number of trading platforms would exert market pressure on the current trading platforms and would therefore improve market quality as bid-ask spreads narrow. Moreover, while the market depth of the former main market may decrease, the joint depth of both markets (the “old and the “new” one) may be higher. The analysis of how intermarket competition affects market quality is related to the literature on competition between traditional financial markets, see e.g. Parlour and Seppi (2003). For an overview of factors determining the competitiveness of a market, see Biais, Glosten and Spatt (2005).

### 2.2.2. Trading Costs

Market makers provide the liquidity by accepting to buy or sell securities at the quoted price, see also section 4.1.2. The bid-ask spread is one of the major sources of trading costs; the size of the spread is influenced by adverse selection costs which arise for the market maker when dealing with informed traders. Informed traders possess superior information on the true value of a security than market makers. As market makers cannot differentiate between informed and uninformed traders, they would, on average, incur losses. The larger the proportion of informed traders and the higher the quality of the superior information, the higher the necessary compensation for the market maker and hence the larger the bid-ask spread.

The bid-ask spread also varies according to the type of the security and the trade size. The larger the volume traded, the more likely the transaction is to have an impact on the price of a security. However, in specific dealer markets such bond markets large investors are frequently able to negotiate the price of a security with a number of dealers, whereas smaller investors would have to accept the price quoted in the markets without the option of negotiating. The bid-ask spread is also likely to be higher the less liquid the security is. Bond markets are a prominent example in this respect; illiquid bond markets tend to have large bid-ask spreads.

In addition to the bid-ask spread there are, however, other sources of trading costs. These are direct costs or order-processing costs and inventory costs. Direct or order-processing costs entail commissions to brokers and a tax on the trade. Inventory costs are associated with the risk of an undesired inventory and the price impact of a potential sale in large volumes which may lead to an adverse increase in the bid-ask spread.
2.2.3. Characteristics of Well Functioning Markets

Well-functioning markets are characterized by several features (Campell et al., 1997): First, an adequate amount of timely and accurate market information, for instance, on past prices, trading volumes, current bids and offers and the amount of short sales outstanding, should be available to investors. Yet one has to bear in mind (see section 2.3 and 3.2) that too much pre-transparency could also lead to a reduction in market liquidity. Second, trading costs should be kept as low as possible. Tight markets, for instance, match supply and demand at low costs. Third, transactions should be carried out at prices that do not vary substantially from past prices unless new information enters the market. In other words, market participants should expect price continuity (see section 4.4.1). Fourth, markets differ according to the speed with which new information is incorporated into the transaction prices (see section 2.4 and 4.4.2). Investors would typically prefer efficient markets, where all kinds of information are mirrored in the current transaction price.

Moreover, markets should be deep, i.e. a large number of buyers and sellers should be willing to buy and sell at prices that do not differ too much from the current transaction price. Market depth circumscribes the markets' capacity to digest large volumes of financial flows without having a significant bearing on prices. A deep market is generally considered to have narrow bid-ask spreads, a high daily turnover and only little increase in bid-ask spreads or sparse deterioration in prices if transactions are carried out in other than the best market prices.

In most of empirical work on market liquidity, more emphasis is attached to bid-ask spreads than on market depth, since bid-ask spreads are easily registered and compared across markets and time. In a study on liquidity of international bonds including sovereigns, corporations, banks, and supranational institutions Gwilym, Trevino and Thomas (2002) find that credit rating and issue size of bonds are negatively related to the bid-ask spread, while their price volatility is positively related. The authors' econometric analysis also shows that financial and supranational issuers tend to have narrower and less dispersed spreads than sovereign and, even more so, corporate bonds. Hong and Warga (2000) also find support for the hypothesis that larger issues are more liquid and associated with smaller bid-ask spreads than smaller issues. Degryse (2007) notes that, in addition to regulatory market reforms, the growth of Electronic Communication Networks has helped to significantly lower trading costs.

2.3. Transparency

Transparency is one of the key issues in financial markets. In general, properly functioning financial markets are characterized by a balance between transparency aimed at fostering competition and protecting investors on the one hand and opacity which stimulates
participation of customers and liquidity providers on the other hand. An efficient market that attracts a sufficiently large number of participants has to provide fairness, protection and an adequate incentive structure (Dunne, Moore and Portes, 2006a). The crucial point is to determine the optimal degree of transparency.

Regarding the transparency of financial markets one can distinguish between pre- and post-trade transparency. Pre-trade transparency refers to the availability of information on outstanding order flows collected in the order book or dealers’ quotes before orders are submitted. In other words, pre-trade transparency assures that market participants are aware of publicly observable prices at which they can expect their trades to be carried out. Post-trade transparency refers to information on recent actual prices and volumes traded. Post-trade transparency enables market participants to compare prices and serves as an incentive for dealers to provide their clients with the so-called “best execution price.” Changing the level of pre-trade and post-trade transparency may considerably influence information asymmetry in the markets. Greater transparency increases the efficiency of markets as information is more equally distributed across market participants. This may alter the behavior of market participants substantially and as a consequence change market quality.

Dunne (2007) mentions that the high transparency of primary dealer systems is harmful to the growth of an electronic dealer-to-customer secondary market. The reason is that market segmentation leads to a time lag between customers’ request for a trade and the actual order execution. The time lag and the high degree of transparency common to most electronic trading arrangements can potentially lead to a behavior which damages market quality. For instance, if a dealer wins an automatic request for a quote (“RFQ”) auction, he possibly faces the “winner’s curse problem.” Even if the dealer wins the auction in the B2C-segment, he will often take the opposite position in the B2B segment. If the time lag between order request and order execution in the B2C segment is too long and if more than one dealer is involved, too much transparency in the B2C segment might work against the dealer who won the auction. In other words, dealers have to face increasing risks stemming from their attempts to hedge positions in the interdealer market, such risks result from dealings with buy-side customers.

Hence, increasing transparency by regulators in the B2C segment for investor protection (e.g. through a transparent parallel electronic order book) would possibly reduce traders’ readiness to permanently supply liquidity in the B2B market, which in turn may impact on the efficient functioning of primary markets. In this context, the interests of customers and /or regulators as

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6 The term “increased transparency” means that information on prices and volumes are made available to a larger audience than before and/or that more sensitive details on trades are disclosed and/or that information is released more quickly than before.
well as issuers may conflict: Issuers are mainly interested in a well-developed B2B market – this has indirectly favored a more opaque trading in the B2C segment, which is possibly at the expense of customers. In other words, a highly transparent B2B segment tends to be combined with a much less transparent B2C segment. But higher transparency in the B2C segment enforced by regulators could probably seriously damage efficiency and liquidity in the B2B segment. Casey and Lannoo (2005) also conclude that too much transparency can harm liquidity.

Dunne (2007) proposes to reduce segmentation between the B2B and B2C platforms in government bond markets – inter alia – by opening the B2B segment to customers and by spreading the burden of liquidity provision across a wider group of market participants. A more thorough discussion of alternatives goes, however, beyond the scope of this paper.

In the empirical literature there are only few papers that analyze the effects of changes in the level of transparency on market quality. Madhaven, Porter and Weaver (2005), for instance, find that an increase in pre-trade transparency leads to an improvement in market quality whereas according to Boehmer, Saar and Yu (2005), an increase in pre-trade transparency would result in a deterioration of market quality. Gemmil (1996) analyzes changes in the level of post-trade transparency and detects no liquidity effects.

2.4. Impact of Economic News on Price Movements

Economic announcements influence bond markets, since they represent unanticipated information on the state of the economy. Market participants regard in particular macroeconomic figures as essential leading indicators. In the empirical literature, the impact of macroeconomic announcements on bond prices has been analyzed mainly on the basis of daily data; more recent research concentrates on intraday data.

Earlier work on U.S. data investigated the bond market effects of data releases of money supply, producer and consumer price indices, various leading indicator indices, the trade balance and unemployment figures. Papers, such as Dwyer and Hafer (1989), found that data releases of money supply and producer price indices had the largest impact on bond prices.

Another strand of the more recent literature focuses on intraday effects. Fleming and Lopez (1999) indicate that even large changes in the U.S. Treasury yield curve do not occur in times of U.S. economic news announcements. Such changes frequently appear to happen in

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7 Request for quotes (“RFQ”) trading platforms are electronic platforms in the B2C-segment. Examples of RFQ platforms are BondVision, TradeWeb and Bloomberg-Bond-Trader.
8 The three papers mentioned, however, deal with stock market transparency.
periods when the U.S. Treasury market is not active. German bond yields fluctuate mostly during the European morning trading hours and this fluctuation is not linked to any day-of-the-week pattern or any specific data release.

On the contrary, Fleming and Remolona (1999) and Balduzzi, Elton and Green (2001) find that the largest movement in U.S. bond prices occurs in days of macroeconomic announcements. Both papers find that before the announcement takes place on trading days, trading intensity and price volatility are low while bid-ask spreads are elevated. Fleming and Remolona (1999) declare that unemployment figures have the most significant impact on bond prices. Moreover, they locate a substantial increase in trading volume up to half an hour after macroeconomic announcements. Balduzzi, Elton and Green (2001) study the response of U.S. Treasury bond prices to 26 different public economic news announcements published throughout a day between 8:30 a.m. and 4:30 p.m. 17 out of these 26 announcements affected the prices of the U.S. bond prices. They find that trading around announcement times is more intense than during the normal trading times, leading to multiple trades every minute. Most announcements tend to be very quickly incorporated into prices (one minute or less), leading to a jump in bond prices. They also document significant and persistent increases in volatility and trading volume after the announcements. Bid-ask spreads widen at the time of the announcement, but revert to normal levels after five to 15 minutes.

Goldberg and Leonhard (2003) observe in their study a strong influence of U.S. data on euro area interest rates – in particular on bond prices. They find that U.S. economic news has a direct and large effect on German government bond yields within an hour of its release. In contrast, similar news from the euro area had only small effects on U.S. Treasury yields (and also German yields). In their study, they found that the largest effects on both markets emerge from news on labor markets, real GDP, consumer sentiment reports and various price level indicators.

