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Secondary market trading infrastructure of government securities

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(Állampapírok másodpiaci kereskedési infrastruktúrája)

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Contents

Abstract

The subject of our study is the trading infrastructure of government securities markets, which has undergone fundamental changes driven by the appearance of non-exchange electronic platforms and the rapid rise of their share in the trading volume of developed markets. The summary of the relevant literature indicates that improved trading transparency clearly increases the efficiency of the market (its role in price discovery). Its effect on market liquidity, however, is less clear-cut. While the loss of anonymity most likely decreases liquidity, transparency on the quantity and price of concluded transactions enhances liquidity.

The emergence of electronic trading on developed government securities markets has not changed the fundamental structure of trading, which continues to take place in two segments: between dealers (B2B) and between dealers and clients (B2C). There is, however, no interbank trading platform on the Hungarian government securities market, although data vendors and other platforms serving clients have sprung up. Nonetheless, more than 90 per cent of trading takes place through traditional OTC channels. Consequently, actors which are interested in market processes and prices, but do not actively trade on the Hungarian market have trouble accessing high-standard, quasi-real-time price information. The MiFID initiative – launched at the European level – may contribute to improving the Hungarian market's transparency by engendering the regulation of the bond market similar to that of the equity market. Introduction of the euro in Hungary will fundamentally change the country's market structure. The sovereign debt manager's leeway will increase, and the key direct actors on the government securities market are expected to be the major international actors, which are interested in the centralisation of government securities trading by currencies. Based on the broad electronisation of the euro-denominated government securities market, it is likely that electronic platforms will also gain ground on the Hungarian market, following the introduction of the single currency at the latest.

JEL: G14, G15, D40.
Keywords: government securities market, secondary trading, transparency, efficiency, market liquidity.

Összefoglaló

Tanulmányunk fókusza az állampapírpiacok kereskedési infrastruktúrája, melyben jelentős változást hozott a nem tőzsdei elektronikus platformok megjelenése és a fejlett piacok forgalmában való gyors részesedésemelkedésük. A releváns szakirodalom összefoglalása azt mutatta, hogy a kereskedés átláthatóságának fokozása egyértelműen növeli a piac hatékonyságát (árfeltáró szerepét), a piaci likviditásra való hatása azonban kevésbé egyértelmű. Míg az anonimitás elvesztése nagy valószínűséggel csökkenti, addig a megkötött ügyletek mennyiségének és árának átláthatósága inkább növeli a likviditást.

A fejlett állampapírpiacokon az elektronikus kereskedelem térnyerése a kereskedés alapstruktúráját nem változtatta meg, a kereskedés továbbra is két szegmensben folyik: az árjegyzők között (B2B), valamint az ügyfelek és az árjegyzők között (B2C). A hazai állampapírpiacon viszont nincs bankközi kereskedési platform, bár már itt is megjelentek az ügyfeleket kiszolgáló adatszolgáltatói vagy egyéb platformok. Azonban a kereskedés több mint 90 százalékban a hagyományos OTC-csatornákon keresztül zajlik. Ezért a hazai piacon rendszeresen nem kereskedő, de a piaci folyamatokban, árakban érdekelt szereplők nehezen juthatnak jó minőségű, valós idejűhez közeli árinformációkhoz. A hazai piac transzparenciáját növelheti az európai szintű MiFID-kezdeményezés, mely a részvénypiac után a kötvénypiac ilyen jellegű szabályozását is hozhatja. A hazai piac struktúráját az euro magyarországi bevezetése fogja alapvetően megváltoztatni. Az adósságkezelő mozgástere nőni fog, az állampapírpiac meghatározó szereplői pedig várhatóan a nagy nemzetközi szereplők lesznek, akik a devizánkénti állampapír-kereskedés centralizálásában érdekeltek. Az euro állampapírpiac jelentős elektronizálódása alapján jó esélye van annak, hogy legkésőbb a közös deviza bevezetése után a magyar piacon is teret nyernek az elektronikus platformok.

1 The infrastructure of financial markets (basic notions, subject of this study)

Financial market infrastructure refers to the systems used for the buying and selling of financial instruments. This infrastructure is made up of three layers related to executing market transactions, clearly distinguishable based on their functions:[1]

1 Trading infrastructure

The function of trading infrastructure is to support agreements on buying and selling and to match buying and selling intentions. In essence, it constitutes the marketplace where financial instruments are traded. Examples of trading infrastructures include the Budapest Stock Exchange, NASDAQ and electronic trading platforms. Nowadays, the entities in charge of operating the infrastructure are run without exception as profit oriented business organisations, and their primary source of revenue are fees paid by market actors on transactions.

2 Clearing infrastructure

The function of institutions in charge of clearing is the processing of concluded transactions, the calculation of bilateral or multilateral net or gross positions, the management of default and market risks related to concluded transactions (optionally) and the preparation of the final settlement of transactions. The service provided by clearing houses is often associated with exchanges, however this assumption is not entirely correct. Although clearing (and especially the management of counterparty risk) historically provided support for the secure execution of transactions concluded on the exchange, today these institutions serve non-exchange transactions as well. It is true that it is still commonplace for parties in bilateral OTC markets to proceed without enlisting the help of an external service provider for this function, relegating related tasks to their own operational units (back offices). However, as the number of concluded transactions increases and the related risk management becomes more complex, clearing houses are gaining ground among non-exchange transactions as well. (Examples of clearing houses offering a full range of services are the international LCH.Clearnet, the German EUREX, the Italian CC&G, or KELER Zrt. in Hungary.)

3 Settlement infrastructure

The settlement of transactions, i.e. the final crediting of the traded instrument to the buyer and the final and irrevocable delivery of the cash leg to the seller is a separate function. On the securities side, depositories provide this service, while on the money side, it is the payment systems, the former operating as profit oriented organisations. The services provided by this area of infrastructure assist not only the dynamic (trading) aspect of financial markets, but a static one as well, as ownership rights are also registered there. They thereby provide services to both the issuers and the owners of issued assets. (Clearstream Frankfurt, the national central depositories integrated into the Euroclear group and the Italian Monte Titoli are examples of some of the larger European central securities depositories. In Hungary, KELER Zrt. performs the CSD function.)

It is important to stress that the three functions mentioned above are theoretically entirely distinct, therefore in principle (and increasingly so in practice as well), they do not determine each other. This means that the location of trading and the pertaining decisions have no influence on the institution rendering clearing or settlement services. This is important to highlight, as listing on the exchange or in the market (its location) is often muddled with the place of issue, even within the profession. The former is a service provided by trading infrastructure and consists of trading with the assets provided by the issuer in the given market, according to specific rules (trading infrastructure service offered to issuers and market actors), while the latter is the service linked to the final registration of the assets, such as the custody of securities (settlement

[1] The order also reflects the chronology of market operations. The latter two are also jointly called post-trading infrastructure. Frequently, the same entity provides both two post-trade services (clearing and settlement), such as the Hungarian KELER, or the international Clearstream – the biggest actor in Europe – or Euroclear Bank.

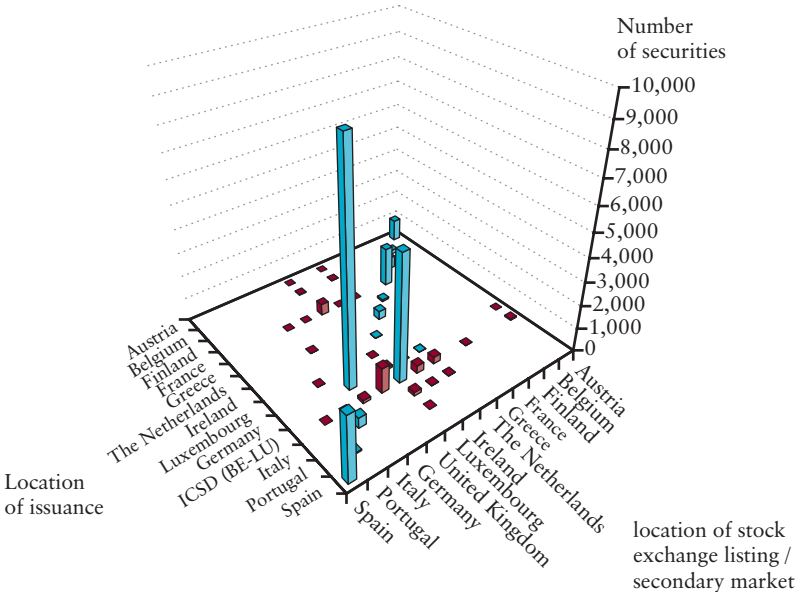
infrastructure service offered to issuers and market actors). A major difference is that in principle (presuming the lack of a concentration rule), trading can occur anywhere (an agreement on buying and selling can be concluded anywhere), although in the course of settlement, the parties or their employed custodians are forced to resort to using the facilities offered by the depository where the security is issued.

The most common example of this is the infrastructure supporting so-called Eurobonds (or more precisely international bonds). These bonds are usually issued in Belgium or Luxemburg (the international central securities depository registered in these countries provides the security settlement service), while listing quite frequently takes place on the London Stock Exchange.[2]

The best-fitting case to statistically characterise the importance of the aforementioned phenomenon is the EU bond market, where numerous instruments are listed on exchanges different from their place of issue or clearing, as a result of growing financial integration. Based on the ECB's database of eligible assets, the location of issuance and of exchange listing differs in 10 per cent of over 24,000 bonds registered in the database (Chart 1).

Chart 1

Distribution of the places of issue and exchange listing of bonds accepted by the Eurosystem as collateral (euro-denominated, at least A-rated credit instruments, introduced to regulated markets, issued in the EEA) (units, source: ECB Eligible Assets Database, December 2006)*



* *Securities with differing locations of issue and exchange listing are shaded grey.*

Our study is focused on the trading infrastructure discussed first above, and within this the government securities trading infrastructure. Issues concerning the other two elements of the infrastructure chain will only be discussed insofar as they directly affect trading parameters.

Along with currency markets, a central bank's scope of interest chiefly encompasses markets for debt instruments for the following reasons:

[2] This is also the case with the Hungarian state and Eurobonds. In principle (and in practice as well), the issuer may list the bonds anywhere (e.g. Paris, Frankfurt, Lisbon, Budapest, etc.). Another stock market example linked to Hungary is the introduction of MOL or Borsodchem shares on the Warsaw Stock Exchange. Listing took place in Warsaw (near Budapest), while the place of issue was, in this case as well, KELER Zrt. (as the same shares were introduced in Warsaw as the ones traded on the Budapest Stock Exchange), registered in Hungary. If a transaction with the shares is concluded on the Warsaw Stock Exchange, it is the Warsaw clearing house which performs clearing services, however final settlement must take place using the amenities of a custodian linked to KELER Zrt. Therefore, the place of trading is Warsaw, and the place of settlement is most likely Budapest.

- The size and trading volume of equity markets – even the ones which are the most developed in these two respects – lag far behind that of bond markets. Accordingly, their direct role in monetary transmission is much smaller, especially in the Continental European financial systems, which are most relevant from our perspective. Consequently, the bond market yield curve provides the most important information to central banks on monetary policy and inflationary expectations.

- Central banks carry out transactions in short-term money markets, and less frequently, in bond markets. However, they practically never transact in equity markets.[3] The fact that the instruments accepted as collateral are primarily debt instruments and that equities are not accepted in central banks' collateralised loan-type transactions is closely linked to this.

- Bonds also have a practically exclusive role as components of central bank foreign exchange reserves. Central banks rarely hold equities, and the ones that do only keep a very small portion of their portfolio in equities.

The most important sub-market of debt instrument markets is the government security market, which is considered as the closest approximation of a risk-free investment market around the world. Although corporate bond markets are also developing at a fast pace globally, our study focuses on the far more developed government security markets.

The major changes that have occurred recently in the infrastructure of government securities trading underline the relevance of our subject. These changes primarily include the appearance of non-exchange electronic platforms and their rapid gain of share in turnover. This phenomenon has further stimulated the already keen interest shown by central banks, regulators and academics in issues related to infrastructure.

The subject is noteworthy from a Hungarian perspective because the most heated debates currently surround the regulation of infrastructure within the EU, and the outcome of these debates will affect Hungary in the form of applicable regulation. The best example to illustrate this is the new 'Markets in Financial Instruments' directive (MiFID): in its current form this directive entails significant changes for equity markets, but the European Commission is also considering extending certain regulatory solutions to bond markets as well.[4] In addition to regulatory issues, the Hungarian government securities market also faces another potential major shock in the medium term: the expected introduction of the euro in Hungary. The current and future trends in the development of trading infrastructure in the euro area will be decisive factors, as the Hungarian market will have to adapt to an already substantially integrated government security market.

This study is structured as follows: in Chapter II, we attempt to summarise the main findings in the literature – both theoretical and empirical – on optimal bond market infrastructure, in the form of a literature review. In Chapter III, we provide a descriptive presentation of the current structure and trends of developed secondary markets for government securities. In Chapter IV, we present the infrastructure of Hungarian government security trading, and in Chapter V we analyse the global and domestic challenges in this area from the perspective of policy. Finally, in Chapter VI, we summarise our conclusions.

[3] The only known example of a central bank intervention on the stock market is the Hong Kong central bank (HKMA), which tried to ward off a speculative attack launched from the stock market with this novel step.

[4] 'Call for Evidence – Pre- and post-trade transparency provisions of the MiFID in relation to transactions in classes of financial instruments other than shares', European Commission, June 2006.

2 Issues of optimal market architecture (literature review)

2.1 MAIN THEORETICAL ISSUES RELATED TO TRADING INFRASTRUCTURE

The focus of the literature examining trading infrastructure has shifted from equity markets towards bond markets as a result of the spread of electronic trading platforms, which allow for greater transparency than bilateral OTC markets. In the following, we attempt to summarise the findings of the theoretical literature on the parameters of trading infrastructure, and more precisely, on the influence of greater transparency on market quality.

Two main topics can be clearly distinguished in trading infrastructure theory (although naturally there are links between them):[5]

- The **first topic focuses on the market for the services offered by the trading platform (namely enabling trading)** and examines to what extent existing network effects ('trading should be done where others do it') lead to natural monopolies, and the role of competition among such services. This part of the literature focuses primarily on the welfare effects of revenue distribution between the owners of profit-oriented trading infrastructures and consumers (market participants) and searches for the optimal regulation. The questions examined are (for example): does competition between exchanges and other platforms need to be regulated, and if so how; should integration and transferability be forced; why is the specific cost of trading much higher in EU than in US markets, etc.?

- The second topic searches for **the market architecture which most efficiently enables the price disclosure process**, and thus it does not focus on the trading service, but rather on the market for the traded product. It examines questions such as the optimum form of trading on the exchange and why exchanges and OTC markets exist in parallel. What level of transparency in the market is optimal, how can the greatest liquidity be achieved and how can fragmented liquidity be avoided? Why does the trading infrastructure moulded by bond market effects differ from that of equities? Is there a need for state or issuer intervention in the development of market architecture (e.g. a primary dealer system, concentration rule, etc.), and what would their effect on welfare and efficiency be?[6]

The main focus of our study will be the latter, as our primary objective is to analyse the effects on the price disclosure process of infrastructure, with special regard to the emergence of electronic trading platforms in the government security market, which was previously traded almost exclusively in bilateral OTC markets.

The markets examined in the theoretical literature from the perspective of their architecture can generally be categorised into two main groups:[7]

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[5] Both issues have been gaining increasing attention in the literature due to regulator dissatisfaction concerning the integration of EU financial market infrastructure and in the light of the major market transformations. See the European Commission, for example (2006).

[6] The literature on market architecture is defined as a branch of the literature on the microstructure of financial markets. It differs from classic microstructure analyses, however, in that it does not focus on the relation between order flow and the market price, but rather the correlation between architecture and the welfare of market actors, and between architecture and the cost of trading. Similarly to classic microstructure analyses, most of the published work examines equity markets, therefore the structure of bond markets has received only limited attention up until recently.

[7] From the perspective of nomenclature and definitions, the literature is not consistent: some use the 'order-driven', while other use the 'quote-driven' expressions, due to the fact that in case of the former, the trading price of the most current matched quote is considered the market price, while in case of the latter, it is the best currently achievable price (or their average). The combination of the two is called 'hybrid' by some and 'floor' market by others. There is also another form of classification, which distinguishes so-called 'call' and 'continuous' markets (see Szalai, 2004), but their current practical significance is low, and mainly plays a role in the examination of the historical development of markets.
The above two categories can be considered the two alphas of the currently reigning continuous secondary markets. Another common classification – although rare in the theoretical literature – is the distinction of exchange and OTC markets. This distinction is rough from the perspective of market architecture, taking account of the fact that some exchanges also function as multi-dealer markets (e.g. LSE, NASDAQ), and some OTC (non-exchange) markets function based on an order-driven system (e.g. MTS). Architecture has numerous parameters, which exchanges and other markets are quite free to choose from. Therefore, the exchange/non-exchange classification is relevant from the perspective of regulation (e.g. strict reporting rules applying to issuers, rules on transparency or capital adequacy), rather than market architecture. For further details on this subject, see below.

In **dealership markets**, the market is divided into dealers and other market users (e.g. investors). Dealers trade on their own accounts, and ensure two-way quotes for market users by signalling the maximum accepted quantity at a given price. In the purest form of dealership markets, market users cannot trade directly with each other, resulting in asymmetric information to the benefit of dealers. Of course, dealers cannot always bring their positions in the traded instrument or asset to the desired level based solely on market user transactions, leading to the need for an inter-dealer market segment, where dealers can trade among themselves. Based on the above, dealer-market user (B2C) and dealer-dealer (B2B) markets can be distinguished. In the latter segment, market users are barred from participation. (This architecture is characteristic of bilateral OTC markets for example).

In **order-driven markets**, market actors can make limit or market orders, specifying price and quantity (only quantity for the latter), and a central order book matches the bids based on rules laid down in advance. In case of electronic systems, no human intervention is needed; a fully-automated system operates the order book. In its pure form, this system can be viewed as a dealership market where all the participants can be dealers (with the right to make limit price bids and hit them with market quotes) and the architecture of trading does not, in its own right, lead to asymmetric information. (Pure forms of order-book trading were originally employed by exchanges; currently, however, non-exchange platforms using elements of this system have become widespread).

Market architecture based on one of the two abovementioned systems in pure and exclusive form are becoming increasingly rare, but it is true that more exchanges use pure order-driven systems, whereas many bond markets function exclusively as bilateral OTC dealership markets.

The two basic types of market form described above, or a combination of them primarily determine the level of information of market participants compared to each other and market transparency. Market architecture can, of course, be analysed from other perspectives (such as the speed of the trading process, the geographical location of market participants, etc.), but these aspects affect the price disclosure process and market quality to a far smaller extent than transparency.

As a result, when examining optimal market architecture, the literature primarily focuses on the optimal level of transparency of trading.

2.2 TRADING TRANSPARENCY

The significance of transparency

Transparency is the most important and most discussed issue in the theoretical literature dealing with trading infrastructure and market architecture. The emergence of electronic trading platforms and regulator initiatives has focused the spotlight of expert interest on this dimension of trading. The significance of transparency is primarily derived from the fact that with its help, the problem presented by the fragmented nature of liquidity – stemming from the existence of several parallel trading platforms – can be resolved. Fragmented liquidity or markets (a lack of market integrity) occurs when identical transactions carried out simultaneously with the same product have varying prices. Based on intuition, if operating markets are transparent and there are actors capable of trading on all of them, then liquidity is not fragmented, as the liquidity of parallel markets adds up and jointly contributes to an efficient price discovery process. Consequently, if markets are transparent, there is no need for regulators to impose concentration rules (such as a concentration rule for instruments introduced in the equity market).[8]

The literature distinguishes between pre- and post-trade transparency. The former applies to the transparency of quoted or bid prices and quantities, while the latter refers to the transparency of the parameters of concluded transactions. Traditional exchanges and bilateral OTC markets represent the two extremes from this perspective. There is generally quasi-perfect, real-time pre- and post-trading transparency on exchanges, with the order book (or its most important elements) and competing

[8] See Persaud (2006), European Commission (2006), Board et al. (2002). Transparency is therefore useful because it allows the liquidity advantages of a forced central market to be avoided, as well as the trade-off between the regulation of pricing of the service provided by the infrastructure in a monopolistic position. Competition between trading platforms and the integration of the market for the traded products can thereby be conserved. The stringent rules on the transparency of stock markets set forth by the MiFID EU directive, effective from 2007, reflect this fundamental principle, among others.

quotes available to all the actors, and concluded transactions published immediately or with a minor delay. In contrast, classic bilateral OTC markets are characterised by an almost total lack of transparency. The quoted prices of a given dealer are only revealed to the client in case of a direct bilateral inquiry, and concluded transactions are usually not announced or published, so they are only known to the two parties involved.

Transparency can be categorised according to bid parameters. Price transparency applies to easy, consolidated access for all to existing firm quotes and limit orders. Quantity transparency applies to the offered quantities behind these quotes. Information on the identity of market actors may also be an element of transparency; anonymous and non-anonymous trading can be distinguished based on this. Exchanges which are considered transparent and other central order-driven markets generally ensure price transparency by at least publishing the best achievable prices, but most often limit the transparency of quantities and the identity of market actors.

Table 1

Various dimensions of transparency on financial product markets

Dimensions of transparency	Pre-trade	Post-trade
Price	**The bid price of the best or all bids are disclosed to all participants of the trading system/ market** Degrees: 1. fully public order-book *(e.g. classic exchange order-book)* 2. the price of the majority of quotes and bids is public *(e.g. most electronic central order-driven trading platforms)* 3. only indicative offered prices, quotes are public, confirmation required direct inquiry *(e.g. certain trading platforms, data vendors)* 4. quotes are made available only after a direct inquiry by the client or dealer *(e.g. bilateral OTC market)*	**Price data of concluded transactions are disclosed to all other market actors** Degrees: 1. comprehensive, real-time reporting to a central data processing and publishing system (e.g. exchange system, or a system specifically created for this purpose) *(e.g. classic exchange system, GovPx)* 2. delayed reporting to a central data processing and publishing system *(e.g. TRACE, certain exchanges)* 3. no reporting on concluded transactions, which are only disclosed to the parties involved. *(e.g. bilateral OTC market)*
Quantity	**The (maximum) bid quantity on bids can be seen by all participants of the market** Degrees: 1. full disclosure of quantity bids *(e.g. classic exchange central order-book)* 2. bid quantities are partially published (so-called hidden order, disclosing only a portion of the total bid quantity, *e.g. most electronic platforms, several exchanges)* 3. quote quantities are disclosed only on direct request of the client or dealer *(e.g. bilateral OTC market)*	**Quantity data of concluded transactions are disclosed to other market actors** Degrees: Same as above
Identity of bidder	**The identity of bidders is disclosed to market actors** Degrees: 1. the identity of the bidder (or the bidder's authorised agent) is disclosed to all market actors *(e.g. classic exchange system, but this is increasingly rare on exchanges)* 2. anonymity, but the trading system verifies if the two parties are allowed to conclude a transaction based on their limit systems (e.g. certain electronic platforms, *e.g. Reuters Spot Matching)* 3. full anonymity, without verification of limits (e.g. inter-dealer trading platforms offering access to CCP services, certain exchanges)	**The identity of the actors of concluded transactions is disclosed/available to them and to other market actors** Degrees: 1. the identity of the parties of the transaction is disclosed to them, as well as to the third party *(e.g. classic exchange system, but this is increasingly rare on exchanges)* 2. the identity of the parties of the transaction is disclosed to them for clearing and settlement *(e.g. most electronic trading platforms)* 3. full anonymity with the participation of the central clearing house and the CCP *(e.g. certain exchanges and electronic trading platforms)*

The literature does not always use the abovementioned divisions of transparency. Although several authors distinguish the effects of pre- and post-trade transparency on market quality, many merely refer to the degree of transparency in general. The lack of classification ensues from the fact that several authors implicitly interpret transparency as proportionally opposite to the cost of finding out actual market prices and other market conditions and the search cost of the best bid. In other words, it not only includes the scope of accessible information, but the method of access as well. Based on the above, these authors characteristically consider electronic trading platforms more transparent because they substantially reduce these search costs. (e.g. the best achievable market price can theoretically be found in a bilateral OTC market as well, if the client calls major dealers one after another, but this is more costly and time-consuming than consulting a centralised screen listing quotes, characteristic of electronic platforms).[9]

Research on the optimal degree of trading transparency is based on the observation that markets with other differing factors have diverging degrees and types of transparency. While the trading of equities primarily takes place in an exchange-based environment, transparent from every perspective even without regulatory pressure, bond markets are traditionally bilateral or broker-intermediated OTC markets, which less transparent in these aspects. Understanding the underlying reasons for this phenomenon is key to examining the emergence of alternative electronic trading platforms and devising optimal regulation.

Transparency and efficiency

There is a relatively broad consensus in the literature about the fact that higher transparency increases market efficiency, thereby strengthening and speeding up the price disclosure process. In a transparent market, prices converge faster towards real market value, new information is reflected quicker by market prices and noise effects are weaker (see for example Bloomfield and O'Hara, 1999; FSA, 2005; Pagano and Röell, 1996; Lee, 2002; IOSCO, 2004). However, there are heated debates about the correlation between transparency and the other important parameter of market quality, liquidity.

Transparency and liquidity

Contrary to lay opinion, the literature is straightforward regarding the idea that increasing transparency does not always unequivocally have a positive effect on market quality, and that above a certain degree of transparency, there may be a trade-off between the level of transparency and liquidity (certain dimensions of liquidity[10])[11]. However, the cited authors do not agree on the precise mechanism through which greater transparency affects market quality, and how it does so. In the following, we review the arguments and aspects found in the literature determining the correlation between transparency and liquidity.

+ Transparent markets enable and rationalise trade for a far broader range of investors and market actors; therefore, **transparency increases the number of participants** (this mainly applies to price transparency), and more importantly, their heterogeneity. Markets can thereby become deeper, more stable and more efficient (Lee, 2002; IOSCO, 2004). This holds especially true for the participation of small investors, for whom a lack of transparency may be a significant barrier (EC, 2006; Board et al., 2002; FSA, 2005).

+ Pre-trade market price and quantity transparency **renders the division of risk between actors in the role of dealers in inter-dealer markets easier**. Dealers can manage risk arising from one-off, unforeseeable adverse inventory shocks more easily in a transparent environment. Bid-ask spreads – a prime indicator of market quality – may thus narrow (Lyons, 1996; FSA, 2005).

+ As market liquidity is ensured by the dealers (or limit-order providers), the majority of studies focus on how greater transparency affects these actors. This plays an especially important role in **protection for dealers against insider traders**, as insider traders profit to the detriment of existing quotes. Pagano and Röell (1996) argue that **increasing post-**

[9] Hereafter, the terms 'transparency' and 'greater transparency' will refer to easier, less costly access to market information mentioned above. Remarks pertaining to a specific dimension of transparency (such as pre-trade price transparency) will be indicated seperately every time.

[10] For the dimensions of liquidity, see Csávás and Erhart (2005).

[11] According to Gravelle (2002), the transition on bond markets is Laffer curve-like, that is at a low level, transparency is more likely to improve market quality (liquidity), but above a certain level, it deteriorates quality.

trade transparency helps protect against such actors, as they can be identified more easily. Market spreads can therefore narrow, and publicly quoted depth can increase. Biais et al. (2002) and Naik et al. (1999) are of similar opinion. Based on comparable arguments, Glosten (1994) demonstrates the higher liquidity of the transparent order-driven system compared to other anonymous trading mechanisms.

– One of the biggest disadvantages of transparency and generally more transparent order-driven trading is that **public quotes (limit orders) essentially represent a free option for market bidders** (those hitting quotes), who, having taken notice of the change in the market for the traded product, can hit them knowing that they can definitely close their positions with a better price (by calling on the free option). To ensure that these options are not free, larger bid-ask spreads are required in transparent markets; **transparency thus contributes to higher bid-ask spreads** (Foucault–Moinas–Thiessen, 2007 and Madhavan–Porter–Weaver, 2005) **and may decrease depth** (Baruch, 2005). On this subject, many authors stress that the key element is anonymity. Quotes (limit orders) must be anonymous in order to avoid abuse using free options and to narrow spreads (Foucault–Moinass–Thiessen, 2007; Glosten, 1994). Another way to decrease contra selection risks stemming from free options are the use of hidden or iceberg orders. This essentially means that either quotes not showing the actual quoted quantity, or only partially showing it may be entered into the order-book. Quotes can thereby take part in trading (and also increase the liquidity of the order-book) without increasing the abovementioned risk of the bidder (Moinas, 2005).

– One prime counter-argument against transparency is that **it makes the management of dealer positions substantially more difficult** (especially post-trade price and quantity transparency), because if a dealer concludes a larger transaction with a client, it is vital that the other dealers do not gain knowledge of this. If the others gain knowledge of the order flow in time, the dealer making the transaction will be incapable of profitably exiting the achieved position, as the market price will shift against him/her in response to the news before action can be taken. Dunne–Moore–Portes (2006) has dubbed this phenomenon the winner's curse. This effect can especially manifest itself in markets where stock-risk, instead of so-called news risk[12] is strong, characteristic of equity markets and uncharacteristic of bond markets. If the order flow becomes transparent for the entire market, a dramatic widening of the spread and a decrease in depth may ensue as a result of increased quoting risk (Martines Resano, 2005; FSA, 2005; Gravelle, 2002).

– Some authors perceive the **negative effect of post-trade transparency** in the loss of the information advantage for the dealer having accessed the information resulting from the publication of the order flow in a dealership market (Lyons, 1996), (this implicitly implies that dealers make loss-making quotes only to be the first informed about changes in client demand and supply). This **decreases competition for order flow**, **which may lead to the widening of spreads**, and thus lower liquidity (Bloomfield–O'Hara, 1999; Naik–Neuberger–Viswanathan, 1999).

– Several authors note that bond markets, and specifically the government securities market, markedly differ from equity markets – which are usually order-driven – in the nature of relevant information on the actual value of instruments. In the case of equities, the instrument's future cash flow is not known, thus the private information relating to it must be incorporated into the market price and thus become public. **In case of bonds (and foreign exchange markets)**, cash flows are disclosed, and it is **order flow information which must be incorporated into the price**. The authors argue that the central order-book is not optimal for the efficient processing of order flow information, but rather the less transparent dealership markets. The latter is more efficient, with lower volatility (noise) and is capable of managing temporary imbalances of supply and demand with costs (Martines–Resano, 2005; Gravelle, 2002; Venkatamaran, 2001).

– The issue of transaction venue is related to what was mentioned above. Several authors argue **that a transparent central order-book is not suitable for executing large (block) transactions**, as the dealers or brokers (in case of a floor market) have superior knowledge on so-called unexpressed, latent order flow, enabling them to match large bid-ask offers not received simultaneously, with only minor shifts in prices. According to these authors, this explanation also prevails in equity markets, where so-called upstairs markets develop for large transactions, which do apply to the matching of bids through the order-book, but rather to bilateral search trade (Grossmann, 1992; Martinez–Resano, 2005; FSA, 2005; Gravelle, 2002; Venkatamaran, 2001). Others simply compare the auction-like nature of dealer quotation with the

[12] Quantity shocks of supply and demand hold more risk for dealers than news pertaining to the issue of the given instrument.

discriminatory price nature of the order-book, concluding that the abovementioned market separation based on size is rational and efficient (Visvanathan and Wang, 2002).

Many authors believe that the fundamental characteristics of the two instruments explain the fact that equity markets generally function in more transparent order-driven or hybrid forms, while bond markets are typically dealer markets, as mentioned above. The most frequent argument is that bonds have a finite term to maturity, in other words they liquidate themselves, therefore **investor behaviour differs from the equity market, as many institutional investors hold bonds until maturity.** The liquidity of bonds thus changes rapidly and substantially over the course of their lifetime – newly issued bonds are liquid ('on the run'), with high market turnover until they are found by the buy and hold investor for whom they are most valuable. Subsequently, they become illiquid ('off the run'). Moreover, **the trading of bonds characteristically takes place on a less frequent basis, in blocks**, making them better suited to dealership trading rather than to order-driven market trading (Gravelle, 2002; Martines–Resano, 2005; FSA, 2005). Warga (2004) argues that the majority of bonds are simply **fundamentally illiquid**, in other words there is no demand for their trade. It is pointless to force a transparent form of trading in such a market. Others stress that the pricing of bonds is much simpler than of equities, as their fixed cash flow includes all the necessary data for pricing (Martines–Resano, 2005). This argument, however, ignores the fact that if reliable prices observed in the market cannot be used as a basis, then a proper yield curve – needed for the pricing of fixed cash flows – cannot be established. For this reason, high-standard observed price data from a segment of the interest rate market (cash, government securities, corporate bonds or interest derivatives) are needed to establish pricing. There is therefore an additional positive effect between these closely interrelated market segments of liquidity ('knock-on effect', FSA, 2005), namely that the liquidity and transparency of one improves the quality of the other.