Green (2004) studies the impact of trading on U.S. government bond prices surrounding the release of macroeconomic news. He finds that bond prices are increasingly subject to order flow in the first half hour following economic announcements, suggesting that the release of public information increases the level of information asymmetry in the bond market. Trading activity remains high for several hours after the announcements, the level of information asymmetry, however, returns to almost the normal levels again within 15 minutes.

Andersson, Hansen and Sebestyén (2006) examine the effects of various macroeconomic data releases (unemployment, industrial production, GDP, consumer price index, business confidence indicators) and of the ECB’s monetary policy announcements on German long-term bond yields. Macroeconomic data releases cover German, French, Italian and aggregate euro area and U.S. macroeconomic data releases. The authors find that U.S. and – to some
extent – euro area and national data releases have a considerable influence of German government bond yields. Yet the announcements have a stronger and longer impact, on the volatility than on the levels of bond yields.

According to the brief survey of select papers, money supply, producer and consumer prices, unemployment figures, real GDP and industrial production, consumer and business sentiment have in most cases an influence on bond prices. With few exceptions, fiscal variables are not considered as an impact variable, probably due to the fact that fiscal balances and debt levels are measured on a yearly basis and are hence not frequently announced. Considering the speed under which economic news is incorporated into bond prices, the impact of news on bond prices occurs within a very short period of time (several minutes) after the announcement.

3. The Euro Area Government Bond Markets

When referring to euro area government bond markets, it is important to distinguish between primary and secondary markets. Both markets affect the price dynamics of euro area government bonds. Whereas the primary market is closely related to the financing need of the government and therefore ultimately provides the liquidity, the secondary market is the place where market participants meet and trade the bonds that are issued in the primary market.

The institutional setting of both markets, i.e. the issuing procedures and the structure of the clearing and settlement framework and the trading facilities of large and small players (market makers, brokers, and investors) are essential ingredients for price determination. Casey and Lannoo (2005), Pagano and von Thadden (2004) and ECB (2004) provide extensive surveys of the European secondary bond markets, Dunne et al. (2006a, 2006b) of the primary markets.

Surprisingly, policymakers pay less attention to euro area bond markets than to equity markets, which is surprising given the overall importance of bond markets for the proper functioning of the economy (as already briefly mentioned in the introduction). Since the bulk of euro area bond trading still occurs off-exchange, the mechanisms of bond markets are often poorly understood outside the market.
3.1. Primary Market

3.1.1. Stylized Facts

In 2006, total gross issuance of euro-denominated bonds (euro area and outside) amounted to EUR 1,873 billion (table 1), thus exceeding total gross issuance of euro-denominated bonds in 1999 (EUR 1,400 billion) by 34%. By market segment, asset-backed securities and local government bonds have experienced the largest expansion since 1999 (387% and 257% respectively). It is interesting to note that in 2006 the private sector was more dynamic than the public sector. Compared with 2005, the relative share of public issues dropped from 39% to 36% in 2006. Within the private sector, expansion was strongest in the market segments of asset backed securities (+39%), corporate bonds (+34%) and financials (+10%) in 2006.

As regards the composition of total issuance, central and local governments account for the largest part of euro-denominated bond issues. In 2006, they carried out 39% of all euro bond issues (51% in 2002). Since 1999, central government issues have risen by approximately 10%, and local governments by 257%. Local government bond issues, however, represent only a small fraction of all government bond issues.

In 2006, euro area issues placed 98% of all euro-denominated central government issues, with Italy (31%), Germany (22%) and France (18%) contributing the largest shares, followed by Spain (6.5%), Greece (4%), the Netherlands (3.5%), Austria (2.7%), Portugal (2.2%) and Finland (0.9%). Ireland and Luxembourg recorded no bond issuance in 2006.

Table 2 displays that in 2006, approximately 55% of all issues were launched by “AAA”-rated euro area central governments, 40% by “AA”-rated and 5% by “A”-rated governments. Among the 12 countries that introduced the euro in 1999 and 2001 (Greece), eight countries are currently carry Standard & Poor’s highest rating (“AAA”), three countries an “AA” and one country an “A”-rating.

With regard to issue size, 5% of the total euro government issuance occurred in a range between EUR 0.5 billion and EUR 1 billion per issue, 14% between EUR 1 and EUR 2 billion

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9 “Outside” means recently acceded Member States, candidate countries and other emerging markets. In sum, these issues amount to approximately 2% of the total in 2006.
10 The figures on the primary market are from Commission Services (DG ECFIN database on euro-denominated bonds) and draw from publications that can be found on the website http://ec.europa.eu/economy_finance/publications/bondmarkets_en.htm. The database includes all issues of a maturity of one year or more (incl. in particular Italian and French discounted paper of usually significant issue amount).
11 Austria, Finland, France, Germany, Ireland, Luxembourg, Netherlands, Spain.
12 Belgium, Italy, Portugal.
13 Greece.
and 81% above EUR 2 billion per issue in 2006. Obviously, euro area central governments favored larger bond issue sizes in order to enhance liquidity. New benchmark bond issues generally amounted to at least EUR 5 billion. This is the minimum volume for trading on the euro MTS platform, see section 3.2.1.

### 3.1.2. Institutional Aspects

The issuing policy is autonomously determined by the government of each euro area member country. Since January 1999, several initiatives have been taken to promote the proper functioning of euro area government bond primary markets, and in particular to enhance market liquidity. Auction calendars have been released well in advance to raise market transparency and issue sizes have been enlarged. This was facilitated by programs aimed at replacing old illiquid bonds for new bonds and by reducing the issuing number of benchmark securities. In order to attract attention from a larger number of investors, some countries with traditionally smaller issuance volumes (Austria, Belgium, the Netherlands, and Portugal) have partly substituted traditional auctions for syndication procedures. Countries with larger issues, like France, have launched new products such as inflation-indexed bonds. Yet there are still, considerable differences in primary markets. Dunne et al. (2006b) find that issuance techniques in primary markets account for a good deal of cross-country differences within the euro area regarding transparency, trading costs and depth. The characteristics of the euro area bond market are therefore far more heterogeneous than for example the features of the euro area money markets where the European Central Bank (ECB) is the ultimate supplier of liquidity.

Regardless of the introduction of the euro, national government bond markets have still been existing in parallel. Obviously, smaller national government bond markets must be offering some incentive for participation. The main reason may be the specific design of national auction syndicate structures that already abounded before 1999. National Debt Management Offices (DMOs), which are in general – at least to some extent – legally and constitutionally part of their respective Ministry of Finance, act as agencies for the government. They carry out the government’s debt management in line with the government policy and financial framework in an operational way. DMOs serve different objectives: In some countries, they simply aim at minimizing the cost of paying the debt, in other countries they endeavor to secure a healthy retail market and an orderly behavior of market participants.
When issuing bonds, many DMOs rely on the ample participation of primary dealers to absorb the volume issued and to sell it in the secondary markets later on. One of the obligations primary dealers have to comply with in many European countries is that they may only trade on pre-specified platforms, such as the local MTS platform (see section 3.2.1), where DMOs can closely monitor the activities of primary dealers. Regarding the number of primary dealers and MTS market makers in the different euro area countries, we refer to table 3.

According to Persaud (2006), DMOs hold the opinion that only one single platform would maximize liquidity. He also notes that primary dealers are often small stakeholders of the local MTS systems.

Typically, DMOs rank primary dealers by performance criteria in the primary and secondary markets that serve the DMOs specific interests, like minimizing the cost for the Treasury or mandatory market making on a particular platform. The best-performing dealers that move on to the second stage – syndication – have the chance to make profits compensating for any losses incurred during the first stage of the auction.

In this spirit, Dunne et al. (2006a) mention that is plausible to conclude that primary and probably secondary market activity is a loss leader for primary dealers. In turn, however, primary dealers benefit from having the right to participate in bond exchange programs and/or to strip and reconstruct bond issues. Moreover, in some countries primary dealers enjoy privileged access to the repo market. Other benefits for primary dealers comprise advisory fees or a mandate from national authorities to organize syndications, securitizations and privatizations. Furthermore, large banks often regard primary dealership as a matter of prestige. Although it is hard to measure the exact value added of a primary dealer, it is a fact that governments and their DMOs are important clients for large international banks.

Given the high importance of primary dealers and voice brokerage in the secondary markets, the euro area government bond market has often been criticized as being opaque. However, in recent years the extension of existing primary dealer obligations in small euro area countries has led to an improvement in the transparency in the interdealer market. Yet in the dealer-to-customer segment opacity still prevails, see Dunne (2007).

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14 A primary dealer is officially recognized by a DMO and must participate in auctions. In the secondary markets, primary dealers must undertake quoting obligations by quoting firm prices to investors and other dealers as well as displaying indicative prices on electronic systems. Primary dealers offer additional benefits to issuers, for instance, advisory services, a deep investor/customer base and promotion of the debt abroad.

15 Belgium, Denmark, Finland, Italy, the Netherlands, and Portugal.

16 See MTS Group (2006, p. 20)

17 In this respect, the relevant euro area countries are Belgium, Finland, Ireland, Italy, the Netherlands, and Portugal (EPDA, 2007).
As compared to voice brokerage, DMOs prefer electronic brokerage mainly because it enables them to retrace transactions more easily which, on the one hand, facilitates the inspection of the adherence of primary dealer secondary market obligations and, on the other hand, reduces systemic risk.

As a result of the increased pre- and post-trade transparency, liquidity for trades with normal size has improved. However, in countries that have introduced the primary dealer system, some kind of market distortion has emerged as auction prices are frequently higher than post-auction prices. The reason is that primary dealers tend to over-bid at auctions and typically take over large stocks in order to meet their secondary market obligations. The risk arising from such large inventory building has been further passed on to the customers who are confronted with spreads which are higher than normal trade size spreads. Issuers benefited from lower yields and non-rewarded market participants refrained from further auction-bidding.