Certain authors (pl. Gravelle, 2002; Allen et al., 2001) stress the Laffer curve-like effects of transparency on market quality. If there is a total lack of transparency in a market, then improving transparency improves market quality (tightness and depth). Above a certain level, however, an excessive, forced increase in transparency is detrimental to market quality. Based on the 'fundamentally illiquid' theory cited above, others argue that a market must first achieve a sufficient level of maturity (liquidity) in order to be ready to accommodate a higher degree of transparency (Dunne–Moore–Portes, 2006; Warga, 2004). This is used to explain the fact, for example, that the highly liquid, on-the-run US government bond market is entirely electronic, while only a small portion of the less liquid Japanese market is electronic. Dealers face too high of a risk in such a less liquid market for the market to be more transparent with the same tight bid-ask spreads and depth.

Empirical findings

The majority of empirical research on transparency and market structure focuses on equity markets due to the fact this issue was at the forefront of authors' scope of interest on the one hand, and on the other hand, because data of adequate frequency and quality was available on exchanges thanks to higher trading transparency. **Empirical research primarily focuses on so-called transparency events and their effect on market quality:**

Madhavan–Porter–Weaver (2002) examine the introduction of a transparent order-driven system on the Toronto Stock Exchange (TSE) in the market for equities previously traded exclusively on the floor. They concluded that greater transparency **increased the actual bid-ask spread achievable in the order-book** and that prices decreased (expected yield increased).

Dunne–Moore–Portes (2006) examined the liquidity of MTS markets, concluding that in markets where the quoting obligation of primary dealers has to be carried out on the MTS platform, bid-ask spreads are low and trading volume is higher. In equity markets where there is no such obligation, liquidity is lower than in traditional OTC markets. The authors found that **steepness is worse in more transparent MTS markets, and that the cost of execution of large transactions is substantially higher.** Accordingly, these platforms are mainly used to conclude small transactions. In the US market (eSpeed), the introduction of greater transparency of the order-book increased actual spreads.

Some experimental studies[13] (Bloomfield–O'Hara, 1999; Öehler–Unser, 1998) found that greater pre-trade transparency – besides improving efficiency – decreases market tightness **(increases the bid-ask spread) and renders the immediate**

[13] These contain the results of market-simulation experiments carried out in laboratory environments on subjects who had been made interested (voluntary students).

execution of large transactions more costly. Flood et al., 1999 came to contradicting conclusion based on a similar method, stating that efficiency diminishes, but tightness improves as a result of the publication of quotes. In a later study (Flood et al., 2002), the authors found that augmenting post-trade transparency is what contributes significantly to higher spreads.

Venkatamaran (2001) compared the trading costs of the Paris Stock Exchange – which exclusively uses a transparent and automated order-book – and the New York Stock Exchange – which is less transparent, with both floor traders and specialist dealers – coming to the conclusion that the execution of an identical transaction is less costly (more efficient) on the latter.

Contrary to the above, numerous empirical studies could not demonstrate the detrimental effect of pre-trade transparency on liquidity in connection with various (exchange-based) transparency events (e.g. Anand–Weaver, 2001, TSE, Lee (2002) NASDAQ, Naik and Yadav (1999), Gemmill (1996) and Board–Sutcliffe (1996) LSE). On a similar note, Warga (2004) found that in the US municipal bond market, post-trade transparency introduced on a compulsory basis by the regulator did not affect market liquidity.

The effects of the TRACE system – which brought revolutionary improvement to the post-trade transparency of US municipal bond markets, and is the most frequently mentioned positive example in the empirical literature – **are beneficial from the perspective of liquidity in these markets, according to the majority of studies cited by the FSA (2005).**

As regards anonymity, empirical studies are relatively unanimous on the fact that **the introduction of anonymity improved liquidity** and diminished volatility in the markets considered, while its termination would yield contrary effects (Foucault–Moinas–Theissen (2006) Paris Stock Exchange, Scalia and Vacca (1999) MTS).

2.3 SUMMARY

There is broad consensus in the literature as to the fact that greater pre- and post-trade transparency lead to greater efficiency in markets from the perspective of the speed of reflection of new information by prices. Nevertheless, the majority of theoretical work argues that excessive (forced) transparency is more detrimental to market liquidity, notably by reducing tightness (widening the bid-ask spread) and depth (the quantity tradable without price shifts). Transparency weakens the position of insider traders and those trading with large batches, while it is beneficial to non-insider traders and those trading with small batches. Among the elements of transparency, the termination of anonymity yields the most drastic results. Several authors argue that, due to the abovementioned reasons, the less transparent dealership bilateral OTC form is better suited to bond markets, as bonds are traded less frequently and in larger blocks, and there is a higher proportion of inside traders, as it is order flow information which is relevant.

Empirical literature diverges greatly on the effects of transparency; nevertheless, the majority of studies could not unequivocally demonstrate the detrimental effect of transparency on liquidity claimed by the theoretical literature.

3 Tendencies of trading infrastructure development in developed markets

3.1 THE STRUCTURE OF GOVERNMENT SECURITY TRADING

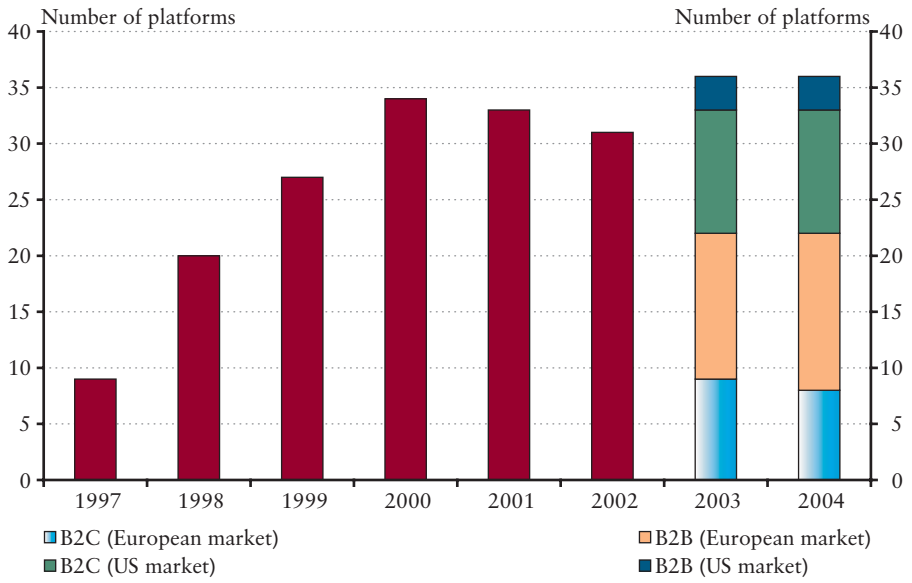
As mentioned in the previous chapter, global government bond markets characteristically operate in OTC form, with a few rare exceptions. Although most government securities can be traded on-exchange (where they have been listed), in most markets the bulk of trading actually takes place off-exchange, and the turnover on exchanges is very low.

There are several, largely diverging channels of (OTC) trading off exchanges. A common trait of OTC markets is that, as a rule, large dealer banks orchestrate the market, linking the client-dealer (bank-to-client, B2C) and inter-dealer (bank-to-bank, B2B) areas constituting the two segments of the market. In the client-dealer segment, transactions were traditionally concluded directly via telephone, while dealers traded via inter-dealer voice brokers, and more rarely, by directly calling each other.

The prevalence of traditional channels has dwindled in recent years, and at present, **electronic trading systems** host approximately the same amount of trading volume. The latter provide a wider spectrum of immediate price information to market actors on the one hand, and enable the quick execution of transactions on the other hand. Moreover, electronic platforms play a major role in providing post-trade information (on price and trading volume), which also contributes to market transparency.

Chart 2

Number of multilateral B2B and B2C electronic trading platforms in global government securities markets (source: TBMA, 2004 and 2005)*

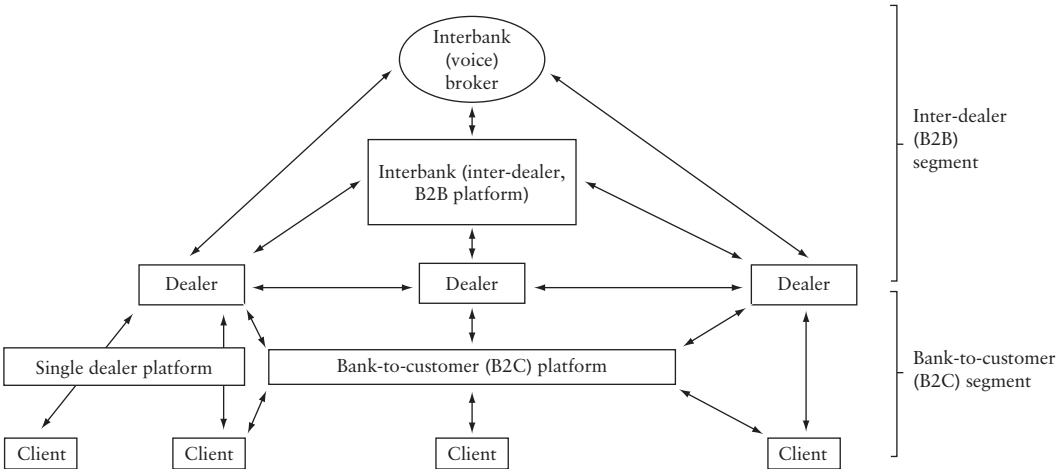


** The source only provides platform distribution by type and geographical focus for the last two years.*

The boom in the use of electronic trading platforms has not caused a substantial upheaval in the fundamental structure of OTC markets described above (Chart 3).

Chart 3

OTC (non-exchange) government securities trading structure in developed markets – (source: BIS, 2001)



Source: BIS (2001).

Electronic systems can be classified into two groups, based on the market segment they serve. The inter-dealer market is served by B2B platforms, while the client-dealer market is served by B2C platforms. Non-dealer clients (buy-side investment funds, pension funds, small banks, central banks, hedge funds and other institutional investors) generally do not have access to the former, while dealers cannot hit each other on the latter. Single-dealer and multi-dealer systems can be distinguished within client systems (B2C). In the former, clients can only conclude transactions with the dealer operating the system, while in the latter, they can choose among the competing bids of several dealers.

There is, however, a major difference between the US and the European market from the perspective of the division of interbank and client systems. In the US, the biggest clients (hedge funds) have access to the leading electronic systems indirectly, usually by proceeding in the name of dealers (order routing), while European B2B are completely separate from B2C platforms. This could be due to the fact that because of the US market's uniformity and development, there is no need for maintaining obligatory quoting for primary dealers. As a result, the requirements set forth by debt managers for interbank actors are not platform-specific. In contrast, in the euro area market debt managers more frequently measure the trading volume and quoting obligation of primary dealers on a specific platform. Due to this, the main argument of primary dealers in the euro area against granting access to large clients to B2B platforms is that it would allow them to access the market without contributing to the costs borne by interbank actors. This is particularly worrying for interbank actors because it may allow a partner in a transaction concluded on the client platform to simultaneously appear in the B2B market, used by dealers to hedge their positions. This creates a door for market manipulation and abuse by clients at the expense of dealers.[14] According to dealers, one of the most detrimental effects of the introduction of such a mixed system is that the B2B segment's tightness would diminish (the spread would increase), while the liquidity of off-the-run and on-the-run papers would further diverge.

In electronic interbank (B2B) systems, transactions usually take place by automatically matching bids (cross-matching), where participants make anonymous quotes in the system. Buy and sell limit bids knock each other out if they overlap, while market price bids are automatically matched with the best limit bid on the appropriate side by the system. Participants therefore submit firm bids in these systems.

In client systems (B2C), indicative quotes tagged with a name are the norm, thus the quotes disclosed to clients are only indicative. If a client wishes to conclude a transaction based on one of the bids, he/she may request a new bid (or bids in case of a multi-dealer system) directly from the selected dealer (request-for-quote). This information is no longer disclosed to the other actors of the system, but is binding for a certain period of time. These systems are usually not anonymous (name give

[14] An example is the previously mentioned winner's curse. For more details about the debate on the merging of the B2B and B2C segments, see EPDA (2006).

up), as dealers making the bids are generally aware of who they are making them for, and clients requesting the quotes are aware of the dealer's identity. There are also B2C systems operating with firm quotes, where participating dealers publish their quotes in parallel, competing with each other (disclosed to all participants), and clients accessing the system can accept the quotes. The formerly described request-for-quote systems are much more popular than the latter, underpinned by current market trends (SIFMA, 2007; BearingPoint, 2005).

Besides more efficient execution of the transactions, electronic trading systems also play a vital role in providing information, regarding both pre- and post-trade data transmission. In addition to these, professional data vendors (Reuters, Bloomberg, Thomson Financial) also contribute to greater market transparency by disclosing information pertaining to trading systems (through the pages of traders), and also by compiling and transmitting vital data on their products. The role of these data vendors is also interesting because they simultaneously provide the IT infrastructure for single-dealer platforms on the one hand, and also operate their own multi-dealer platform (e.g. Reuters RTFI, Bloomberg Bondtrader) on the other. This has made them the most important service providers within the B2C segment, mostly owing to the fact that their screens are easily accessible and were already positioned on the premises of institutional clients to be reached.

At the same time, electronic platforms have made trading substantially more comfortable in the market segments they serve, greatly improving the operational efficiency of trading. Several studies (e.g. BIS, 2001; TBMA, 2005; BearingPoint, 2005) highlight that electronic trading also enables the automation of post-trading processes as well for electronically concluded transactions. In theory, this would allow the omission of manually transferring the data required for keeping positions, clearing and settlement of transactions to the systems performing these functions, as it could be carried out automatically through inter-system data transfer (straight-through processing, STP). This would substantially reduce the need for human resources and the probability of error.[15]

Electronic platforms have not led to the demise of the most important structural element of the OTC market: the separation of the two segments. No common systems accessible to all – similar to those in use on exchanges – have been created. Consequently, electronic platforms have not changed the entire government security market to a unified order-driven structure, despite the fact that a growing number of electronic platforms use this trading architecture. The role of dealers remains vital, as they connect the market's two segments (B2C and B2B). This may suggest that the arguments presented in the theoretical literature, as discussed in the previous chapter, in relation to the need for dealer leading are pertinent, due to the idiosyncrasies of the bond market, and furthermore, that the existence of dealers previously could not be attributed to the lack of technology or the mechanisms on telephone-based trading. In other words, there is no observable convergence towards a large, common exchange-like order-book mentioned in some utopian views.

3.2 EXCHANGE VS. OTC TRADE

The spread of electronic trading platforms has increasingly blurred the line between the trading architecture of OTC markets and the bond-trading segments of exchanges. Continental exchanges generally employ the version of electronic order-driven trading, in which anyone can conclude a transaction with another party through a broker – a member of the exchange – acting as agent. In other words, there is no need for the intermediation of dealers, and clients can even conclude deals among themselves if their intentions match. It is also difficult to draw a clear-cut, unequivocal line along this dimension between exchange and non-exchange platforms. For one, Anglo-Saxon exchanges are generally dealership markets, similarly to OTC trading (for example, the London Stock Exchange – the leading exchange for bond trading in Europe – where traditionally, trading could only be carried out with the help of dealers until the introduction of the parallel electronic order-book). Furthermore, dealers contributing to liquidity have appeared on several Continental exchanges as well (such as the Italian Stock Exchange or Euronext), and continuously quote two-way prices in the electronic order-book or in parallel for certain bonds.[16] So trading on exchanges also seems to be converging towards a hybrid form, in which an electronic order-book

[15] According to ICAP (2007), the processing of concluded transactions (trade processing) constitutes 60 per cent of the total costs of executing a trade for an average professional investor, while settlement constitutes the remaining 30 per cent. The use of electronic platforms and the automatic client processing based on it may lower total cost by up to 50 per cent.

[16] Classification is further complicated by the fact that in several countries, member institutions of the exchange must report all transactions involving products listed on the exchange which were not concluded in the exchange's trading system. Following reporting, these officially qualify as on-exchange transactions, and are published by exchanges as such. The UK and the Czech Republic have such regulations in force.

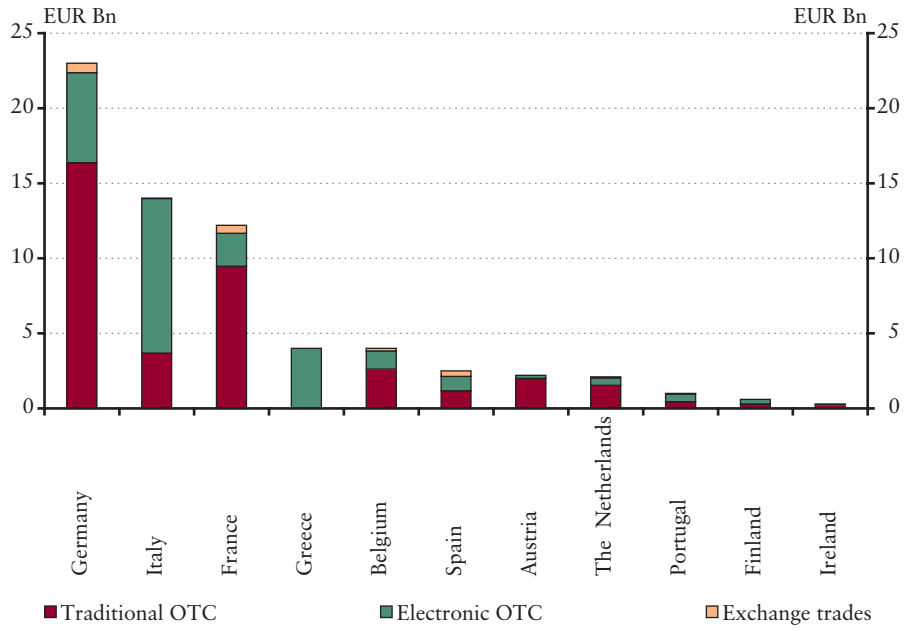
enabling direct trade between dealers and clients exists in parallel. Moreover, most exchanges – recognising the difference between large and small transactions as regards the optimal trading structure, often mentioned in the theoretical literature – allow most members to conclude deals outside of the main trading system (the order-book), as long as they report the transaction immediately to the exchange, either separately, or either in the order-book as simultaneous, matching buy and sell quotes (so-called 'upstairs' or 'negotiated' transactions). These transactions are officially qualified as on-exchange transactions, identically to those concluded in the central order-book.

Moreover, regulation does not provide clear guidelines for distinguishing exchanges and non-exchange electronic platforms. Although international legal regulations establish clear requirements on the mode of acquiring exchange status in most cases, the EU's common regulation – of greater importance than national rules – only distinguishes 'regulated' and 'non-regulated' categories of markets from this perspective (Investment Services directive, ISD, and its successor, the MiFID). However, regulated markets cannot be clearly identified as exchanges, as the ISD/MiFID recognises several regulated markets which do not qualify as exchanges based on national law, and are specifically classified by market actors as electronic platforms (such as the Greek HDAT, MTS Italy, MTS Portugal or the Bondvision B2C platform, significant in the Italian market). Meanwhile, other markets – identical in every parameter – do not officially qualify as regulated markets based on the ISD (such as other MTS markets). The abovementioned muddling also complicates classification. For example, the TBMA categorises the SWX as a multi-dealer electronic platform, which considers and calls itself an exchange (see Chart 2).[17]

Chart 4

Distribution of the average daily turnover of euro-denominated government securities issued by sovereign issuers within the euro area by trading location

(estimate, BearingPoint, 2005, and based on the FESE's data)



In light of the above, the question of what actually distinguishes exchange and non-exchange electronic trading, and why the majority of trading takes place outside exchanges arises. The reviewed literature does not give a clear answer to this question (and does not even pose it in such an explicit form). We can therefore only share our own hypotheses and those formulated in the theoretical literature.

There are numerous dimensions based on which traditional bilateral or voice broker intermediated OTC markets and exchange trading can be distinguished, and there are dimensions in respect of which there are no major differences between current electronic trading platforms and exchanges:

[17] For further details on the abovementioned problems related to definition and regulation, see Lee (1998), or Domowitz and Lee (2001).

- Traditional OTC markets are not regulated, meaning that there is no organised publication of transactions and no other rules apply to parties besides the ones laid down in their own agreements. In contrast, centralised exchanges and electronic trading platforms are supervised markets with external trading rules established in advance and operating with greater transparency.[18]

- In contrast to traditional OTC markets, exchange and electronic platforms are centralised and automated, allowing the interaction of several actors simultaneously, usually within an order-driven system.

- Stemming from their automation and real-time character, exchanges and electronic trading platforms have a significantly higher level of transparency than traditional OTC markets, regarding every dimension of transparency (pre- and post-trade price and quantity data). As a result, the cost of finding the best achievable price is also much lower in theory (search cost).

- In contrast to traditional OTC markets, exchange and electronic platforms rely on a central clearing house, which often guarantees the execution of transactions as the central counterparty (CCP).[19]

- Compared to bilateral OTC transactions, the use of a CCP allows bidders and actors of concluded transactions on exchange and electronic platforms to remain anonymous, even in the post-trade phase.

Although the differences between trading taking place on exchanges and electronic platforms seem blurred based on the above factors, there remains one decisive difference: the possibility of segmentation. On classic exchanges, anyone can participate in trading through the intermediary of a broker, so the client-dealer (B2C) segment is not separate from the dealer-dealer (B2B) segment (in other words, there are no dealers and clients, and if somebody does make a quote, he/she cannot separate client bids from dealer bids). **In contrast, electronic trading platforms have not altered the traditional segmentation of OTC markets, with separate platforms serving the B2B and B2C segments.**

In the competition for bids (order flow), exchanges have also reacted to the need for segmentation by establishing distinct rules for 'upstairs' or 'negotiated' transactions, mentioned in the theoretical literature review. For these (generally larger) transactions, the exchange allows its members to conclude them by direct negotiation with each other and to avoid matching their bids through the order-book (downstairs). These transactions officially qualify as on-exchange transactions, and the exchange must immediately report all their parameters (in many cases, they also appear immediately as concluded transactions in the electronic system itself). In bond markets, only transactions of this sort can generate substantial turnover on exchanges, but this turnover is generally much smaller than in traditional OTC markets or segmented electronic platforms (Chart 5).

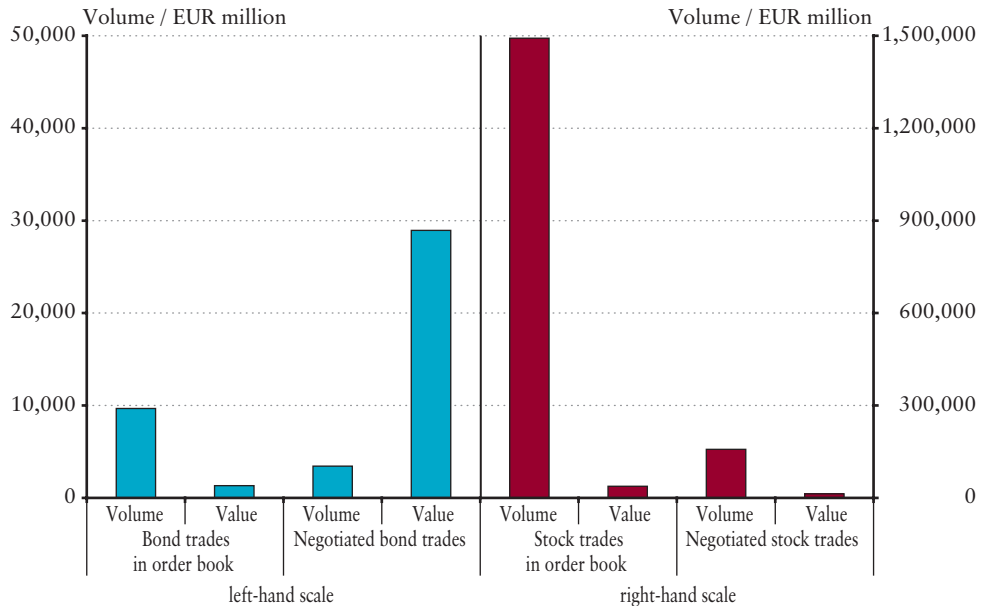
In the case of government securities, the much larger proportion (based on value) of transactions concluded outside of the order-driven exchange turnover suggests that the larger government security transactions – accounting for larger trading volume – are concluded outside of the order-book on exchanges, in a market orchestrated by dealers. Electronic platforms present the advantage of having been specifically created for given segments, i.e. either for the inter-dealer market or the client-dealer market. At the same time, thanks to automation, they are more comfortable than the upstairs markets on exchanges or OTC trading.

[18] Official regulated market qualification does not differentiate between exchanges and electronic markets, despite the fact that traditionally, exchanges were considered as regulated markets (see previous argument). There is, nevertheless, some degree of supervision on platforms – considered as non-regulated markets – as the organisation responsible is charged with supervisory functions related to market behaviour and adherence to rules.

[19] Previously, this was considered a unique characteristic of exchanges; at present however, the use of CCPs on non-exchange platforms is widespread. It is worth mentioning that OTC trading does not exclude the use of CCPs, nevertheless it is rare in this segment.

Chart 5

Distribution of the average turnover of government securities and equities on exchanges in the EU in order-driven and so-called 'negotiated' (downstairs or upstairs) trade in 2006



Source: FESE.

3.3 CHARACTERISTIC SECONDARY TRADING PRACTICES OF MAIN FINANCIAL CENTRES

Euro area/EU

Government security markets in the euro area are characterised by a wide diversity of participants and platforms, due in part to differing national idiosyncrasies, and in part to the intensifying competition in trading infrastructure market in recent years. The latter has been best reflected in the conspicuous spread of electronic trading platforms in the second half of the 1990s and the first half of this decade.

In addition to the diversity, the introduction of the euro has substantially contributed to the integration of the government securities markets in the euro area member states, constituting the lion's share of the EU's economy, considered one of the success stories of the EU financial markets. The introduction of the single currency shed light on the obstacles to integration presented by the existence of various national currencies in the government securities market. At present, institutional market actors consider the euro area's government security market a single market, where sovereign security yields move in increasingly closer unison and cross-border market activity within the region has significantly grown.[20] The developed euro interest swaps and future interest derivatives market also affected the government securities market quality positively, as the hedging of interest rate risk takes place in genuinely homogenous derivatives markets thanks to the introduction of the euro (dealers can hedge Greek, Italian or German government security exposure in the same derivatives market)[21]. Another factor contributing to integration has been debt managers' reaction to the single market, which has led to coordination of debt managers' market behaviour between member states.[22]

The introduction of the single currency has also prompted market actors to reconsider their role and behaviour, enabling consolidation of government security trade in the affected national markets. Instead of the presence in 12 government security

[20] See ECB: 'Indicators of Financial Integration', March 2007, and Bundesbank (2006). Compared to the US treasury market's liquidity and quality, however, the euro area lags far behind, so the achievements in integration pale in comparison, and one might question whether there is much to celebrate.

[21] The EPDA (2007) has formulated it more bluntly that genuine liquidity can be found on the German dated government bond market, meaning that dealers heavily relying on it for hedging run significant basis risk (arising from the difference between the behaviour of the cash and derivatives market).

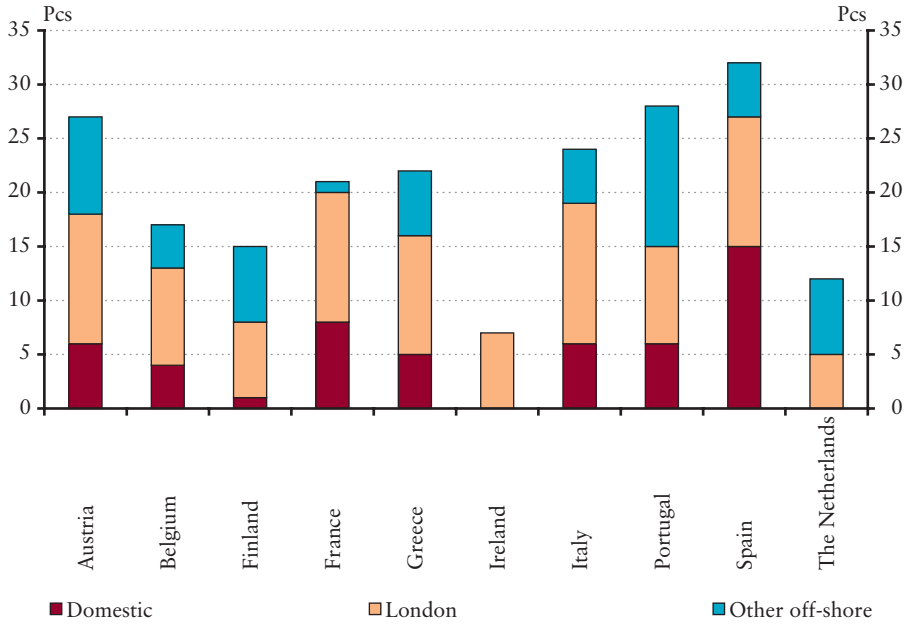
[22] An example is the specialisation of debt managers on certain segments of the yield curve, such as Germany, which sells benchmark papers on the long end of the yield curve, or France, which sells at the middle. A further example is the harmonisation of primary dealers' reporting obligation.

markets – served by several government security desks in almost all dealer banks – today, generally one sole desk manages all euro-denominated government securities within one geographical location. Global banks were most successful in adapting to the new situation arising from the single currency and the emergence of electronic platforms, while domestic actors previously strong in segmented national markets lost their hold in government security markets. This simultaneously led to the increased concentration of market trading, as 15-10 global banks orchestrate the majority of the euro area's government security trade in Europe today.

Paradoxically, the main geographical 'winner' of this consolidation was London – which is not part of the euro area – where the most active European traders concentrated their trading in euro-denominated government securities. Concentration was further increased by the fact that any foreign bank can now assume the role of primary dealer without limitations in all members of the euro area, without having to establish an office in the given country. Currently, the number of foreign primary dealers exceeds that of domestic ones in all euro area member states operating a primary dealer system (Chart 6). One London bank, for example, is a primary dealer in all euro area member states.

Chart 6

Distribution of the number of institutions acting as primary dealers by country of registration in the euro area's national government security markets

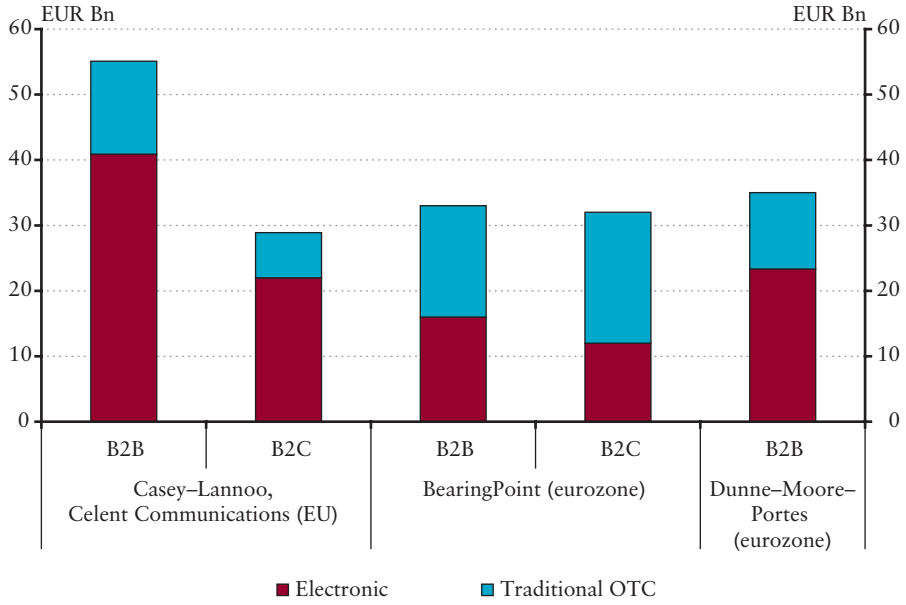


In the *euro area*, only estimates are available on the turnover of government securities markets due to the high proportion of bilateral and voice-broker intermediated OTC markets. BearingPoint, a market analyst, estimated that in 2005, trading volume was divided in half between the interbank market (B2B) and transactions concluded with clients (B2C). Electronic trading in the interbank market is slightly more widespread, accounting for over 50 per cent of all trade. In trade with clients, electronic trading plays a slightly smaller role (just under 40%). The daily average trading volume of the entire euro area amounts to approximately EUR 65 billion. The German market makes up one third of it, while the French and Italian markets jointly make up another third. The survey carried out by Celent Communications, cited by Casey and Lannoo (2005), and estimate by the TBMA (2005) contain differing data (although these pertain to the entire EU, the size of the estimated B2B electronic trading volume is inconsistent with the previous analysis[23]).

[23] A practical difference from the perspective of government security trade between the euro area and the EU is the turnover of the British government security market, of which the B2B segment is not at all electronic. Therefore, it is hard to find another explanation besides estimate deviation for the substantially diverging B2B electronic turnover estimations. The fact that two independent surveys (Casey–Lannoo, 2005 and TBMA, 2005) have estimated that electronic markets account for approximately 70-80% of trade in the EU, while BearingPoint puts the figure around 40-50% further adds to the uncertainty. Dunne–Moore–Portes (2006) came up with an intermediate figure, estimating that electronic trade within the euro area makes up two-thirds (66%) of total trade.
The SIFMA estimate significantly deviates from the above (SIFMA: Securities Industry and Financial Markets Factbook, Global Addendum 2006), placing daily government security trade within the euro area much higher, at a value of EUR 115-120 billion.