3.2. Secondary Market

The segmentation of the euro area government bond market in B2B and B2C offers a variety of advantages to market participants. As Dunne (2007) points out: once a B2B und B2C setup is in place,

• issuers are better off distributing new bond issues through dealers rather than to investors directly,
• dealers are better off building and maintaining a client base that is large enough to warrant the risk exposure they incur by providing liquidity in the secondary interdealer market and
• clients are better off routing most of their order flow through one dealer because they can expect better execution when they assist their dealer in keeping trading positions hidden from competing dealers.

Most secondary market trading activities occur on MTS trading platforms. MTS platforms are electronic interdealer trading venues, where individual investors are not permitted to trade.

3.2.1. MTS Trading Platform

Initially, the MTS trading platform (Mercato dei Titoli di Stato) was created by the Banca d’Italia and the Italian Treasury in 1988 to stimulate and enhance trading of Italian government bonds. In 1994, the MTS system was modified – in particular with a view to improve market depth. After the privatization in 1998, the MTS system has expanded to other Euro-denominated markets. It has since become operational in many EU Member States with MTS Austrian Market (2003), MTS Belgium (2000), MTS Denmark (2003), MTS Finland (2002),

In 1999, the EuroMTS system – a pan-European electronic trading platform – was launched in addition to the already existing national MTS trading platforms mentioned before. From 1999 onwards, trading activities in the European government bond markets have been increasingly marked by a transition from over-the-counter (OTC) trading to EuroMTS. Galati and Tsatsaronis (2001) point out that by enhancing transparency, EuroMTS has significantly contributed to further stimulate EU cross-border trading. For a detailed description of the MTS trading system, see Cheung, de Jong and Rindi (2005).

According to Persaud (2006), MTS covers a market share of 71.9% of the electronic European cash government bonds trading, followed by HDAT (the Bank of Greece’s proprietary system of secondary trading in Greek government bonds) with a market share of 19.0%. SENAF, a Spanish platform which exists in addition to MTS Spain, ranks third (market share: 5.4%), Eurex Bonds fourth (market share: 3.6%) and Brokertec & E-Speed fifth (market share: 0.1%).

The range of fixed-income securities that can be traded on domestic MTS platforms is larger (see table 4), as it comprises on-the-run and off-the-run issues, whereas on the EuroMTS platform only on-the-run issues can be traded. Although dealers are able to offer a much wider range of bonds to clients in the national MTS platforms, both platforms exist in parallel. Cheung et al. (2005) report that bid-ask spreads, quoted on EuroMTS and the national platforms, do not differ much. Neither do transaction costs vary much among large orders being traded on the EuroMTS-platform and smaller orders on the local MTS platforms. This observation would appear to suggest that the national trading platforms and the centralized EuroMTS platform are closely linked to each other in terms of liquidity.

Alternatively, as pointed out by Casey and Lannoo (2005), tight bid-ask spreads across the MTS platforms may also reflect the mandatory quoting obligations placed on the dealers, since market-making obligations are standardized across the system. Consequently, the perceived depth of the MTS system may be only an illusion, as liquidity is artificially standardized across these platforms by similar or identical market-making requirements enshrined in the Liquidity Pact.
The Liquidity Pact is an arrangement whereby market participants in the primary and secondary markets (dealers and issuers of securities listed on MTS) undertake various commitments to each other in order to enhance liquidity and transparency (MTS Group, 2003). For instance, market makers have to continuously post buy and sell limit-orders within a maximum bid-ask spread, for a minimum quote amount on both sides of the market, for at least five hours each day. However, since it is not guaranteed that enough customer transactions can be carried out at these small spreads to make the liquidity commitments profitable, banks endeavor to build up their client base. Banks, however, benefit from the commitment of other banks, since undesired high inventories can be reduced by the liquidity supplied by another dealer under the same agreement. Otherwise, no single dealer would be prepared to bear all the risks and supply the liquidity.

In fact, the main reason for the dominant market position of MTS platforms seems to lie in the trading restrictions imposed by national DMOs (see section 3.1.2). According to Persaud (2006), these secondary market obligations for primary dealers reduce competition between platforms. Persaud discards arguments that could be raised by DMOs maintaining that competition among various trading platforms would increasingly fragment liquidity and reduce the transparency of primary dealer activity. Moreover, he contests that market participants would find it difficult and costly to exploit the most efficient trading opportunities and argues that evidence from financial markets rather suggests that competition between platforms has enhanced volumes, depth and market functioning as U.S. experience has shown.

The MTS trading system, where mainly standardized transaction sizes are traded, is characterized by a high degree of transparency. Detailed information on order book data in real time, quotes and transactions are directly submitted to information systems like Bloomberg and Reuters. If, however, large volumes are to be split into smaller amounts, these large block quantities are not displayed in the order books and therefore not available as information. Also, if transactions are settled bilaterally, only the two counterparties are known to each other, in case central counterparties (CCPs) are used, total anonymity is guaranteed.

In the euro area, liquidity of the national bond markets differs according to trading volumes, the amount of outstanding issues (see section 3.1.1), the market makers' trading activity and the depth and efficiency of the secondary markets. Benchmark bonds, in particular at 5- and 10-year maturities (which are the most liquid ones) are mainly traded at EuroMTS, whereas bonds that are no longer benchmark bonds are traded on the domestic MTS platforms (see section 3.2.1). Pagano and von Thadden (2004) mention the Liquidity Pact as one key to the success of the EuroMTS platform in terms of secondary market liquidity. Casey and Lannoo (2005) and Persaud (2006), however, dispute whether the perceived liquidity structurally reflects the market condition.
Pagano and von Thadden (2004) present statistics on bid-ask spreads across euro area countries for the period 2002/2003. Average spreads range between 2.5 basis points (Italy) and 4.9 (Finland). According to these data, the German government bond cash market is surprisingly not the most liquid market, the average spread in the 10-year bond market is 3.2 basis points. The reason is, as already mentioned earlier, that most of the trading in 10-year German government bonds takes place in the futures markets at the EUREX which are far more liquid than the corresponding cash markets.

Codogno, Favero and Missale (2003) stress the liquidity relevance of a sufficiently large menu of hedging and financing instruments, i.e. efficient futures and/or repurchase agreement (Repo) markets. Furthermore, they point out that the proper functioning of derivatives markets enables market participants to manage and actively trade interest rate risk, thereby enhancing liquidity not only in, for example, the futures markets but also in the spot markets. In the euro area Bund futures contracts on the German 10-year government bond – the de-facto euro area benchmark bond in this maturity spectrum – have assumed the pivot role.

### 3.3. Primary and Secondary Market Setup in Selected Euro Area Countries

The trading intensity on the national MTS platform(s) varies considerably across euro area countries; it depends on the issuing modalities and the secondary market obligations placed on primary dealers, see Dunne et al. (2006b). The stricter these obligations, the higher the volume being traded on the MTS platform(s). Countries which favor syndicate issuance and the imposition of secondary market obligations to primary dealers, experience higher turnover volumes on MTS. Austria, Belgium, Finland, Italy and Portugal are countries that feature syndicated issuance and/or secondary market obligations, whereas France and Germany are on the other side of the spectrum. In Spain and Greece, there are no specific secondary market trading obligations with reference to MTS. In the Netherlands, the DMO does not provide large benefits to primary dealers through syndicated issuance and is itself frequently the lead runner in syndicated issues. Moreover, there are no secondary market obligations for primary dealers.

#### 3.3.1. Germany and France

In Germany, for instance, the German Finance Agency (Finanzagentur) does not rely on a primary dealer system or a syndicated issuance system. The German Finance Agency arranges regular auctions which are announced in advance through an annual issuance
calendar to ensure transparency. Instead of a primary dealer system, 40 banks – the Bund Issues Auction Group – participate in these auctions on a voluntary basis. There are no secondary market obligations; participating banks are neither obliged to serve as market makers, nor do they receive any fees or any other incentives from the Finanzagentur. However, as a result of the Bund Issues Auction Group’s active market making, the secondary market in Germany is highly liquid; see MTS Group (2005). Dunne et al. (2006, p. 43) suspect that a significant proportion of trading in German government bonds occurs outside MTS in the OTC markets. According to their analysis, the existence of an opaque secondary (OTC) market that is less transparent than the MTS platform might be seen as a concession to participating banks to provide liquidity at auctions. As a result of this more opaque trading setting, bond auction prices are less distorted since there is no need for participating dealers to show good auction performance.

Another important trading venue of German government bond trading is the EUREX Bond trading platform. In terms of transparency, EUREX is comparable to MTS platforms and, moreover, includes trading in German fixed income securities other than government bonds, like sub-sovereign fixed income bonds of the Kreditanstalt für Wiederaufbau, the European Investment Bank and the States of the German Federal Government. In addition, market participants have the possibility to trade government bond futures contracts at the EUREX, which are the benchmark futures contracts that are heavily used for hedging purposes of any euro area government bond positions. Price movements of the futures contracts and the MTS cash markets show high correlation.

In France, the Agence France Trésor, has installed a regular auction system which is announced in advance and through which bond issues are placed. On some occasions, specific products are launched through syndication. Primary dealers have committed themselves to take part in all actions to ensure a smooth auction process. The French government bond market is very liquid; France was the first European sovereign issuer that authorized the stripping of its bonds. The French Strips market is the largest and most liquid Strips market in the euro area, see MTS Group (2005).

### 3.4. Financial Market Regulation in the EU

In 1999, the Financial Services Action Plan (FSAP) was adopted, which aimed at integrating national capital markets into a single market for financial services in the European Union. The FSAP puts forward indicative priorities and a timetable for specific measures in order to accomplish three strategic objectives, namely establishing a single market in wholesale
financial services, making retail markets open and securing and strengthening the rules of prudential supervision, see for instance Deutsche Bundesbank (2004).