Chart 7

Distribution of the various estimates regarding the trading volume of traditional and electronic secondary markets in the euro area and EU government security markets, by interbank and bank-client segments



** Sources: Casey–Lannoo 2005 (Celent Communications, 2004), BearingPoint (2005) and Dunne–Moore–Portes (2006).*

According to a more recent analysis by BearingPoint (BearingPoint, 2006), in the past two years the German and French markets managed to increase their turnover to the detriment of the Italian market, while government security market turnover in smaller countries declined slightly. On the whole, trading volume in the entire euro area market remained unchanged.

A large number of diverse electronic platforms serve electronic trading in the highly integrated government security markets in the euro area. All larger dealers have single dealer platforms for their clients, while also operating numerous multi-dealer platforms in parallel in the B2C segment (Table 2).

Table 2

International* electronic (multi-dealer) trading platforms serving European government security markets

Platform (service provider's) name	Type	Trading mechanism	Participants	Traded products
eSpeed	B2B	cross-matching	dealers**	government securities, corporate bonds, bonds of supranational institutions, agencies and other issuers
Eurex Bonds	B2B	cross-matching	dealers**	government securities, corporate bonds, bonds of international institutions, agencies and other issuers
BrokerTec	B2B	cross-matching	dealers**	government securities, corporate bonds, bonds of international institutions, agencies and other issuers
MTS Group	B2B	firm quote	dealers**	government securities, bonds of international institutions, agencies and other issuers
Bloomberg Bondtrader and ALLQ	B2C	firm quote + request-for-quote	dealers and clients	government securities, bonds of international institutions and agencies
Bondscape	B2C	firm quote	dealers and clients	government securities, corporate bonds, bonds of agencies and other issuers
Bondvision	B2C	request-for-quote	dealers and clients	government securities, corporate bonds, bonds of international institutions, agencies and other issuers
MOT	B2C	cross-matching	dealers and clients	government securities, corporate bonds
Market Axess	B2C	request-for-quote	dealers and clients	corporate bonds, bonds of international institutions, agencies and other issuers
Reuters RTFI	B2C	firm quote + request-for-quote	dealers and clients	government securities, corporate bonds, bonds of international institutions, agencies and other issuers
SWX (Swiss Exchange)	B2C	cross-matching	dealers and clients	government securities, corporate bonds, bonds of international institutions, agencies and other issuers
TLX Euro	B2C	cross-matching	dealers and clients	government securities, corporate bonds, bonds of international institutions, agencies and other issuers
Tradeweb	B2C	request-for-quote	dealers and clients	government securities, corporate bonds, bonds of international institutions, agencies and other issuers

** Source: TBMA: 'European Bond Pricing Sources and Services', April 2005. The TBMA survey did not cover B2B platforms focusing on a specific national market, such as the Greek HDAT and the Spanish SENAF.*

*** Based on market information, on the e-Speed and BrokerTec platforms, other large actors (generally the biggest hedge funds) besides dealers also trade in their name.*

In the interbank (B2B) segment, there are 4 competing international platforms. According to the BearingPoint (2005) analysis, MTS platforms account for 75 per cent of trade within the segment (at least in the cash market). Moreover, in electronic turnover, MTS is followed by the Greek domestic B2B platform HDAT – exclusively serving the Greek market – instead of an international competitor. With its trade in Greek government securities, HDAT accounts for 16 per cent of the euro area's total electronic B2B trading volume.

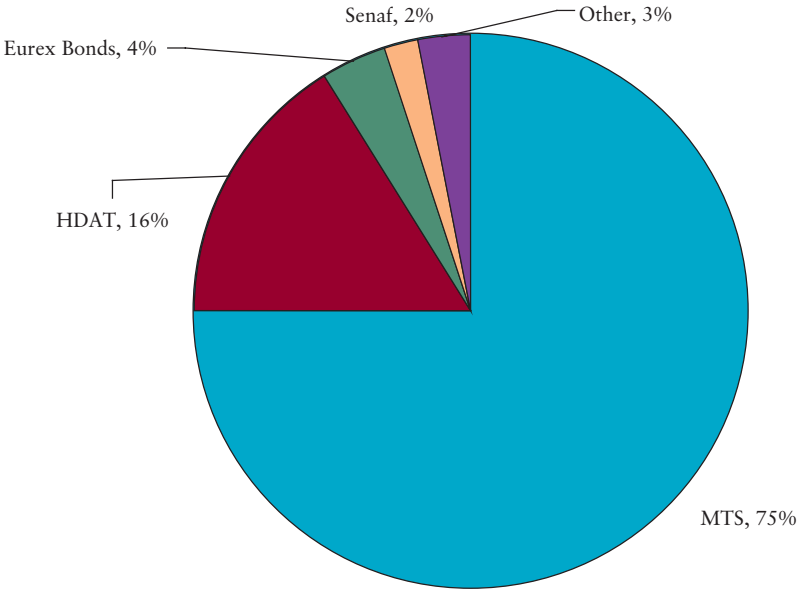
Regarding the dynamics of turnover, the Spanish Senaf and the Greek HDAT platforms have seen their trading volumes decrease slightly compared to 2004, while Eurex Bonds and MTS kept their share stable. MTS acquired its leading position in part thanks to debt managers in certain countries who generally determine the obligations of primary dealers (quotation, trading carried out) on the MTS local platform.[24]

In the B2C segment, Tradeweb and Bloomberg Bondtrader are the leading electronic platforms. What is interesting is that both have data vendor backgrounds, as the Tradeweb platform was developed by Thomson Financial. Data vendors have a competitive advantage in the B2C segment, due to the fact that they had already established relations with a broad range of institutional investors interested in financial markets (buy-side clients).

[24] The Spanish debt manager is an exception from this perspective, as in Spain, the prescribed requirements for primary dealers can be executed in the Senaf system in addition to the MTS system. Persaud (2006) argues that this competitive advantage – granted by Continental debt managers – is the only thing allowing MTS to maintain its monopolistic position on the electronic market.

Chart 8

Distribution of electronic trade in the euro-denominated government bond market by B2B platform*



* *Source: BearingPoint (2005).*

Among other segments of the government securities market, the repo market is closely tied to the cash government security market. An interesting fact is that based on the available estimates, BrokerTec has a substantial lead in this segment based on its turnover, by far exceeding that of MTS and EurexRepo. Electronic transactions only account for one fourth of all repo trade.

In the British pound-denominated gilt-edged government securities market, transactions concluded by telephone are still predominant. Primary dealers in the most important segment of interbank transactions (GEMMS, currently 15 London banks) conclude the majority of transactions though five interbank brokers. Based on reports by primary dealers,[25] the entire market's daily turnover amounts to EUR 21 billion, of which one third stems from transactions between primary dealers (B2B) and two thirds from transactions concluded with clients (B2C). However, the final transaction in a portion of telephone-based deals takes place through an electronic system. In case of agreements concluded with clients via telephone, transactions are based on unique requests for quotation via telephone or from several dealers simultaneously through the electronic system (e.g. TradeWeb, Bloomberg BBT), however the latter is not yet common. On the whole, the gilt-edged market is less transparent than the euro area or the US market. Despite primary dealers being exempted from quotation and trade-related obligations, the market functions efficiently and with adequate liquidity compared to its size.[26]

Among the government security markets of the new EU member states (acceded in 2004), in addition to the Hungarian market, the structure of the **Polish and Czech** *government securities market* is the most relevant from the perspective of this analysis.

The Polish market is the largest one among the new EU member states, with a total daily trading volume of EUR 5 billion. B2B trading in the Polish market only accounts for 20 per cent.[27] Poland is the only country among the new member states where the euro area's leading electronic interbank platform (MTS) has been present since 2004 (it took over the operation of a former local platform). In 2005, the electronic platform increased its turnover further by granting direct access for foreign actors. In spite of this, only 14 per cent of B2B trade takes place through this platform (amounting to 3 per cent of total trading volume). The remaining 86 per cent of trade takes place via traditional OTC channels. The proportion of trade conducted on the exchange is marginal (0.1%). Bloomberg and RTFI are present on the B2C segment here as well, which accounts for a much larger slice of turnover, however their share is still negligible.

[25] Source: www.dmo.gov.uk.

[26] FSA (2005). What is interesting is that on the gilt-edged market, the majority of transactions qualify as on-exchange transactions due to the fact that primary dealers and interbank brokers are members of the London Stock Exchange and must therefore subsequently report their concluded transactions to the exchange.

[27] MoF Poland (2006).

The Czech market has low turnover, even in comparison to the Polish and Hungarian markets (approximately EUR 200 million per day), primarily due to the much lower Czech public debt. There is a higher proportion of transactions concluded on the exchange in this market (around half of total trade), however these are for the most part negotiated block transactions. Traditional OTC transactions also occupy an important role in the interbank market. Bloomberg's trading system (BBT) supports trade carried out with clients (B2C) in this market as well.[28]

US

The US government securities market has a substantially higher turnover compared to the euro area market (the daily trading volume of interbank transactions is six times higher than in Europe, amounting to USD 600-650 billion). According to various estimates, the interbank B2B segment accounts for 75 per cent of total trading volume. Electronic markets are also much more widespread, with a share of approximately 98 per cent of liquid (so-called on-the-run, benchmark) papers in the B2B segment.[29] BrokerTec is the leading platform, with an estimated 60 per cent share of on-the-run trade, while the rival eSpeed accounts for the remaining almost 40 per cent (both platforms are owned by inter-dealer brokerage firms). This almost exclusively electronic trading is surprising because the first system of this sort was introduced in 1999. The dynamic growth of this segment may be due to the fact that the largest clients (e.g. hedge funds) can also trade alongside dealers on the two leading B2B platforms. The leading platform (MTS) in the euro area market is has not yet granted direct trading access to these large clients, partly explaining the uneven distribution of trade between the interbank and the bank-client segments in the euro area, as well as the lower proportion of electronic trade compared to the US. The more special, less liquid off-the-run papers are still predominantly traded in traditional OTC markets. As on-the-run papers account for 70 per cent of total US government security turnover, electronic trading systems make up the majority of transactions in the entire market. One of the main effects of electronic systems has been the substantial slashing of transaction costs (by 90 per cent, according to estimates) in the US government security market.[30] Stock exchange turnover in the US is negligible, although US government securities can theoretically be traded on the New York Stock Exchange, which accounts for the largest slice of bond trading among US exchanges.

Japan

The Japanese government securities market is less liquid and has lower turnover relative to the amount of government securities issued compared to the US or European markets.[31] The main protagonists of the market are Japanese banks, but foreign activity is also strong. Benchmark government bonds have been introduced on all three large Japanese exchanges, however only OTC markets have measurable turnover. Despite the fact that the main international electronic platforms (MTS, eSpeed, ETC/Brokertec) have been present in this market from the turn of the millennium,[32] Japanese interbank trade has migrated to these platforms at a sluggish pace. According to Pierron (2004), 40 per cent of the B2B segment's trading volume is electronic, while a mere 2 per cent of the B2C segment is electronic.

Canada

The daily average trading volume of the Canadian government securities market is valued at USD 12-13 billion.[33] The B2B segment makes up around half of turnover. This segment is also served by eSpeed and Brokertec, like all other main government securities markets, but the majority of inter-dealer trade still takes place through traditional (bilateral OTC and

[28] In the domain of trading infrastructure, an interesting point is the internet-based Czech retail electronic trading system operated by the 'RM system', which performs immediate settlement in its depository of the concluded transactions (private individuals can open securities deposit accounts directly in the depository). However, there is no measurable government security trade in this system.

[29] Based on Persaud (2006), Mizrach–Neely (2006) and regular reports by primary dealers (source: www.newyorkfed.org).

[30] The transparency of the US treasury market was significantly improved well before the emergence of electronic trading by the electronic GovPx system, initially created in 1991 by the treasury market's four leading interdealer brokers on the express notice of the SEC. GovPx was not used as a trading system, but rather for the quasi real-time ex-post reporting of concluded transaction prices and volumes, and the market prices thus made accessible to market participants not present on the interdealer market made pricing substantially easier for them. Today, GovPx has lost its significance, as the ICAP brokerage house – also the owner of BrokerTec – acquired it in 2004, as a result the other brokerage firms no longer report the transactions processed by their systems. The SEC did not object presumably because the widespread electronic trade ensures the level of transparency required by the SEC even without the help of GovPX.

[31] Secondary market cash turnover amounts to USD 150 billion, according to JSDA (2006) and BoJ (2004), which is much lower than on the US market, despite the fact that the total outstanding supply of marketable Japanese government securities exceeds the size of the US treasury market. The average bid-ask spread is wider than that of euro and dollar denominated government securities (BoJ, 2004).

[32] BoJ (2001).

[33] Blythe (2003) and Khan (2007).

voice broker) channels. The B2C segment is served by the three main multi-dealer electronic platforms (CanDeal, CBID, Bloomberg BBT). Trade on exchanges only accounts for a minor portion of government security turnover in Canada as well. Ex-post transparency in the Canadian market is further improved by the CanPx system, modelled on the US GovPx system, which reports the transactions of all major market actors and brokers. CanPx publishes the quantity and price data of transactions reported to it within one hour directly to its subscribers, as well as through data vendors.

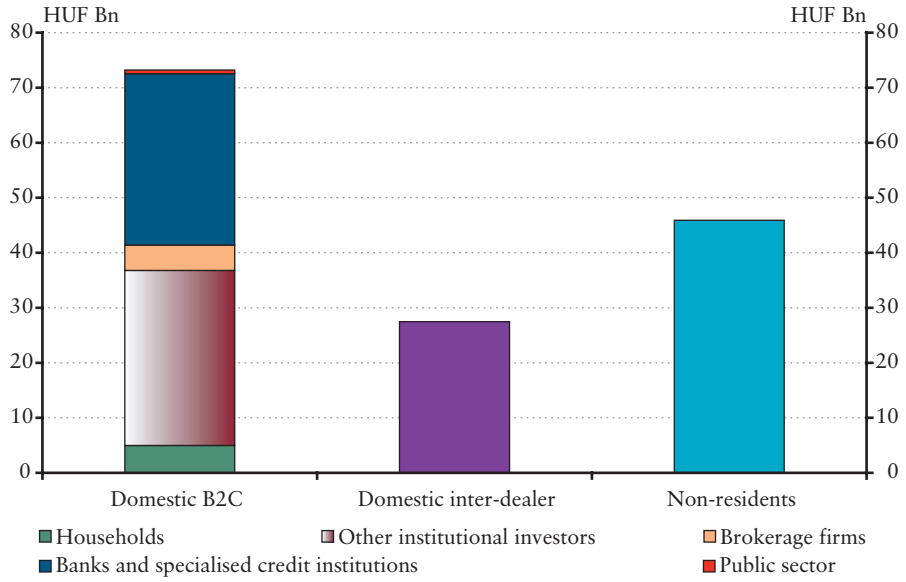
4 Secondary market trading practice of forint-denominated government securities

4.1 ACTORS AND TURNOVER OF THE FORINT-DENOMINATED GOVERNMENT SECURITY MARKET

Similarly to most developed countries, Hungary employs a primary dealer system for the more efficient issuing of domestic government securities (forint-denominated, issued in Hungary) and for better liquidity in their secondary market. Primary dealers (currently 11 Hungarian banks) have exclusive rights to participate in government security auctions, and also have a priority or exclusive rights in other transactions of Államadósság Kezelő Központ Zrt. (ÁKK, the Government Debt Management Agency) (such as repurchase agreements). In return for these privileges, primary dealers are obliged to perform continuous secondary market two-way quotations in the government security market and regularly report their government security trading volume in aggregate form to ÁKK. Similarly to other countries which employ a primary dealer system, primary dealers also play a central role in secondary markets. Besides primary dealers, numerous foreign banks also perform active (continuous) quotation in the forint-denominated government securities market. These are generally Continental or London-based banks with subsidiaries in Hungary.

Chart 9

Distribution of daily average secondary market trade in forint-denominated government securities carried out by Hungarian primary dealers by sector, 2006



Source: ÁKK.

Based on reports by primary dealers, the Hungarian secondary market has an average daily turnover of HUF 150 billion. The B2C segment – where clients are generally banks not quoting actively and Hungarian investment and pension funds – accounts for half of the turnover (Chart 9). Transactions concluded between primary dealers make up 20 per cent of trade (i.e. inter-dealer, B2B trade between Hungarian actors). The remaining 30 per cent is concluded with foreign actors, for which no dealer-client distribution is available.

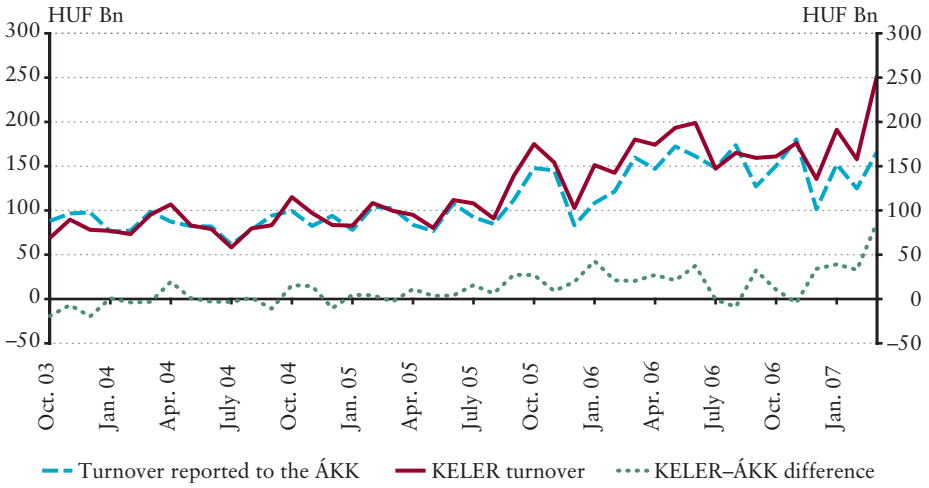
Primary dealer reports do not contain trade carried out by foreign actors without Hungarian involvement (off shore trade). Consequently, data should be compared with the secondary market clearing volume provided by KELER, the Hungarian central securities depository (CSD). These contain all transactions concluded between actors with different custodians, and therefore contain off-shore transactions in which the two parties keep their Hungarian government bonds at different

custodians. At the same time, the ÁKK's data is more complete from other perspectives, as they contain all transactions in which at least one of the parties is a primary dealer, even if both parties have the same custodian. Based on this, we can state that the difference between the trading volume calculated based on KELER's data and primary dealer reports gives a lower estimate of non-primary dealer secondary market government bond turnover (its size is indicated by deducting the turnover between investors with the same custodian).

Chart 10

Comparison of secondary market government security trading volumes

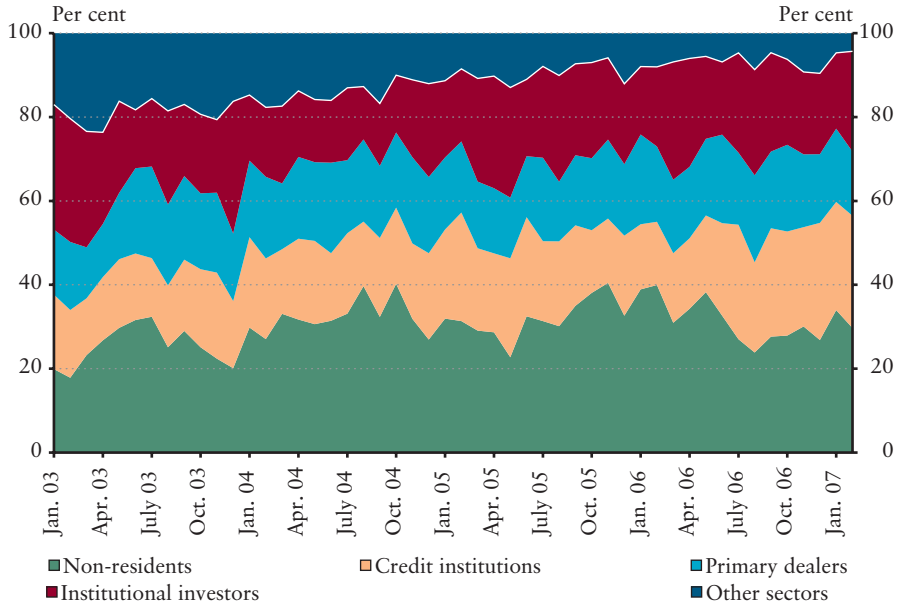
(daily average volume by month)



Over recent years, the difference between the daily average turnover reported by KELER and primary traders has been increasing; it has amounted to almost HUF 30 billion on average (and to nearly HUF 50 billion for government bond turnover) since January 2006, whereas in 2004, the two turnover figures were more or less the same. This difference is the equivalent of half of the trading volume stemming from trade between primary and foreign dealers. Assuming that Hungarian non-primary dealers mainly participate as clients in the secondary market, in other words do not engage in active quotation, increased non-primary trading volume reflects that foreign actors engage in a substantial amount of government security trade

Chart 11

Distribution of the secondary market government security turnover of primary dealers



with non-primary dealers. **This may include B2B, or B2C transactions with both foreign and Hungarian clients. In any case, it reflects strong foreign dealer activity.** At the same time, besides foreigner, the financial institution sector has managed to increase its share in secondary market trade carried out by primary dealers. In other words, non-primary dealer Hungarian financial institutions have succeeded in increasing their activity.

The tendency of on-the-run papers accounting for substantially larger turnover and more concentrated transactions compared to off-the-run papers also prevails in the Hungarian market. These active papers include, on the one hand, bonds auctioned by ÁKK in this period, and on the other hand, papers from earlier issues with the largest outstanding supply. Several papers are classified as such within a two-year time period, while only one paper in each year is classified as such above the three-year segment. For the purpose of analysis, the group of active papers can be determined in a more narrow sense, based on the benchmark government bonds defined by ÁKK, allowing the simple assessment of the differences in the two market segments. The difference in the average transaction size of the two groups is in accordance with international observations: the average transaction size associated with benchmark government bonds in 2006 was more than 40 per cent larger than that of other government bonds (HUF 900 million versus HUF 600 million). Daily average turnover is also in line with expectations: the number of benchmark papers accounted for only one fourth of all traded papers, while daily turnover was divided roughly equally between the two groups in 2006.[34]

4.2 TRADING INFRASTRUCTURE

In line with international practice, the bulk of secondary forint-denominated government securities market turnover takes place in the OTC market (outside the exchange), with the exchange accounting for merely 1% of total turnover. In the B2C segment of non-exchange secondary market trade, trading can be carried out on several electronic platforms, but their turnover is negligible. There are no electronic platforms on the inter-dealer (B2B) segment, thus trading takes place via traditional OTC channels (bilateral or voice brokered)

Trading in the credit instrument section of the Budapest Stock Exchange takes place in the automatic trading system, where primary dealers must satisfy their quoting requirement (within trading hours, obligatory quoting takes place from 9:00-10:30, and 13:30-15:00). In case of benchmark government bonds, these apply to all dealers, while in case of other government securities introduced on the exchange, at least three dealers (market leaders) make quotations. These quotes may be hit by any participant in the credit instrument section with trading rights, however this group encompasses only a few financial institutions besides primary dealers.[35] Exchange turnover is also very weak in this market, with a daily average of HUF 500 million in 2006. Compared to the OTC market, this low turnover is a result of the low number of transactions on the exchange (less than 1 per cent of the number of transactions in the OTC market) and their low average value (half of those concluded in the OTC market).

In addition to the transactions registered in the public order book that can be viewed by all section members, the trading system of the exchange (MMTS I) enables the completion of fixed deals (where the names of the dealers are not disclosed). As regards the latter, only the two parties completing the transaction will see the bid, which will not be included in the public order book. The ratio of fixed deals, however, is rather unusual on the Budapest Stock Exchange. As regards equities, where the number of fixed deals only constitutes a fraction of the number of public transactions (0.02%), the transactions concluded

Table 3

Average daily turnover of forint-denominated government securities, average number and size of transactions on and outside the BSE (2006)

	BSE	OTC
Average daily turnover (HUF bn)	0.5	146
Average transaction size (HUF mn)	330	730
Average number of transactions (units)	1.5	200

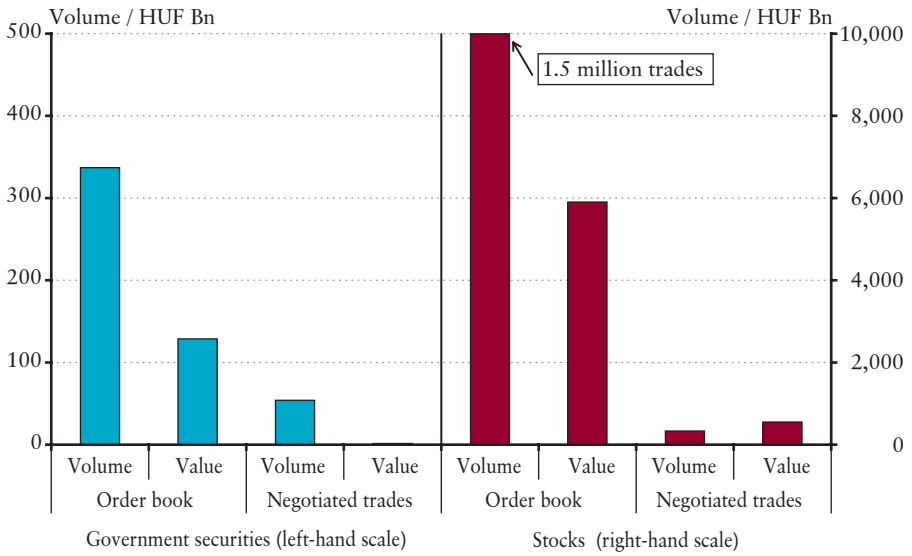
[34] Csávás–Erhart (2005) analyse the effects of certain HUF securities changing from on-the-run to off-the-run on turnover in more detail.

[35] Besides the MNB, only two banks and two equities firms are present as non-primary dealers in the credit instrument section of the exchange.

are of much larger volumes, in line with international experience: in 2006, the average transaction value was approximately 400 times than that of fixed deals. As regards government securities, the relationship is the opposite: fixed deals are more frequent, but their values are inferior to that of public transactions (in 2006, the number of fixed deals was 16 per cent of public deals on average, but the HUF 25 million transaction value of fixed deals only amounted to 6 per cent of the HUF 400 million transaction value of public transactions). This supports our hypothesis that exchange-based transactions are unpopular primarily because inter-dealer transactions (B2B) and those concluded with clients (B2C) are not differentiated.

Chart 12

Ratio of public order book and fixed deals in the equities and government securities sections of the BSE (2006)



In addition to the BSE, forint-denominated government securities can be traded in the trading systems of two foreign exchanges: the Frankfurt Stock Exchange (Deutsche Börse) and the Swiss Exchange (SWX). The turnover of both markets is insignificant, falling well below that of the Budapest Stock Exchange. Both exchanges offer public order book trading and there are no dealers in the markets that would enhance liquidity. It is important to note that the transactions concluded on these exchanges are not officially considered on-exchange (official regulated market) transactions as the exchanges practically only provide trading platforms for trading.[36]

The inter-dealer (B2B) segment of the OTC (off-exchange) market is not served by any electronic platform; forint-denominated government securities cannot be traded at any of the international platforms described in the previous section and no interbank platform has been specifically developed for this market either. Based on anecdotal information, the prevailing form of trading involves requesting quotes and trading via the bilateral Reuters Dealing.[37] This accounts for approximately 75 per cent of inter-dealer turnover, whereas the remaining 25 per cent is concluded via major international voice brokerage firms (IDB).

As regards the B2C segment of the OTC market, the picture is more varied; electronic trading has established itself, at least based on the number of platforms. Practically, all dealers provide an electronic trading tool to their clients, which can be called a single-dealer platform, via data vendors such as Bloomberg or Reuters. In practice, this constitutes an own page for the dealer, accessible only to authorised clients and containing the quotations of the given dealer, which can be accepted immediately with a single click. Based on anecdotal information, however, such trading is very rare. In general, the parties

[36] This is similar to the 'MMTS non-regulated market' service offered by the BSE, where solely the trading platform can be used, but the deals transacted are not considered on-exchange transactions.

[37] Reuters Dealing is an application of an electronic chat nature, which is similar to a telephone as regards market architecture. In the academic literature, this and other similar general communication tools are not classified as electronic trading platforms and the transactions concluded using these tools are not considered electronic trading.

Table 4

B2C electronic trading platforms providing facilities in the market of forint-denominated government bonds

Platform	Operator/Owner	Trading mechanism	Dealers	Volume
Bloomberg Bondtrader	Bloomberg	firm quote, request-for-quote	290 (of this: 8 quote on the HUF market)	Approx. HUF 3-4 billion (estimate)
Reuters Trading for Fixed Income (RTFI)	Reuters	firm quote, request-for-quote	15	negligible
Tradeweb	Thomson Financial	request-for-quote	37 (of this: 27 quote on the EUR market)	negligible
Bondvision	MTS group	request-for-quote	32 (of this: 14 quote on the HUF market: 14)	negligible

only consider the listings to be indicative, meaning that a bilateral relation usually ensues (via telephone or Reuters Dealing) to determine the price and the size of the transaction.[38]

In the market for forint-denominated government securities, several multi-dealer B2C platforms are accessible; all of these are among the leading platforms in the international markets (Table 4).

The most significant of the above platforms is Bloomberg Bondtrader, the only one continuously used by Hungarian dealers for quoting. This platform has been available for completing forint-denominated government security transactions since 2004. According to the reports by market actors, at the time when the platform was launched, clients showed keen interest and were very active. This activity later subsided and, at present, the volume of trading on this platform is not significant compared to the trading volume of the entire market.[39] As we have pointed out in the section discussing international trends, the Bloomberg platform's great advantage is that it does not entail additional costs for clients, as those who have a Bloomberg monitor and have agreed previously with their preferred dealers can trade via the system free of charge. Dealers continuously maintain bilateral quotes in the system, which are in principle firm for the clients authorised by them, i.e. can be accepted immediately. However, according to market actors (and also in line with international practice), the request-for-quote procedure described above is a trading form that is used more frequently. In this procedure, the client can request a firm quote with a click from up to five selected dealers. The dealers must respond to the request within a short time interval (few seconds). By clicking on the best quote received, the client can conclude the transaction with the dealer that gave the quote (the client also has only a few seconds to decide). Also based on anecdotal information, Hungarian dealers generally trade with domestic clients (investment funds, pension funds, insurers) on this platform, and use other platforms to service to foreign clients.

According to information received from market actors and the operators of other multi-dealer B2C platforms, the trading volume of forint-denominated government securities on these platforms is negligible or inexistent. Reuters only made its service available at a later point in time, in reaction to Bloomberg, which could explain why turnover via Bloomberg is higher (although still quite low). Tradeweb and Bondvision are platforms that have been used previously, but their target groups are traditionally overseas or European clients that do not demonstrate considerable activity in emerging bond markets.[40]

On the basis of the above, we can say that, as opposed to the more developed part of Europe and the United States, electronic trading has not succeeded in obtaining a substantial share in the market for forint-denominated government securities (similarly to several other more developed markets for government securities). Traditional bilateral trading (Reuters Dealing, telephone-based) is predominant in both the inter-dealer and the B2C segments. As regards the inter-dealer segment, multilateral electronic trading services are not available at present, presumably due to the low market interest. This is also supported by the fact that market actors do not intensively use the platforms available in the B2C segment.

[38] According to the academic literature, this is not electronic trading, as the final conclusion of the transaction is concluded via telephone or Reuters Dealing.

[39] Precise figures are not available on the turnover of the platform, however, according to market actors, the total daily turnover cannot be more than HUF 3-4 billion, which equals 1-2 percent of the total market turnover.

[40] Tradeweb mostly focuses on the US as it is a market-leading platform in the American treasury B2C market, whereas Bondvision is a platform created by the MTS group to primarily serve the B2C segment of the euro bond market.

4.3 MARKET TRANSPARENCY AND QUALITY

It is difficult for market actors not trading actively in the secondary market (not in regular trading contact with other dealers) to obtain price and volume data from the forint-denominated government securities market. Due to the bilateral nature of trading, information disclosed to third parties is obtained from sources other than those where the majority of trading is concluded.[41] Although indicative prices, which can be used with certain restrictions published via data vendors (Reuters, Bloomberg, Thomson) are easy to access, these actors have limited access to actual tradable (firm) prices. Actors that do not have access to the inter-dealer market (e.g. investment fund managers) have stated several times that it is disadvantageous for them that they can only price their portfolios on a daily basis based on exchange prices, as primary dealers quote public prices for all government securities on this platform only. Thus, although these prices are in practice accessible for each trading day, they will be much worse than actual market prices. This presents a problem with respect to the assessment of portfolios and the determination of non-realised profits for those actors in particular that do not have their own contacts with dealers (within a bank group).