In order to accomplish financial market integration, the regulation of securities within the FSAP has to take care that EU suppliers are granted equal access to all EU securities markets. To this end, EU Member States have to acknowledge the rules and supervision of the other Member States (home country control)\(^{18}\). Moreover, a maximum of market transparency has to be established to ensure that market participants are able to thoroughly compare quality and costs across national financial markets, see also section 2.3.

In recent years there have been increasing efforts to strengthen transparency in European financial markets. Regulatory issues with respect to transparency are dealt with under the Markets in Financial Instruments Directive (MiFID) framework, which lies at the heart of the FSAP (see chapter 3.4.2).

Casey (2006) contributes to the ongoing debate policy on bond market transparency in the context of the MiFID and puts forward the idea whether an industry code of conduct may possibly be a more appropriate avenue than legislative initiatives for introducing more transparency in the bond markets across the EU.

For a detailed survey on regulatory issues of the securities market infrastructure in the European Union, see for instance Kazarian (2006).

### 3.4.1. Clearing and Settlement

There is a broad consensus among European policymakers that more efforts should be put into removing restrictions on clearing and settlement arrangements in particular in terms of securities registration and tax compliance.

Segmentation in the location of clearing and settlement systems has created inefficiencies in the EU government bond market which are characterized by a large number of cross-border transactions; the implementation of a euro area-wide clearing and settlement system has progressed only very slowly. The optimal market infrastructure solution for clearing and settlement across the EU should basically cover the following areas: cost of service, stability, scalability and security, transparency of governance, removal of barriers to entry.

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\(^{18}\) Home country control (also country of origin rule) is part of the Single Market law that determines which laws will apply to goods and services that cross the border of EU Member States. EU law requires that the goods or services produced in one Member State should be allowed unhindered access to markets of other Member States, the latter being allowed to apply their laws except in specific circumstances.
These issues have been tackled by various groups and/or institutions such as the Giovannini-Group and the European Commission. In its report on “Cross-border Clearing and Settlement Arrangements in the European Union” (Giovannini Group, 2001), the Giovannini-Group specified 15 barriers which impede a more integrated and efficient clearing and settlement industry in the fields of market practice and/or regulation, legal certainty and taxation. The “Second Report on EU Clearing and Settlement” (Giovannini Group, 2003) proposed a strategy and a timetable to remove these 15 barriers. Barrier 10, for instance, refers to restrictions on the clearing and settlement activities of primary dealers and market makers in EU government bond markets. Yet EPDA does not consider Barrier 10 to be particularly burdensome in itself (see EPDA, 2006).

In 2004, the European Commission prepared a note to the European Council and to the European Parliament entitled “Clearing and Settlement in the European Union: The Way Forward”. Moreover, a standing group, the Clearing and Settlement Advisory and Monitoring Expert Group (CESAME), was formed to monitor progress in eliminating the 15 barriers and to provide further advice to the European Commission in the fields of clearing and settlement. CESAME is made up of financial experts and EU officials and has organized regular meetings since 2004.

Although the MTS group jointly controls the various national MTS markets, clearing and settlement arrangements vary across countries (London Economics, 2005). LCH.Clearnet, for instance, provides clearing services to EuroMTS, MTS France, MTS Belgium, MTS Amsterdam, MTS Associated Markets and MTS Deutschland. Cassa di Compensazione e Garanzia and LCH.Clearnet jointly provide clearing services to EuroMTS for Italian bonds. Transactions in Austrian, Dutch, German, Finnish, Irish and Portuguese government bonds and in quasi-government bonds are settled either by Clearstream Banking Luxembourg or Euroclear Bank, while settlement services for trades in Belgian, French, Greek, Italian,

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19 The Giovannini Group is a group of financial market participants, under the chairmanship of Alberto Giovannini (chairman - Unifortune Asset Management SGR), which advises the European Commission on financial market issues. Formed in 1996, the Group’s work focuses on identifying inefficiencies in EU financial markets and on proposing practical solutions to improve market integration. The Commission’s Directorate-General for Economic and Financial Affairs provides the secretariat for the Group. Members of the Directorate-General for the Internal Market and of the ECB also participate in the Group's work. The Group has produced four reports. The first report on the impact of the introduction of the euro on capital markets was published in July 1997. It has been widely acknowledged as a driving force in forging a common approach to the re-denomination of public debt into euro and in establishing common bond market conventions for the euro area. Since then, the Group has published reports on the EU repo market, on coordinated public debt issuance in the euro area, and on EU cross-border clearing and settlement arrangements.

20 The European Primary Dealers Association (EPDA) is a division of the Bond Market Association and was formed 2004.
Spanish government bonds are provided by the National Bank of Belgium, Euroclear France, the Bank of Greece, Monte Titoli S.p.A, and Iberclear respectively.

Transnational initiatives aimed at integrating settlement systems have been implemented. The merger of Cedel with Deutsche Börse Clearing into Clearstream International which itself was taken over by Deutsche Börse AG in 2002 and the merger of Euroclear with CBISSO and Sivocam into the Euroclear group should also be mentioned.

3.4.2. EU Transparency Provisions (MiFID)

MiFID was adopted in April 2004 by the European Council and Parliament and entered into effect on November 1, 2007. MiFID transparency provisions entail – among others – the obligations for regulated markets and multilateral trading facilities to publish the bid-ask prices that are run through their trading systems, the price, volume and time of transactions as closely to real-time as possible. Transparency also covers pre- and post-trade prices at different order-book levels, for instance, the ex-post examination of the best execution price.

Equity and bond markets vary considerably as far as their characteristics, investor base, holding patterns and market regulations are concerned, see the discussion in Casey and Lannoo (2005). The question whether transparency requirements should be applied to the same or to a similar degree to bond and equity markets is currently discussed in official European fora. The Commission is expected to report to the European Council and Parliament on the possible extension of the MiFID to non-equity markets by March 2008.

Compared to equity markets, more trading occurs off-exchange and OTC in bond markets. Another special aspect is that bond markets are quote-driven and market makers risk their own funds for providing the liquidity. It is also worth mentioning that, compared with equity markets, bond markets are characterized by a higher degree of segmentation into B2B and B2C platforms. Moreover, in bond markets, investors tend to maintain a closer relationship with their dealers than in equity markets, which makes dealer-to-client trading inherently less transparent in bond markets, see Dunne (2007).

The increasing shift of government bond trading to electronic platforms that increases the speed and efficiency of information flows between the two segments could possibly also reduce the market quality. As could for example be the case where transactions between dealers and customers become so widely known that the dealers would find it hard to get a good price in the interdealer segment. In other words, the more transparent the dealer-to-customer segment, the more difficult it is for successful primary dealers to hedge their positions in the interdealer segment. This could also lead to a disincentive for participation in government bond auctions. Excessive transparency in the interdealer segment could prevent
customers from contacting their dealers which in turn would reduce the banks’ market information from the liquidity demand side.

In spring 2007 the ICMA responded to a request of the European Commission whether a market-led approach would provide a better solution to achieve adequate transparency than regulatory changes. ICMA (2007) reported that a majority of 92 respondents of a questionnaire preferred a “Price Service,” which would involve publishing, at the end of the day, an average of the closing bid and ask quotes for each reportable security; and high, low and average prices for each bond trade reported to ICMA. A quarter of the ICMA respondents favored a “Single Trade Publication Service,” which would involve publishing trades in large investment-grade bonds above a minimum level and below a specified upper size limit. Another quarter would prefer both publication venues. It is, however, important to note that views differed according to the impact of the “Single Trade Publication Service” on liquidity.

Dunne et al. (2006b) report that – according to the interviews they carried out with market participants – transparency developments have led to a fall in per-trade profits available from trading and supplying liquidity. Nevertheless, market participants were able to cope with the drop in trading profits by making use of improved information technology that reduced the costs of maintaining their market presence.

The U.S. experience following the implementation of TRACE calls into question the concerns that transparency requirements would negatively impact liquidity and deter market participants from committing resources. Haas (2007) notes that while the introduction of TRACE is believed to be responsible for a sharp decline in the profitability of corporate bond trading desks, it did not result in a notable decline in market liquidity, and was accompanied by increased retail investor participation. Casey and Lannoo (2005) mention that in the U.S. the introduction of the TRACE post-trade reporting system has reduced transaction costs for retail investors who wanted to be directly active in the markets. By contrast, the transaction costs for institutional investors may have risen since most of the retail investments in bonds have been carried out through funds and funds generally transfer their higher transaction costs to their clients by providing lower returns.

4. A View from the Market

After having briefly described the structure of the euro area primary and secondary government bond markets, we turn to the detailed analysis of the questionnaire we sent out to selected market participants (bond traders and research analysts) primarily located in
Frankfurt and London. The survey was conducted between June 2005 and January 2006. The questionnaire was primarily aimed at gathering opinions on possible determinants of bond yield spreads but it also covered various other aspects on government bond trading and bond price formation in the euro area government bond market.

Our analysis is based on 30 questionnaires. Respondents carry the following job titles: 48% “chief dealer/senior dealer”, 10% “treasurer/manager”, 10% “sales/senior sales”, 19% of the respondents are “researcher/strategist” and 13% “other”, see figure 1.

4.1. The Market and Its Players

4.1.1. Market Activity of Our Respondents

In our respondents’ departments the daily turnover in the European government bond market is – on average, but not in each department – equally divided between cash and derivatives markets. 51% of the respondents trade in the cash markets and 49.2% in the derivatives markets, see figure 2. Moreover, we asked our respondents about their average daily turnover shares in the derivatives markets, differentiating between swaps, futures and options. Note that although German and French government bond yields are generally regarded as euro benchmark yields in the 10-year and 5-year maturity spectrum, it is the euro interest rate swap yield curve that provides the most accurate euro benchmark yields. The majority of the purchases and sales in the derivatives markets occurred in the futures markets (59%), almost one third in the swap market (29%) and a smaller percentage in the options market (12%), see figure 3. The overall degree of transparency is generally higher in the futures market than in the cash market. This may be because instruments are highly standardized and traded in exchanges where collection and dissemination of information is relatively easy (see Inoue, 1999).