As for tradable prices, the Bloomberg platform currently provides the most reliable information on the market for actors not trading actively in the market. On the BBT platform, several dealers quote prices acceptable for their clients, which can be viewed on a single screen for all Bloomberg users. As transactions are concluded on the platform (although at a low volume compared to the entire volume), the prices and quoted quantities here are a more reliable reflection of market conditions. At the same time, the significance of the prices quoted is lessened by the fact that in general, the transactions are concluded according to a request-for-quote mechanism, and not by hitting the continuously maintained quotes. The volume of the other electronic platforms, according to anecdotal information obtained from those operating the platform is practically zero, thus their role in price disclosure is limited.

The prices quoted on the BSE are also tradable (primary dealers fulfil their price quoting obligations on this venue), but these prices are considerably worse than actual market prices (the spread is very wide).[42] Although transactions are also concluded here, market actors are unanimously of the opinion that the role of the exchange in price disclosure is of no importance whatsoever.

Authorised clients may view the single-dealer pages of certain dealers, but the drawback of these pages is that they are not multilateral and – as we have mentioned above – market actors often consider these to be only of an indicative nature.[43]

Regarding post-trade data, the actual and delayed data of *transactions* concluded on the exchange are continuously published by several market data vendors, thus, with regard to the very low number of transactions concluded on this venue, prices and volumes are transparent. As regards OTC transactions concluded via platforms and traditional OTC transactions, however, no post-trade information on prices or volumes is available (not even for other actors on the platform).

At the same time, analysis of the market is facilitated by the fact that ÁKK publishes consolidated quantitative data on the secondary market transactions concluded by primary dealers on a weekly basis, and also publishes turnover data broken down by security on a monthly basis. Also on a daily and weekly basis, ÁKK publishes consolidated quantitative data on secondary market volume settled by KELER. As regards price information, ÁKK publishes exchange prices as well as the daily average prices of DVP transactions settled by KELER, broken down by government securities.

Apart from the BSE, accessible price sources (electronic platforms, single-dealer pages) indicate a bid-ask spread of 5-10 basis points in terms of yield in the market for forint-denominated government securities, which is consistent with the information provided by market actors on the bilateral OTC market (Chart 13).

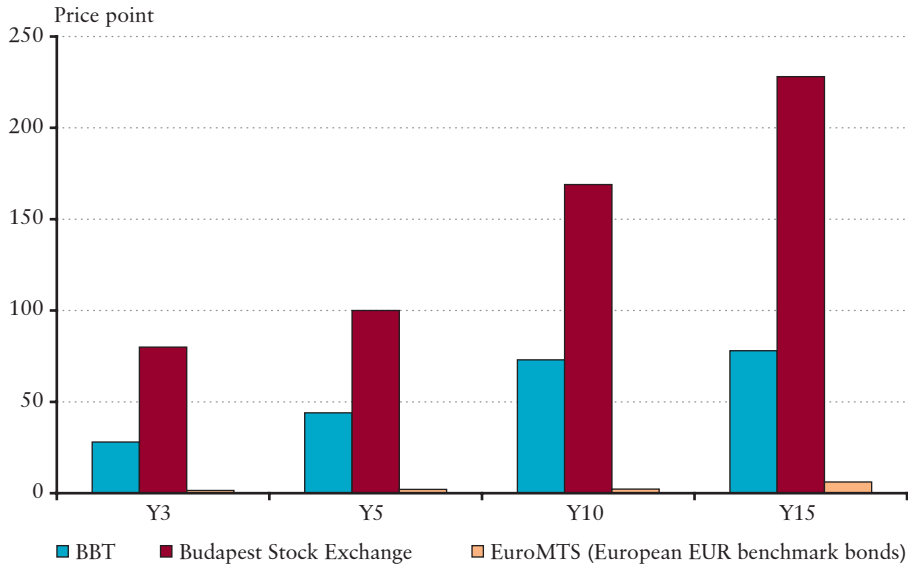
[41] These market actors (also including, for example, the central bank itself or even debt managers) cannot request firm quotes from several dealers whenever they intend to find out real market prices. Firm prices may only be requested upon a real intent to trade.

[42] At present, the maximum spread required by ÁKK equals 50 basis points (30 basis points in the case of reference series), thus quotes often reflect this spread. They are, in any case, substantially higher than actual secondary market (OTC) quotes. Primary dealers do not wish to trade on the exchange.

[43] The advantage of this is that there is no need to establish bilateral contact with the given dealer, thus a larger number of pages can be viewed without having to call the given dealers by telephone.

Chart 13

Average secondary market spreads of forint-denominated benchmark government securities on the BBT and the BSE; average spreads of the most liquid euro government benchmark bonds on the EuroMTS*



** The spreads are expressed in price points (one hundredth of the percentage of the bond face value).*

The liquidity of the forint-denominated government securities market was analysed in detail by Csávás and Erhart (2005) based on the data accessible by the central bank.

In Hungary, the essential reason for the low exchange volume is presumably the same as in other markets. There are two major differences between the exchange and traditional OTC markets and electronic platforms:

1. The B2C and B2B segments are not separated. According to exchange regulations, other dealers can hit the quotes of dealers just as other section member brokerage firms or the clients of these actors.

2. From the perspective of dealers, the situation is further aggravated by the post-trade transparency of the exchange, that is, by the fact that the data of on-exchange transactions are published within a short time.

Dealers often quote individual securities applying the maximum possible spread of 50 basis points (30 basis points in respect of benchmark securities), which clearly indicates that they are not interested in exchange trading. The wide (non-market) spreads will prevent other dealers from hitting their quotes. This, of course, will also deter clients, because, as pointed out above, they can be offered much better terms in bilateral OTC markets constituting the actual market, or even on B2C platforms.

Thus, a major advantage of traditional bilateral OTC trading for dealers is that their anonymity can be preserved much better as opposed to multilateral platforms and exchanges. This is of particular importance with regard to the less liquid forint-denominated government securities market, as transactions of relatively large volume compared to the size of the market are frequently concluded. This is characteristic of the Hungarian market, in part due to the considerable share of foreign clients in the government securities market (approximately 40 per cent of fixed-rate government bonds are held by non-resident investors).

5 Dilemmas related to regulation and policy

5.1 INTERNATIONAL MARKETS

As briefly mentioned in the introduction, the trading infrastructure and transparency of bond markets has become one of the major issues with respect to the regulation of financial markets in recent years. Whereas in the US – with the best quality government securities market – the issue has been practically resolved without any serious regulatory intervention as the cash market has become a fully electronic market, in the EU debate surrounds the need for regulation and for the improvement of quality and transparency in the second-most developed market of euro-denominated government securities.

It is a fact that at present the degree of transparency in American bond markets (especially the market for government bonds and municipal bonds) seems to be much higher than in EU bond markets, and the quality of these markets (liquidity, efficiency, trading costs) is better in general.[44] This was not achieved in the United States purely by market forces, either, but via several initiatives by regulators. The most notable of these initiatives is the one related to the establishment of systems, further to encouragement on the part of regulators, in order to improve post-trade transparency (GovPx in the market of government bonds, TRACE in the market of corporate bonds, MSRB data collection in the market of municipal bonds). The role of US supervisory authority in the improvement of transparency was to express its dissatisfaction to the market actors, who, in response (presumably fearing stronger regulatory intervention), set up the systems with the purpose of reporting and distributing the public trading data in question. Thus, these systems were set up by the self-regulatory bodies of dealers (NASD, MSRB) and not by the SEC itself. The majority of empirical analyses examining the effect of these systems have found that, overall, the systems had a positive effect on market liquidity (see Chapter 2).

The MiFID Initiative

The heated debates regarding the need for regulation in the EU bond markets primarily stem from the above-mentioned US successes. The lower degree of transparency and higher trading costs of the European markets have become major issues of financial integration. This explains why the MiFiD directive, adopted in 2007 and in its current form mainly driving the innovation of equities market regulation, contains a section requiring the European Commission to examine the applicability of the strict transparency requirements pertaining to equities traded on exchanges to other financial markets (primarily the bond market).[45]

Market transparency can bring several benefits with respect to regulation. It enables a more efficient and rapid reflection of information in prices (efficiency), the management of the risk posed by fragmented liquidity stemming from the physical and architecture-related differences of market segments, and from the aspect of consumer protection (small investors), it also constitutes stronger control of the agents acting in the market.

The transparency requirements of the MiFID were influenced by the abovementioned factors. First of all, the directive focuses on the equities market, as the direct activity of small investors is the strongest in this market. In light of the above, the directive explicitly acknowledges the existence of alternative trading venues and abolishes the concentration rule on the EU level.[46] In response to the emergence of electronic trading platforms, it establishes the category of multilateral trading facility. Thus, in addition to regulated markets, there will be two more basic types of markets in the new system: the previously mentioned MTFs and market intermediaries (banks, securities firms), which can bring together buying and selling interest within the company (systematic internalisers) – similarly to several jurisdictions today. In order to ensure that the three basic trading venues serve a uniform and liquid market to the largest extent possible, the MiFID imposes strict requirements on the markets and market intermediaries:

[44] With regard to corporate bonds, the US quality-related advantage can be disputed.

[45] European Commission (2006).

[46] That is, it repeals the obligation that, regarding shares introduced onto regulated markets, it is mandatory to trade with the given shares on the given regulated market. At present, such an obligation prevails in a number of EU member states, and, among them, Hungary. This rule, as an alternative of transparency, originally served the purpose of preventing the fragmentation of the equities markets and ensuring that all transactions are concentrated on the exchange. However, experience has shown that market quality did not deteriorate with the emergence of OTC trading on markets where this was already done previously.

- As regards the protection of small investors, the most important rule is the principle of **best execution**, which requires that market intermediaries to carry out the orders of a client under the best possible terms that can be achieved for the client, that is, the agent should for example select the trading venue for carrying out an order that, in the given moment, is the most advantageous for the client.[47] Although this has been expected from agents previously, the directive places emphasis on this requirement by obliging market intermediaries to be able to prove at any time retrospectively that the option used was the best possibility under the given circumstances. In effect, this requires the centralised storage and processing of data on achievable prices and other terms from market intermediaries.

- In order to prevent market fragmentation and maintain competition between trading venues, the directive enforces explicit and comprehensive **pre-trade transparency** with respect to all three trading venues. The rules applicable to the individual types of trading venues are very similar and consistent with each other. The veritable novelty is the rules imposed on market intermediaries, as no such explicit requirements existed previously. Market intermediaries will be obliged to publish bids not fulfilled by them immediately in a registry similar to a public order book, and, if they also carry out trading on their own account, to publish their own quotes.

- With regard to **post-trade transparency** the directive also imposes a uniform requirement regarding the real-time publication of price and volume data of transactions executed. The rules equally apply to all three types of trading venues. Exceptions may only be made in the case of transactions involving large volumes – in such cases, data may be published with a delay.

A market must and may be regulated if it demonstrates any form of market failure. The adoption of the MiFID signals that the European Commission is of the view that, due to the positive external effects of market transparency, the market is unable to ensure a socially acceptable degree of transparency for market actors, thus regulatory intervention is needed. Although the MiFID only imposes the abovementioned requirements on equities, it requires investigation by the Commission with regard to bond markets that show less transparency than the equities market. Although the results of such investigation are expected to be presented in the first half of 2008, on the basis of the opinions published over the course of consultations and theoretical literature, it is probable that in the European bond markets, the Commission will not require a transparency similar to that required of equities.[48] **In the event of regulatory intervention, it is expected to target the improvement of post-trade transparency, by permitting the postponed publication of transactions in a much wider scope**, taking into consideration the larger sized transactions generally concluded in the bond market.

Involvement of Regulators

The government and official actors exert considerable influence on regulation and are highly interested in the creation of better quality and more liquid, transparent markets.

Government debt managers are primarily interested in ensuring that the sale of government securities in primary markets is as secure as possible, at the best achievable price. However, the price achievable in the primary market is considerably influenced by the quality of the secondary market, as well as the size and composition of the investor base, which in turn is influenced by trading infrastructure. Only a significantly narrower investor base can participate on a non-transparent government securities market with low pre-trade price transparency. At the same time, excessive insistence on transparency by regulators involves a great risk, as it may lead to the absence of dealers, who ensure liquidity. On the majority of the European markets, issuers are making efforts to improve market quality by setting up primary trading systems. Primary dealers possess exclusive rights to participate in auctions and, at the same time, are obliged to quote prices for government securities issued in the secondary markets under specific terms (in general, maximum bid-ask spread and minimum quantity). As debt

[47] It is important to note that, with respect to the best execution requirement, not only the price achieved is considered a factor, but also a number of other factors such as the costs, speed and security of execution. Thus, it may occur that at a given moment, the best execution will not constitute accepting the counter-offer containing the best price.

[48] See FSA (2005), and other responses given in the course of consultations with the Commission at the following website: http://ec.europa.eu/internal_market/securities/isd/consultation/mifid_replies_en.htm. The ECB's management also adhered to this perspective. ('MiFID – non-equities market transparency: the ECB's perspective', http://www.ecb.int/press/key/date/2007/html/sp070911.en.html). In the public debate, the Commission also concluded that no major irregularities were experienced on B2B markets in the past, however, it may be advisable to increase price transparency for small investors (http://ec.europa.eu/internal_market/securities/isd/mifid_reports_en.htm).

Table 5

Trading platforms required in the primary dealership systems of EU member states with a large government securities market

Country	Primary dealer system	Venue of mandatory price quoting and the fulfillment of trading criteria
Germany	no	–
Italy	yes	MTS Italy
France	yes	No designated platform, no previously determined maximum spread
The Netherlands	yes	MTS Amsterdam
Belgium	yes	MTS Belgium
Denmark	yes	MTS Denmark
Finland	yes	MTS Finland
Portugal	yes	MTS Portugal (MEDIP)
Greece	yes	HDAT and EuroMTS
Spain	yes	MTS Spain and SENAF
Great-Britain	yes	No designated platform, no previously determined maximum. spread
Ireland	yes	MTS Ireland and EuroMTS
Austria	yes	No designated platform, no previously determined maximum. spread
Czech Republic	yes	No designated platform, no previously determined maximum. spread
Poland	yes	MTS Poland

managers must verify the fulfilment of the price quoting obligation, they must perform this on the stock exchange or on a designated, transparent platform (Table 5).

Persaud (2006) deems this practice harmful, arguing that it is the main reason why MTS remains a dominant market actor in the European markets as opposed to the competing inter-dealer platforms (eSpeed, BrokerTec, Eurex). Dunne, Moore and Portes (2006) also argue that the narrow spreads seen in MTS markets actually only constitute 'forced and artificial' liquidity, and do not simultaneously represent adequate market depth, that is, actual market quality.[49] We should note, however, that the statement that electronic trading of European government securities is carried out primarily in MTS markets because MTS is preferred by European debt managers seems greatly simplified. MTS appeared in these markets long before its competitors, thus most of its advantage results from timing (first mover advantage). Once liquidity has appeared in a platform, it is very difficult to lure it away. As regards setting forth primary dealer quoting obligations, debt managers may have been cornered, because until the actual market entry of competing platforms MTS markets were the only possibility for monitoring listings as opposed to domestic exchanges. Due to the low exchange turnover (see Chart 4), in many cases the choice of MTS may have been the only option.

In addition to sovereign issuers and debt managers, central banks are the third group of actors on government securities markets with considerable influence on regulation. In general, central banks are considered the largest consumers of information in the government securities market, for several reasons:

- The transmission of monetary policy is implemented via the interest rate markets, thus it is essential for a central bank to possess a yield curve of appropriate quality to monitor trends in market prices.

- Central banks also provide oversight of financial markets, which is primarily related to their function of ensuring financial stability. The government securities market is generally one of the major segments of the financial market, and thus the central bank, as the overseer, requires information on its operation on a regular basis.

[49] It must be noted that Persaud's study was commissioned by the ICAP group, which operated BrokerTec, whereas the Dunne–Moore–Portes study can be considered a strong anti-transparency response of the dealer community to the MiFID. Although their analyses are valuable, these studies may lack complete objectivity.

- In numerous cases, monetary policy-related market operations by central banks are carried out in the government securities market, thus – as direct market actors – central banks are directly interested in market transparency.

- It is a lesser known fact that practically all central banks rely on government securities of their own currency to a considerable extent as collateral for the credit transactions they carry out and for intraday loans extended to support the payment systems. The total amount of government securities offered as collateral for a central bank (taking into account the amount of credit extended by the central bank to the banking system) constitutes a quantity that is substantial in respect to the entire market. Central banks generally revaluate this collateral on a daily basis. High-standard, achievable market prices and a yield curve that can be estimated on the basis of such are necessary elements for this revaluation.