In the United States government bonds are offered by a single issuer. Hence, benchmark liquidity is higher in the cash than in futures markets. In the euro area, issuance is fragmented due to presence of different sovereign issuers. In contrast to the U.S.A., in the euro area liquidity is higher in the futures markets compared to cash markets, in particular in the German futures market.

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21 In this respect, we greatly benefited from the assistance of the Oesterreichische Nationalbank’s (Austria’s central bank) Section Treasury and the Oesterreichische Kontrollbank (OeKB).

22 Two financial institutions submitted two questionnaires each, one submitted three. They were, however, filled out by different departments. We would like to thank all respondents from the financial institutions listed in appendix A.
For DMOs in the EU Member States, the use of derivatives has become an important management tool in achieving their twin objectives of cost minimization and risk control. The use of interest rate swaps has also made it possible for DMOs in the smaller euro area countries to adjust the maturity of the outstanding debt while benefiting from issuance in most liquid yield curve segments.

4.1.2. Market Participants and their Interaction

With respect to market participants’ interaction in the interdealer market segment, inventory and order flow play an important role: Hu and Stoll (1983) analyze the impact of inventory on trading behavior and conclude that market makers with the largest long (short) positions are most likely to be the first sellers (buyers). Lyons (1997) analyzes market maker behavior under different order flow configurations and points out that a frequent selling of inventories to other dealers (“hot potato” effect) leads to additional noise, thus reducing the information in interdealer trades, reducing the information content of prices and making it more difficult for other dealers to derive the true price of a security. Menkveld, Cheung, de Jong (2004) also find evidence for an order flow effect on the price formation in financial markets. According to Fleming (2003), order imbalances have a strong positive correlation with contemporaneous returns in the U.S. Treasury market. Theoretical foundations for the impact of order imbalances on the formation of prices are termed “inventory effect” in the microstructure literature, e.g. Spiegel and Subramanyam (1995) and “portfolio balance effect” in the more macroeconomic dominated literature, e.g. Cao, Evans and Lyons (2006).

Trading activity may have a different impact on bond prices depending on the prevailing market situation. In periods of high market activity the impact may be lower and less persistent than in periods of low market activity. If a large player, i.e. a market maker, intends to unwind a position, he may either accept another dealer’s bid-ask spread, for instance in the interbank market, or wait for his own bid-ask spread to be accepted.

Hence, the costs for market-making are lower in periods of higher market activity when more players in the interdealer and/or the dealer/customer segment are looking for transactions than in quiet periods when transactions are primarily based on interdealer bid-ask spreads, see also section 2.2. The costs of market-making are also related to the correct anticipation of trade which highlights the importance of order flows in bond price behavior. If, for instance, dealers correctly anticipate buying orders, they will also be able to anticipate customer transactions in the same direction and start buying in the interdealer market. In case market makers’ guess goes into the wrong direction, they will have to adjust their own bid-ask spread in order to correct their mistake. This can be done more easily in periods of higher market
activity. Moreover, market makers who dispose of a bulk of order flows are not forced to immediately exploit their information, since the information obtained by a sufficiently large number of orders could prove to be longer-lived information, in particular when there is no market distress. Informed traders could distribute their information over a longer period of time with the result of a larger net supply of liquidity, smaller bid-ask spreads and a smaller impact of trades on prices.

In our questionnaire, we asked our respondents about the percentage of euro government bond sales and/or purchases either related to customer “flow business” or proprietary trading. 49% of the total activity is related to customer “flow business” and 51% to proprietary trading, see figure 4. Customer business clearly dominates the trading activities in six banks – the respective turnover amounts to 80% auf the total turnover; proprietary trading dominates in five banks – the respective turnover amounts to 90% on average. Customer business and proprietary trading is either equally distributed (six banks) or there is a slight prevalence on customer business (five banks) or proprietary trading (four banks).

To find out the relative importance of fundamental factors versus the weight dealers give to more market-driven factors (chart analysis or technical trading), we asked whether trading decisions were mainly “based on fundamental analysis”, “undertaken for hedging purposes”, “based on chart analysis” or “based on technical trading rules”. The results, presented in figure 5, show that “fundamental analysis” (34%) account for the largest share, followed by “chart analysis” (24%) and “technical trading rules” (16%). Transactions “undertaken for hedging purposes” encompass 20%.

According to the answers to the question on competitive advantages of large versus small players, 28% of our respondents named “a large customer base” as the most important advantage, followed by “better market information” (22%) and “ability to deal in large volumes” (15%), see figure 6.

These answers highlight the interdependence of the banks’ customer base with liquidity and transparency. On the one hand, a large customer base is closely linked to better market information; on the other hand, it is only an advantage in a regulatory setup where transparency is kept at a level that does not force a bank to reveal the complete order book. The same argument with respect to the transparency level applies to the advantage of large banks “to deal in large volumes”. Banks with (large) open positions could find it difficult to unwind these positions at good prices under certain market conditions. This would certainly apply to banks with a large customer base, which are likely to build up higher inventories than banks with a smaller customer base. As already mentioned in section 2.3, higher transparency requirements would not necessarily lead to higher customer welfare: Due to the risk of having built up large positions, banks could reduce their participation in government bond trading. As
a consequence, liquidity in the secondary market could dry up and spreads might increase as a smaller number of dealers operate in the markets.

A large customer base might not only be important for dealers when distributing new issues in the secondary markets but also for primary market issuers. DMOs that regularly issue new bonds have a vital interest that new issues are speedily and noiselessly absorbed by market participants, see also section 3.1.2. As Dunne (2007) points out, for this sake, DMOs are heavily dependent on the services of primary dealers. In turn, dealers that have a larger customer base and/or clients with large investment volumes are dependent on successfully bidding in primary market auctions or participation in syndicated auctions to meet the liquidity demands from their clients. Because of the high competition among dealers at primary auctions, new bond issues are frequently concentrated on a small number of large dealers with high market power. These dealers often have a large customer base, since the safest way for individual customers to invest in new on-the-run issues is to stay in close contact with a single primary dealer.

This is all the more true for syndicated issues, which are frequently used by smaller sovereign European issuers. Primary dealers that have been very active at bond auctions and in the secondary markets are frequently awarded lead management by DMOs, thereby earning high fees that compensate them for over-bidding losses at the auctions, see section 3.1.2. The lead managers and other syndication banks tend to distribute the new issues to those dealers that already have a large customer base. Smaller banks often run short of new bond issues.

### 4.2. Yield Spreads in the Euro Area – Stylized Facts

German government bonds are usually regarded as being the benchmark bonds in the 10-year maturity segment. As already mentioned in the introduction, government bonds differ primarily in terms of the creditworthiness of the issuer, liquidity and the regulatory framework (clearing and settlement procedures, tax treatment, etc.). Daily yield differentials of 10-year euro area government bonds relative to Germany bonds are displayed in figure 7, figure 8 and figure 9 for the period between 1999 and 2006. Summary statistics are shown in table 5. They are based on three different data sources frequently used in empirical work (academic and policy oriented): BIS database, Reuters and Thomson Financial/Datastream.

23 This is one reason why issuers can easily impose obligations on dealers for primary market participation and liquidity supply in the B2B segment.

24 The question of how to define a benchmark bond is not unambiguous, see the discussion in Dunne, Moore and Porter (2007).
At first glance, data series seem to behave in a very similar way irrespective of the data base used. A closer inspection of the data, displayed in figure 10, figure 11 and figure 12, reveals surprisingly high and unsystematic differences of the yield spreads with regard to the data source used. As presented in table 6, the differences between the three data sources are approximately of the same order as the underlying yield spread series itself. This is even more striking, as all respective data refer to the “10-year benchmark government bond”.

4.3. Determinants of Yield Spreads

Favero, Pagano, von Thadden (2007) raise the point that fundamental (credit) risk and liquidity risk, i.e. the risk that a security has to be sold at an unexpected time of need or has to be bought at an unexpected time of wealth, interact with each other. The effect of this interaction on the yields depends on whether referring to current or future liquidity risks. They conclude that an increase in liquidity risk also leads to higher credit risk effects. Ample future liquidity, however, would prompt market participants to invest in such liquid assets, even if the price of risk increases as credit risk has risen. Their theoretical analysis is supported by the results of the empirical part: They found liquidity variables (bid-ask spreads) to play a certain role in bond yield spreads provided the interaction with fundamental risk is taken into consideration.

Codogno et al. (2003) include an international risk factor, as measured by the spread between 10-year fixed interest rates on U.S. swaps and the yield on 10-year U.S. bonds, into their empirical SURE model in order to explain bond yield spreads (versus German bonds). And they analyze whether several liquidity variables (bid-ask spread, trading volume, turnover ratios and trading intensity) can increase the explanatory power of international factors. The main finding of their analysis of daily data is that for most of the euro area countries under investigation “international risk factors” (measured by U.S. swap and corporate bond spreads relative to U.S. Treasury yields) are more important for the determination of yield spreads than liquidity variables.

Geyer, Kossmeyer and Pichler (2004) reach similar results; they do not detect any impact of liquidity variables (yield differentials between on-the-run and off-the-run issued, issue size) on the government bond yields spreads in the euro area.

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25 The authors argue that in case of high current transaction costs, the negative price impact of an increase in credit risk is mitigated whereas in case of (expected) higher future transaction costs, when the security may have to be sold, illiquidity tends to enlarge the increase in credit risk.
In a related paper, Beber, Brandt and Kavajecz (2007) study the yield spreads (relative to a common Euro-LIBOR yield curve) and order flow for ten euro area countries with active sovereign debt markets. They document that the larger part of yield spreads is explained by differences in credit quality, although liquidity plays a certain role for low risk countries and during times of market distress. They conclude that credit quality is the driving force for bond valuation. In times of heightened market uncertainty, however, investors are primarily guided by liquidity considerations rather than credit risk.

Brandner and Grech (2007) analyze the yield differentials of 10-year government bonds (spread relative to Germany) for all euro area countries (except Greece). They used the bi-annual forecasts of the EU Commission and the OECD for the period 1999 to 2006. Within a SUR model (one equation for the EU Commission forecasts and one for the OECD forecasts), they regressed the spread, measured as the average of 20 daily observations following the public announcement of the forecast, on (expected) fiscal variables (budget balance, change of public debt), controlled for other influences like the business cycle or international risk factors (all variables defined relative to German). For most countries, they found a small but statistically significant effect of fiscal variables on the spread.

Since there is considerable variety in the evidence of the literature on the driving forces behind these yield differentials, we asked in our questionnaire whether respondents attributed the yield differentials to credit risk, liquidity or regulatory factors.

The results are displayed in figure 13. All respondents (100%) cited “credit risk factors” with an average ranking of 1.3. Liquidity factors were cited by 97% of the respondents with an average ranking of 1.8. Hence, liquidity factors also seem to be of considerable importance for bond yield spreads, but appear to be slightly dominated by credit risk factors. Regulatory factors play obviously a minor role; only 60% find that differences in the national regulatory framework have an impact on bond yields differentials, the average ranking being 2.9.

### 4.3.1. Credit Risk

Differences in various country-specific macroeconomic fundamentals (e.g. debt-to-GDP ratios, budget balances) may have an impact on yield spreads in the euro area (see for instance Codogno et al., 2003). Economic theory provides no clear answer to the effects of fiscal policy on (real) interest rates. Among other reasons, the effects depend on how forward-looking households and/or firms assess future tax liabilities. Empirical evidence is not clear cut either: Whereas the ECB (2006, p.80) holds that variations of fiscal fundamentals have large effects on yield spreads, the empirical evidence in Balassone, Franco, Giordano (2004) raises some doubts on such a strong relationship for the period since 1999.
In our questionnaire, we asked the respondents to name the three most important variables out of the following five budgetary variables: “ability to raise (future) tax rates”, “current budget deficit”, “implicit pension liabilities”, “debt levels”, “future budget deficit”. All variables have a straightforward influence on the sustainability of public finances and therefore affect the risk of a country defaulting on government debt. The ability to meet future financial obligations depends very much on a country’s current and, in particular, future displayed and hidden debt. Other variables that might influence a country’s credit risk in the euro area, such as the current account, were not explicitly mentioned in our questionnaire but included under “other”. It is worth noting, however, that although euro area bond markets have experienced a considerable integration in the last years, credit ratings have remained heterogeneous. Italian and Greek government bonds, for instance, are rated “A”, Austrian, Dutch, French and German bonds “AAA”, see section 3.1.1.

Our respondents rate “future budget deficits”, “debt levels” and “current budget deficit” as the variables with the strongest influence on a country’s credit risk, see figure 14. Of these variables, “future budget deficits” is supposed to be the most important one in terms of variations in the credit risk (97% of the respondents, average ranking of 1.7). 70% of the respondents mention debt levels (average ranking of 1.9) and 60% of the respondents quote the current budget deficit (average ranking of 2.0). These three variables have received the highest attention and are frequently reported in the daily financial press (referring to stability programs, official forecasts, etc.) and hence, are known to market participants. The remaining factors (“implicit pension liabilities” and “ability to raise future tax rates”) are less evident to market participants since they lack regular financial reporting. Obviously, they are supposed to have a minor impact on credit risk.

Another approach to quantify the default risk premium is to analyze credit default swap (CDS) spreads which may provide some further information on the credit risk of different countries in the euro area. Although the credit default swap market has grown rapidly in the last years, only little empirical work on credit default swap and bond yield spreads has been undertaken because of the short history of the CDS market history and the limited data availability. Most of the empirical work covers the U.S. market, only a limited number of papers refers to European (corporate) bond markets. CDS retrieve their popularity from the banks’ and insurance

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26 A credit default swap (CDS) is a specific kind of counterparty agreement which allows the transfer of third-party credit risk from one party to the other. One party in the swap is the lender or the protection buyer, facing credit risk from a third party. The counterparty, the CDS seller, agrees to insure this risk in exchange of regular periodic payments until the CDS matures or the credit event occurs. The periodic payments, the CDS spread, are defined as a certain percentage of the principal of the underlying contract. In theory, under certain conditions, the CDS spread should approximately equal the corresponding yield spread between the reference bond and a risk-free bond, see ECB (2006). If, for
companies’ desire to hedge their bond exposures and from hedge funds’ and other market participants’ need for a liquid instrument to speculate on credit risk.\footnote{Sovereign CDSs have the potential to supplement and increase efficiency in underlying sovereign bond markets (BIS, 2003).}

Blanco, Brennan and Marsh (2005) find that liquidity in the CDS market is higher than in the bond market, because price changes in the CDS market tend to occur faster than in the bond market. Yet other papers like Berndt, Douglas, Duffie, Ferguson and Schranz (2005), Longstaff, Mithall and Neis (2005) or Pan and Singleton (2007) prefer bond data as a more direct measure of default risk in their analysis because of the lack of liquidity in the CDS market. According to BIS (2003), in 2002 only 6% of quotes correspond to actual transactions; however, quotes are more than indicative, since once submitted they are binding on participants.\footnote{The analysis is based on CreditTrade, one of the major trading platforms for credit derivatives.} Zhu (2004) analyzes the long-term pricing accuracy in the CDS market relative to the bond market in the U.S.A. by examining the underlying factors that explain the price differentials.

In our questionnaire, we asked our respondents for their views on the relevance of CDS spreads when it comes to adequately reflecting differences in the credit risk of government bond issuers. According to the answers (see figure 15), 50% of the respondents believe that CDS spreads reflect differences in the credit risk while the other 50% hold the opposite opinion. 32% of the respondents attributed the lack of information on the credit risk to the low liquidity in the CDS markets.

### 4.3.2. Market Discipline

In general, market discipline is defined as a market mechanism that helps governments to keep their public debt at levels that market participants regard as sustainable. An increase in debt levels would be evaluated as an increase in a country’s credit risk and thus market participants would demand a higher risk premium, i.e. higher interest rates. In other words, sound fiscal policies would be rewarded and unsound fiscal policies punished by the markets.

The ability of financial markets to assume such disciplinary role hinges on several factors (Lane, 1993; ECB, 2006). The most important factors include a strict legal framework in terms of government access to financial markets and the exclusion of a “bail out”-mechanism. The legal framework should ensure that governments are not given preferential access to financial markets in order to finance their needs and that market participants are not obliged in any instance, the third party defaults, the protection seller will have to purchase the defaulted bond from the insured party. The insurer pays the insured the remaining interest on the debt as well as the principal.
sense (directly or indirectly) to buy government bonds. Furthermore, government bonds should not be granted a more favorable tax treatment than private bond issues.

The Maastricht Treaty (Article 101) precludes direct public debt financing by the ECB and by National Central Banks. Furthermore, Article 102 of the Treaty prohibits any measure that may establish privileged access to financial institutions for governments and community institutions or bodies. Markets should be able to assess the soundness of public finances without being impaired by any legal contingency requirement on a debt takeover or bailout by another euro area country or a community institution. The Maastricht Treaty (Article 103) therefore stipulates that: "The community shall not be liable for or assume the commitments of central governments (...) A member state shall not be liable for or assume the commitments of central governments (..)."

Article 103 is often referred to as the “no-bail-out clause”. In a monetary union, however, there could be an incentive for one (or more) country (countries) to bail out another country, since financial distress in one country could put severe strain on the financial markets in the euro area as a whole. The credibility of the “no-bail-out clause” is therefore an essential element for the individual countries’ credit risk to be fully reflected in their respective yield curves.

Given that currently there are large differences in the country-specific budget deficits and debt levels in the euro area, it is surprising that bond yield spreads show so little dispersion. Although yield differentials are also affected by national regulatory and institutional settings and tax rules, it is worth asking whether fiscal variables play a role in determining bond yield spreads at all, or in other words, whether market participants do no longer trust in the “no-bail-out-clause”, as stipulated in the Maastricht Treaty.

According to Balassone et al. (2004), the credibility of the “no-bail-out” commitment remains an open issue. In our questionnaire, we asked the respondents whether they agreed that the “no-bail-out” clause was credible or whether they disagreed. The majority of our respondents (67%) answered “yes” and 33% answered “no” which supports empirical evidence of macro fundamentals influencing yield spreads (see figure 16). The IMF (1997, p.192), however, concludes that “it is unlikely that market participants will price sovereign debt as if it were corporate debt.”

4.3.3. Liquidity Risk

As already discussed at the beginning of section 4.3, recent empirical evidence in the literature suggests that liquidity variables exert only a minor influence on bond yield spreads in the euro area (Pagano and von Thadden, 2004). As figure 17 displays, the bid-ask yield
spreads of the euro area government bonds remain stable below 2 basis points in the period between 1999 and 2006, irrespective of country specific bonds.

In our questionnaire, we proposed the factors “bid-ask spread”, “issue size”, “quality of the repo markets”, “existence of a derivatives market”, “daily turnover”, and “transaction volume”; then we asked our respondents to identify the three most important ones, which were “bid-ask spread”, “issue size”, “quality of the repo markets”. Of these variables, 73% of the respondents selected “bid-ask spread” (average ranking of 1.6), 55% of these ranked “bid-ask spread” first. 73% of the respondents chose “quality of the repo markets” (average ranking of 2.1). Yet only 18% of these ranked it first, 55% second. The factor “issue size” is mentioned by 60% (average ranking of 1.9). As regards the remaining factors, 40% of the respondents mentioned “existence of a derivatives market”, 40% “daily turnover” and 20% “transaction volume”. The results are displayed in figure 18.

The answers of our respondents are in line with the empirical work of Fleming (2003). In this paper, the author measures liquidity in the U.S. Treasury market and finds that the commonly used bid-ask spread is the most informative tool for assessing market liquidity. According to his work, other variables such as quote and trade sizes are only “modest” measures and trading volume and frequency “poor” measures when assessing market liquidity.

It is interesting to compare our respondents’ answers with the earlier discussed results of the question referring to the share of transactions undertaken in the cash and derivatives markets, see section 4.1.1. Institutions which primarily deal in the derivatives markets overwhelmingly cite “bid-ask spread” as the most important liquidity factor, whereas financial institutions whose daily transactions occur predominantly in the cash markets mention “bid-ask spread” and “issue size”.

**4.3.4. Regulatory Factors**

In most of the EU Member States restrictions of the primary market clearing and settlement activities (see section 3.4) result either from formal and/or legal obligations to settle government securities transactions with only the local clearing system or from technical difficulties when interlinking the local clearing and settlement systems with systems located in other EU Member States. Similar problems exist in the secondary markets, yet to a lesser extent.

Some progress has been made: For example, the elimination of several legal obstacles to cross-border trading, such as currency matching rules, which used to limit the possibilities of investors (especially pension funds and insurance companies) to invest in foreign currency.
Yet there are still differences in the clearing and settlement systems, tax regimes and market conventions.

In our questionnaire, we asked the respondents to select the three most important factors in terms of regulatory issues. The suggested options were “taxes”, “clearing and settlement”, “costs of market presence” and “other”. The results are shown in figure 19. “Clearing and settlement” was quoted by 87% of the respondents (average ranking of 1.8). “Costs of market presence” was also quoted by 87%, the average ranking of 2.1 showing a slightly minor importance. Finally, “taxes” was quoted by 76% (average ranking of 1.8). Interestingly, “clearing and settlement” seems to be more relevant than “taxes”, although the latter receives more attention in the public economic policy debate.

4.4. Euro Area Government Bond Yields and Portfolio Management

4.4.1. Predictability of Interest Rates

Predictability of asset returns is an active research topic in financial economics and econometrics. However, econometric research and empirical evidence seem to suggest that financial asset returns are at least to some degree predictable, see Campell, Lo and MacKinlay (1997). Structural aspects of securities markets, frictions in the trading process and time-varying expected returns as a consequence of changes in the business conditions can result in return predictability. A minimum of predictability seems to be indispensable for market participants as a reward for taking certain dynamic risks.

In our questionnaire we asked the respondents, if they thought that the market trend in the yield levels was predictable, ranging from “no predictability” to “high” predictability. They had to distinguish between five different horizons: “intraday”, “within one week”, “within one month”, “within six months” and “over six months”. The results are presented in figure 20. While one would expect predictability to be higher for short time horizons than for long time horizons, the respondents’ views on the forecasting horizon does not show a clear cut picture.

In a related question, we asked our respondents to name the most important factor(s) determining bond price movements according to different horizons: “short run (within days)”, “medium run (within months)” and “long run (within years)”. The results are presented in figure 21. In the short run, “over-reaction to news”, but also “chart analysis / technical trading” and “speculative forces”, albeit to a minor extent, seem to be the more relevant rationales. In the medium and even more so in the long run, “economic fundamentals” is the most important factor, clearly dominating all others.
4.4.2. Impact of Announcements

Economic announcements enable market participants to learn about recent economic developments and help them to adapt their expectations on the future course of macroeconomic variables. If markets are efficient, these announcements should influence bond markets, since they represent unanticipated information on the state of the economy. Yet as macroeconomic announcements differ in terms of relevance, reliability and point of release, they may exert a different influence across the maturity spectrum of bond yield curves and across international markets.

GDP and employment figures are frequently regarded by market participants as essential leading indicators for the future course of the economy. A higher than expected GDP growth rate announcement may point towards a stronger than expected upswing of the short-term economic growth and may put upward pressure on real interest rates and inflation expectations. Under this economic setting, central banks would possibly react by raising monetary policy rates. Despite the complex relationship between short-term interest rates – which are usually controlled by the central bank – and long-term interest rates, bond yields are likely to mount as well, in particular if the central bank surprises the market.

As already mentioned in the brief survey of the empirical literature in section 2.4, the announcement of several macroeconomic variables is found to have an influence on bond prices. In general, fiscal fundamentals are not considered as impact variables. In our questionnaire, we asked our respondents which of the economic announcements had an impact on the euro area government bond markets. The announcement variables comprised “central bank policy rate”, “inflation”, “money supply”, “budget deficit”, “unemployment rate”, “consumer confidence indicator”, “trade deficit”, “GDP”, “industrial production”, “retail sales”, “business climate indicator” and “political events/other”.

The results, displayed in figure 22, indicate that announcements of the “central bank policy rate” and “inflation” clearly dominate the other variables. More than 80% of the respondents quote “central bank policy rate” (average ranking of 1.3). More than 65% cite “inflation” (average ranking of 2.0). Surprisingly, much less weight was put on the announcements of real variables than on the announcements of monetary variables. Interestingly, only four respondents (13%) mention “budget deficits” with a weak average ranking of 2.5. Obviously, certain fiscal fundamentals play a role in determining bond yields in the medium- to long-term (e.g. relative creditworthiness of euro area government bonds, see section 4.3.1), but not in the short-run trading activity. This is well in line with the results of the empirical literature that
announcements of fiscal fundamentals are not supposed to have a large impact on government bond prices.

As also outlined in the short review of the empirical literature in section 2.4, economic news is incorporated in bond prices within a very short period of time after its announcement. In our questionnaire we ask the respondents how fast they believe the market incorporates new information into bond prices when economic announcements differ from what the markets have expected. 80% of the respondents said that unexpected news on the “central bank policy rate” would influence the bond market within “less than one minute” which is hence the predominate variable. Unexpected news on “retail sales”, “GDP”, “unemployment rate”, “industrial production”, “business climate indicator”, “consumer confidence indicator” and “inflation” would be incorporated within “less than ten minutes”, as also quoted by 80% of respondents. For the other variables the picture is less clear cut, see figure 23.

Interestingly, only few respondents assume that the announcement of unexpected “budget deficit” news actually has an impact on bond prices. If any, the impact occurs not immediately after the announcement but after a longer period of time (more than 30 minutes after the announcement). It seems that – at least for short-term trading activities – central bank policy decisions (and consequently inflationary expectations as a factor for the inflation term premium) are more important than sustainability assessments (reflected in the “budget deficit” as a determinant of the credit risk premium).

5. Conclusions

A further integration of the European government bond markets that leads to a full convergence of yields would ascertain a more efficient allocation of funds. Moreover, properly functioning liquid government securities’ markets would contribute to the efficient conduct of the ECB’s open market transactions. Financial institutions are only able to raise liquidity in liquid and deep financial markets without having to take recourse to the central bank as a lender of last resort. In addition, bond yields embody relevant information on the future course of the economy in terms of inflation expectations and/or variations in economic activity.

Following the introduction of the euro in 1999, all euro area government bonds should have been traded along the same yield curve. Yet in the first eight years of EMU, they have exhibited considerable and volatile spreads vis-à-vis German government bonds. These spreads could either be due to differences in credit and/or liquidity risk or to differences in the regulatory and/or institutional framework. In order to analyze yield spreads in the euro area government bond market, we sent out a detailed questionnaire to market participants who are
actively involved in the euro area government bond market as bond traders or research analysts.

In the first part of the paper, a brief description of the structure of the euro area primary and secondary government bond markets shows that the different legal and institutional settings of the national capital markets still prevent euro area capital markets from representing a full-fledged homogeneous euro area-wide capital market.

In the second part of the paper, we turn to the detailed analysis of the questionnaire. We present results on the relative importance of fundamentals versus market-microstructure related variables as determinants of the observed yield spreads. The respondents of our questionnaire were – more or less to the same extent – active in customer “flow business” and proprietary trading. When taking a closer look at proprietary trading, the majority of banks focus on short-term activities (“trading”), whereas medium- to long-term activities (“strategic”) are also quite important – to a minor extent though.

In general, the analysis of the questionnaire highlights the importance of the banks’ customer base for the bond markets in terms of liquidity and transparency. On the one hand, a large customer base leads to better market information, but on the other hand, it is only an advantage in a setup where transparency is kept at a certain level which does not force a bank to reveal the complete order book. Banks with a large customer base are likely to build up higher inventories than banks with a smaller customer base. Due to the risk of having built up large positions, banks could reduce their participation in government bond trading in case more transparency is enforced by regulatory authorities. As a consequence, liquidity could dry up and spreads could increase as a smaller number of dealers operates in the markets. As a conclusion, higher transparency requirements would not necessarily lead to higher customer welfare.

Since there is considerable variety in the evidence of the literature on the driving forces behind yield differentials, our main interest has been whether participants attribute the yield differentials to credit risk, liquidity or to regulatory factors. All respondents cited “credit risk factors” with a very high ranking. They rated “current budget deficit”, “future budget deficits” and “debt levels” as having the strongest influence on a country’s credit risk. The majority of our respondents (67%) trust in the credibility of the “no-bail-out” clause. This supports empirical evidence of macro fundamentals influencing yield spreads. Liquidity factors also seem to be of substantial importance for bond yield spreads, but appear to be slightly dominated by credit risk factors. Regulatory factors obviously play a minor role; only 60% of the respondents find that differences in the national regulatory framework have an impact on bond yields differentials with a rather low average ranking. With respect to regulatory issues,
“clearing and settlement” and “costs of market presence” seem to be more relevant than “taxes”, although the latter receives more attention in the public economic policy debate.

Economic announcements should influence bond markets, since they represent unanticipated information on the state of the economy. According to the empirical literature, the announcement of several macroeconomic variables has an influence on bond prices, but in general, fiscal fundamentals are not considered as impact variables. In our questionnaire the majority of our respondents cited “central bank policy rate” and “inflation”, whereas only few respondents assumed that the announcement of unexpected “budget deficit” news actually had an impact on bond prices. Obviously, certain fiscal fundamentals play a role in determining bond yields in the medium- to long-term, but not in short-run trading activity.
References


\(^{29}\) On July 1, 2005, the International Primary Market Association (IPMA) transferred its assets, liabilities and activities to ISMA and ISMA changed its name to International Capital Market Association (ICMA).


³⁰ In Nov. 2006, The Bond Market Association (TBMA) and The Securities Industry Association (SIA) merged to The Securities Industry and Financial Markets Association (SIFMA).
Appendix A: Participating Financial Institutions

List of participating financial institutions (in alphabetical order)

ABN Amro Bank N.V., Frankfurt
Bank of Amerika, London
Barclays Bank PLC, London
BNP Paribas, London
Commonwealth Bank of Australia, London
Commerzbank, Frankfurt
Credit Suisse First Boston, London
DekaBank, Frankfurt
Deutsche Bank AG, Frankfurt
Dresdner Kleinwort, Frankfurt
DZ Bank, Frankfurt
Goldman Sachs, London
HypoVereinsbank, München
ING Bank N.V., Amsterdam
IXIS Corporate & Investment Bank, Paris
J.P. Morgan Securities Ltd., London
Morgan Stanley, London
Nomura, London
Nordea, Kopenhagen
Norges Bank, Oslo
Pioneer Investments Management Ltd., Dublin
Svenska Handelsbanken, Stockholm
The Bank of Nova Scotia, London
Toronto Dominion Bank, London
Royal Bank of Canada, London
UBS, London
Appendix B: Tables

Table 1

Gross issuance of euro-denominated bonds
in billion €

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
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<tbody>
<tr>
<td>Total</td>
<td>1.399.843</td>
<td>1.297.087</td>
<td>1.471.137</td>
<td>1.470.954</td>
<td>1.767.235</td>
<td>1.750.862</td>
<td>1.719.214</td>
<td>1.873.449</td>
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<td>Central Government</td>
<td>619.763</td>
<td>600.882</td>
<td>633.888</td>
<td>700.129</td>
<td>779.565</td>
<td>769.773</td>
<td>674.296</td>
<td>681.653</td>
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<tr>
<td>Local Government</td>
<td>11.769</td>
<td>17.935</td>
<td>36.627</td>
<td>42.879</td>
<td>45.031</td>
<td>38.535</td>
<td>50.532</td>
<td>42.013</td>
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<tr>
<td>Agencies and Supranationals</td>
<td>59.498</td>
<td>51.093</td>
<td>62.677</td>
<td>68.137</td>
<td>87.010</td>
<td>86.020</td>
<td>83.904</td>
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<td>Other Issuers</td>
<td>708.813</td>
<td>627.177</td>
<td>737.945</td>
<td>659.809</td>
<td>855.629</td>
<td>856.534</td>
<td>910.482</td>
<td>1.067.966</td>
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Source: Commission Services (DG ECFIN database on euro-denominated bonds).

Table 2

Gross issuance of euro-denominated government bonds and rating*)

<table>
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<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
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<tbody>
<tr>
<td>Total</td>
<td>619.763</td>
<td>600.882</td>
<td>633.888</td>
<td>700.129</td>
<td>779.565</td>
<td>769.773</td>
<td>684.796</td>
<td>681.653</td>
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<td>381.111</td>
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<td>345.913</td>
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<td>A</td>
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<td>3.400</td>
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<td>810</td>
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*) Standard&Poor's
Source: Commission Services (DG ECFIN database on euro-denominated bonds).
### Table 3

#### Characteristics of MTS Markets for Euro Government Bonds

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\(^\) Market participants, no official Primary Dealers.


### Table 4

#### Domestic MTS and EuroMTS Markets

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Table 5

Yield differentials relative to Germany (in bps)

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Table 6

Differences of yield differentials relative to Germany (in bps)

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Appendix C: Figures

Figure 1

You are currently working as

- chief/senior dealer: 48%
- research/strategist: 19%
- treasurer/manager: 10%
- sales/senior sales: 10%
- other: 13%

Figure 2

In your department, the daily turnover in European government bond trading activity takes place in the

- cash market: 50.8%
- derivatives market: 49.2%
Figure 3

The share of average daily turnover in the derivatives market – with respect to European government bonds – is

- futures: 59%
- swaps: 29%
- options: 12%

Figure 4

The percentage of European government bond sales/purchases related to

- customer "flow business": 49%
- medium to long term "strategic": 23%
- short term "trading": 28%
- proprietary trading: 51%
Figure 5

The percentage of European government bond sales/purchases related to

- based on fundamental analysis: 34%
- based on chart analysis: 24%
- undertaken for hedging purposes: 20%
- based on technical trading rules: 16%
- others: 6%

Figure 6

The most important (competitive) advantages for large players – compared to small players – in the European government bond markets are

- a large customer base: 28%
- better market information: 22%
- ability to deal in large volumes: 15%
- lower operating costs: 8%
- primary dealership: 7%
- accessibility to global trading platforms: 7%
- experienced traders: 6%
- ability to offer new structured products: 3%
- ability to influence bond prices: 1%
- access to repo markets: 0%
- relation between front- and back office: 0%
- smaller counterparty risks: 0%
- other: 2%
Figure 9

Yield (10Y) differential relative to Germany (DE) / BIS Database

Figure 10

Difference of benchmark (10Y) yield differential relative to Germany (DE) / Thomson Financial (Datastream)- Reuters
Figure 11

Difference of benchmark (10Y) yield differential relative to Germany (DE) / BIS Database - Reuters

Figure 12

Difference of benchmark (10Y) yield differential relative to Germany (DE) / BIS Database - Thomson Financial (Datastream)
In the integrated European capital market, government bonds (euro area) are supposed to be perfect substitutes. Differences in prices are mainly due to:

Please rank the top 3 ("1"="2"="3").

Figure 14

With respect to credit risk, what are the three most important factors?
Please rank the top 3 ("1"="2"="3").
Figure 15

Do you think that credit default swap (CDS) spreads adequately reflect differences in the credit risk of European government bond issuers in the euro area?

- Yes: 50%
- No because of low liquidity: 32%
- No because of other reasons: 18%
- No: 51%

Figure 16

The Maastricht treaty contains a "no bail-out clause", which means EMU participants are not liable for another participant's debt.

Do you believe the “no-bail-out clause” to be credible?

- Yes: 67%
- No: 33%
Figure 17

Bid-ask spread (bp yield), 10y

Figure 18

With respect to liquidity, what are the three most important factors?
Please rank the top 3 ("1"-"2"-"3").

With respect to liquidity, what are the three most important factors?
Please rank the top 3 ("1"-"2"-"3").
With respect to regulatory issues, what are the three most important factors? Please rank the top 3 ("1"-"2"-"3").

If you believe the market trend in the level of yields is predictable, please assess the predictability for each horizon. ("1" indicates no predictability, "5" indicates high predictability) (average displayed below)
Figure 21

What is (are) the single most important factor(s) that determines (determine) bond price movements in each of the three horizons listed?

- **Short run**
  - Economic fundamentals: 30%
  - Chart analyses / technical trading: 20%
  - Bandwagon effects: 20%
  - Over-reaction to news: 10%
  - Speculative forces: 10%
  - Other: 10%

- **Medium run**
  - Economic fundamentals: 30%
  - Chart analyses / technical trading: 20%
  - Bandwagon effects: 10%
  - Over-reaction to news: 10%
  - Speculative forces: 10%
  - Other: 10%

- **Long run**
  - Economic fundamentals: 30%
  - Chart analyses / technical trading: 20%
  - Bandwagon effects: 10%
  - Over-reaction to news: 10%
  - Speculative forces: 10%
  - Other: 10%

Figure 22

In your opinion, which of the following economic announcements have a large impact on the European government bond market(s)? Please rank the top 3 ("1","2","3").

- Central bank policy rate: 1.3
- Inflation: 2.0
- Business climate indicator: 2.0
- Political events/other consumer confidence indicator: 2.3
- GDP: 2.2
- Judge deficit: 2.5
- Retail sales: 2.5
- Unemployment rate: 2.5
- Trade deficit: 2.3
- Money supply: 2.7
- Political events/other: 3.0
- Other: 3.7

Legend:
- # of "1":
- # of "2":
- # of "3":
- Ø
Figure 23

How fast do you believe the market incorporates new information into bond prices when the following economic announcements differ from what the markets have expected?
6. The Authors

Peter Brandner is Senior Adviser in the Directorate General for Economic Policy and Financial Markets at the Federal Ministry of Finance, Austria. Previously he was Economic Adviser to the Austrian Minister of Finance, Research Associate at the Austrian Institute of Economic Research (WIFO) and the Institute for Advanced Studies (IHS), Vienna, and Assistant Professor at the University of Vienna, and worked as an economist at the Oesterreichische Nationalbank. His research areas and publications cover, among other things, monetary and fiscal policy, and financial markets. He serves as an expert to the Government Debt Committee.

Harald Grech is an expert in the European Affairs and International Financial Organizations Division of the Oesterreichische Nationalbank (OeNB). Previously he worked in the Treasury and the Economic Studies Division of the OeNB. His research areas and publications are related to exchange rate economics and financial markets.

Kamran Kazemzadeh previously worked as a lawyer and as a compliance officer in an international investment bank in London. Later on he joined the Economic Policy Division of the Federal Ministry of Finance in Vienna. He has worked in several fields of macro and micro policies, including globalisation issues and financial services. Currently he is on leave.
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