5.2 THE MARKET FOR FORINT-DENOMINATED GOVERNMENT SECURITIES

As we demonstrated in the previous chapter, the market for forint-denominated government securities is less transparent than markets in more developed EU member states. The key reason for this is the lack of a multilateral platform providing facilities to the interbank (B2B) segment, as similarly other markets, the exchange in Hungary does not serve a price disclosure function in the government securities market. This means that, at present, for third parties not trading actively in the market, the multilateral B2C platforms operated by Bloomberg and Reuters, as well as the indicative prices published via these data vendors can represent a source of quality information on prices. ÁKK Zrt. designated the BSE's trading system for the fulfilment of the mandatory price quoting obligations, as this was the only price source it could verify. However, in the exchange system, dealers often quote the maximum margin permitted, which is much wider than the actual margin in the market, as well as the minimum mandatory quantity, and consequently exchange turnover is insignificant.

Similarly to the European market, the transparency of the Hungarian market can be improved via the implementation of the MiFID, which was completed by the end of 2007. However, as mentioned previously, this will lead to improved transparency in equity markets, both in pre-trade and post-trade data. Concerning transparency in the government securities markets, the Hungarian Financial Supervisory Authority (hereafter HFSA) and the Finance Ministry among the Hungarian authorities have expressed that, in their view, 'it is not advisable to extend transparency-related requirements to non-equity type instruments because it may result in a competitive disadvantage' (HFSA, 2007). On the basis of what has been described previously, there are arguments stating that, in the case of bond markets, a lower degree of transparency may also be optimal. However, on the basis of the US experience, it could occur to regulators that the improvement of at least post-trade transparency may also be beneficial (on the analogy of the GovPx) in this segment of government securities. It is advantageous to prepare for this, as the EU regulation also seems to be headed in this direction.

Actors interested in the transparency of the market of forint-denominated government securities

On the basis of the distribution of the owners of forint-denominated government securities broken down by sector, there are three identifiable distinct sectors with shares exceeding 10 per cent:

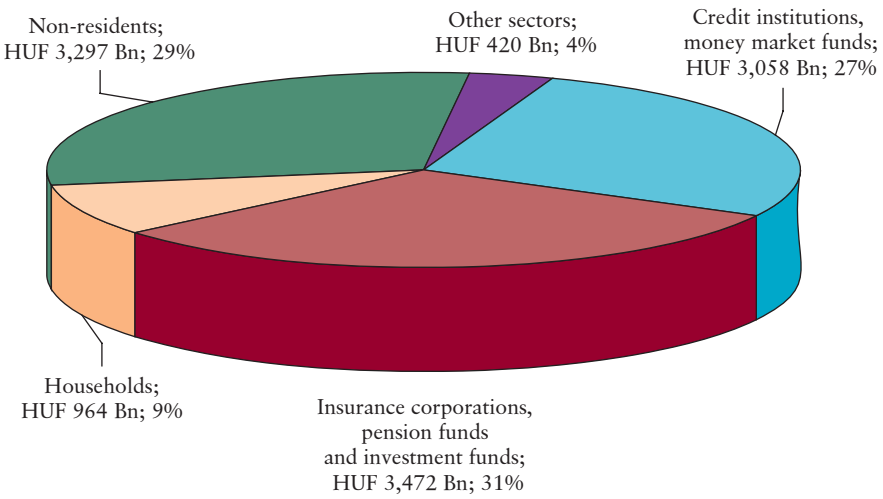
The sector of domestic investment funds, pension funds and insurers – considered relatively homogeneous in terms of market behaviour – account for the largest share. These actors are in the institutional customer category (buy-side customer), and they must assess the market value of the government securities kept in the funds on a regular basis. With regard to these clients, the basis for the valuation of the government securities held in the portfolio is the ÁKK fixing, prepared based on the exchange quotes of primary dealers.[50]

The second largest sector – based on the ownership ratio – is that of foreign investors (approximately 29 per cent). Within this sector, no statistical figures are available on distribution according to type of institution. Although the majority of the total outstanding amount is presumably owned by banks, investment funds and pension funds considered customers in the OTC market, actively trading foreign dealers can obtain a precise picture of the prices in the interbank market.

[50] This is the arithmetic average of the best bid and ask prices on the given government security at 14:15 quoted on the BSE.

Chart 14

Ownership of forint-denominated government securities issued, broken down by sectors
(30 September 2007 at market value, MNB bonds not included)



Source: MNB.

Credit institutions in Hungary hold the third largest share, including Hungarian banks performing primary and other quoting. Smaller banks in Hungary can access market information under terms similar to those applicable to investment funds, whereas primary dealers are the actors possessing the most precise information in the entire market, not only because of their active participation in the interbank market, but also thanks to their exclusive participation in auctions and the vital information on domestic order flow they obtain while serving the largest owners, the Hungarian institutional investors.

Households hold a 9 per cent share of the total outstanding amount, but it is important to note that 80-90 per cent of this amount consists of short-maturity treasury bills. Nevertheless, similarly to most developed markets, households are in the most disadvantageous position regarding market information and trading costs. On the basis of the short-maturity portfolio held by households and the turnover data of secondary markets, households hold purchased securities until maturity. The reasons for this are presumably risk aversion and financial culture, but only partially. The wide retail bid-ask spreads and the difficulty of obtaining information (overall, the impossibility of accessing the secondary market) may also add to the passivity of this sector in the secondary market.

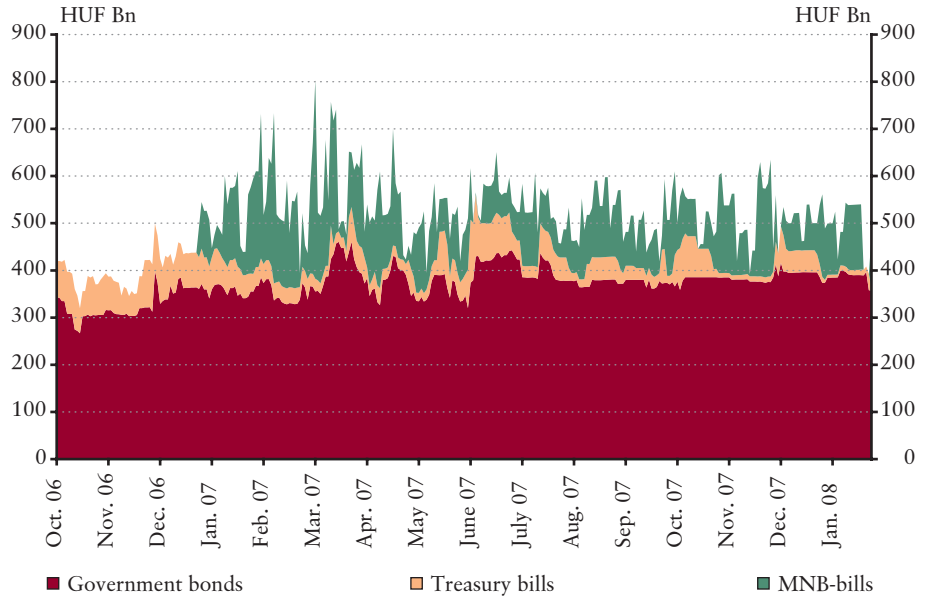
In addition to investors, the Hungarian government – as the issuer – is obviously interested in the quality of the market of government securities, as financing the Hungarian state is cheaper, *ceteris paribus,* via a government securities market of higher standards. ÁKK, which represents the Hungarian state in this market, also requires the highest possible quality information in the secondary market to be able to react to market trends with its issuing strategy, and to optimally satisfy the financing needs of the state. In addition to the qualitative information resulting from a more active relation with primary dealers and other market actors, the debt manager has access to the official reports of primary dealers on the transactions concluded in the secondary market.[51]

As the central bank, the MNB is interested in the transparency of the forint-denominated government securities market due to the reasons mentioned above. The MNB prepares estimates on a yield curve on the basis of exchange quotes twice a day and uses these on a regular basis to analyse short-term expectations relating to interest policy, medium and long-term expectations on inflation processes and the credibility of the central bank. Furthermore, it must be emphasized that due to the importance of the forint-denominated government securities market in Hungary and the considerable amount of government securities held by Hungarian banks, 70 per cent of the bank portfolios pledged for the Hungarian central bank as collateral for forint intraday

[51] The absence of households from bond markets is a global phenomenon, with the only exception being the experience of a few countries (e.g. Italy). Several researchers (Martínez–Resano, 2005; Warga, 2004) argue that there is no need to take this sector into consideration in transparency requirements and the costs of secondary market trading in general, because it is not an active actor on the market. This argument is a logical contradiction, as it does not take into consideration the fact that households are not active in bond markets due to the lack of transparency.

Chart 15

Total amount and composition of securities pledged for the MNB as collateral for overnight and intraday central bank loan



Source: MNB.

credit and overnight loans are in government securities. This means that the MNB assesses a government securities amount with a value of approximately HUF 400 billion on a daily basis (Chart 15). The daily revaluation is also based on quotes at the BSE (closing bid prices), and the yield curves estimated on the basis of the former.

In addition to the assessment of collateral, the central bank is also interested in the transparency of the secondary market in relation to its open market government securities operations. Although over the last five years, the MNB appeared in the government securities market only on two occasions, the possibility of such operations in the future cannot be ruled out. A dealer-to-customer (B2C) electronic trading system may be advantageous for the completion of transactions for several reasons. On the one hand, it is easier to assert the principle of equal treatment with regard to the partners of the central bank in this manner, because as a client, it may request quotes from several dealers at the same time. On the other hand, the acceptance of the best bid is easier to achieve. In addition, the completion of the transactions would be more transparent for market actors in this manner. The central bank would presumably not have the opportunity to participate on an interbank B2B platform as a fully authorised member, thus the establishment of such a system would not represent a change for the central bank in this respect.[52] Consequently, an efficiently operating, liquid B2C platform would present considerable advantages with respect to operations by the central bank.

It follows from the above that, in addition to actors actively trading in the secondary market, practically all other actors affected by market price trends rely on exchange quotes; firstly because the exchange is an official (regulated) market, secondly because it is the only generally accessible price source. In light of this, the fact that the exchange is the trading venue where government securities are not traded at all is cause for concern. The BSE does not play a role in price disclosure in the secondary market of forint-denominated government securities.

Initiation of the development of a more transparent interbank platform covering forint-denominated government bonds may be more favourable in improving transparency (e.g. MTS). An academic argument against such an intervention is the jeopardising of liquidity, as several authors argue (see the theoretical section) that forced transparency diminishes the liquidity of bond markets as it undermines the position of dealers, who will quote wider spreads or eventually leave the market. The

[52] For example, central banks are not present on the MTS platform – which had previously appeared on the Hungarian market as an inquiring party – neither as dealers, nor price takers.

fact that the quoting requirements pertaining to electronic platforms did not increase the average spread in the European market runs somewhat contrary to the academic argument, just as the fact that, to date, no dealer has left its primary dealer position in any European market because it had to fulfil a quoting requirement on such a platform.

Regarding electronic trading, the Polish market (see page 28 for further details) represents an extremely relevant example from the perspective of the Hungarian government securities market. In the Polish market, efforts to direct interbank liquidity onto an electronic platform remained unsuccessful, even though the debt manager designated this platform for the fulfilment of price quotation obligations instead of the national exchange. Taking into account the similar situation of Hungary and Poland in the European capital markets (same region, similar convergence prospects, identical scope of international investors), as well as the fact that electronic interbank trading in the Polish market had certain (modest) traditions prior to establishment of the current platform, it is unclear whether a similar initiative on the part of Hungarian regulators would improve market transparency. International examples show that the mere appearance of electronic platforms will not change the structure of trading. Warga (2004) argues that bond markets must achieve a certain level of development (depth, tightness) to ensure that a majority of trading is directed over to electronic platforms. This occurred on American and more developed European markets. In several otherwise significant markets (e.g. the British or Japanese markets), the critical liquidity needed for the general spreading of electronic trading has not yet been reached. If we accept this reasoning (which the author cannot prove), it is improbable that considerable volume would be traded in the Hungarian market on a more transparent electronic platform, thus attempts by the regulators to force such a platform may involve risks.

The development and maturing of the forint-denominated government securities market is impeded by several factors other than the infrastructure, and regulatory efforts in the near term should concentrate on eliminating these impediments.

One such factor is the elimination of the regulatory obstacles impeding the development of the repo market. A well-functioning repo market has not evolved in the market of forint-denominated government securities. The evolution of a repo market is primarily hindered by the accounting regulation for these transactions, which diverge from international practice.[53] The majority of Hungarian commercial banks significant in terms of their ownership ratios in the forint-denominated government securities market cannot use – even for repurchase agreement purposes – the part of their government securities portfolio not registered in their trading books without having to record these government securities at market value immediately. This means that a more intensive activity in the repo market would considerably affect the results of the given bank under the Hungarian accounting regulations, in which case there are several important aspects that are of higher priority than facilitating the trading of government securities. Another important aspect is the supervisory fee which, according to the Hungarian regulation, was payable even for repurchase agreement transactions serving a purpose other than liquidity management concluded with non-bank clients. This supervision fee was dependent on the size of securities transactions, but not on their maturity. As a result, a short-maturity non-interbank transaction represented a much greater burden on yield for financial institutions, which will pass this burden on to clients. Fortunately, the amendment of the Act on Capital Markets and Credit Institutions in the summer of 2007 resolved this issue as of October 2007. As of this date, the variable portion of the supervision fee is not determined on the basis of transactions, but rather of risks (in relation to the capital required).[54]

Finally, according to market actors, the recent investigations of the HFSA on securities lending resulted in weaker securities lending activity by market actors. Meagre securities lending can have an adverse effect on the liquidity of the government securities market.

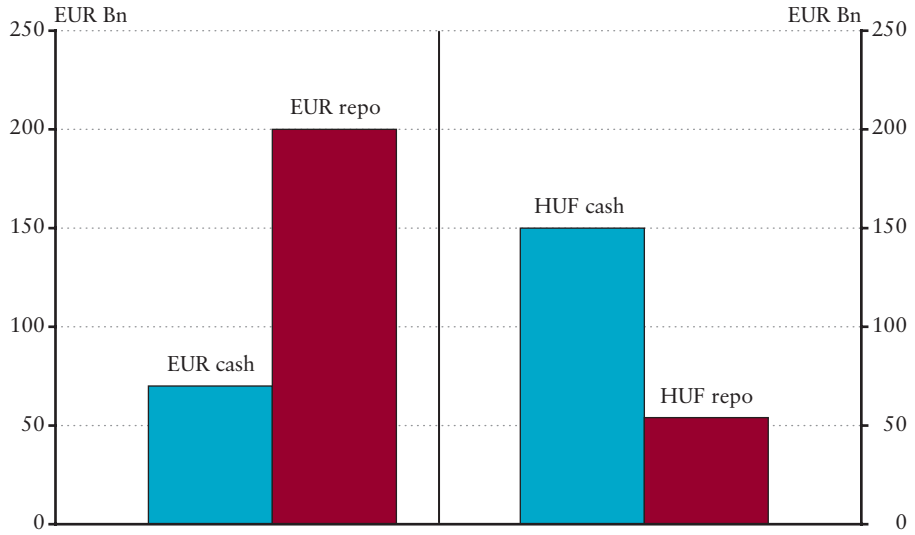
A well-functioning liquid repo market is necessary for the development of a high quality government securities market, as dealers can finance their positions via repurchase agreements (and securities lending). In government securities markets that are more developed than in Hungary, the repo volume is many times the size of the cash market volume. The fact that this ratio is just the opposite indicates the underdevelopment of the forint repo market (Chart 16).

[53] Similar obstacles impede the development of securities lending, which could mostly assist the entry of 'buy and hold' type institutional investors on this market.

[54] In addition to the variable fee, service providers must pay a basic supervisory fee to the HFSA. The latter is determined according to the type of institution, thus it is not related to concluded trades.

Chart 16

Relative size of the spot (cash) and the repo segments in the euro area market and the Hungarian government securities market



Source: BearingPoint, 2005, ÁKK and KELER.

Despite the fact that, on the basis of relative indicators, foreign actors account for the strongest activity on the forint-denominated government securities market among the new EU member states (foreign market actors have a share between 30 and 40 per cent both in volume and size of the supply issued), **if compared with the major European government securities markets, the Hungarian market is the only one where there are no foreign institutions among primary dealers.** In all of the euro area member states, the majority of primary dealers are London-based banks (see Chart 6), and foreign dealers are present even in the Czech Republic and Poland. Although by virtue of EU accession, this status has become accessible for foreign institutions in Hungary as well, an office in Hungary and Hungarian language skills are still required. Taking into account the convergence-related goals of the Hungarian economy, the elimination of this restriction may foster the development of the Hungarian market. The uniform definition by the ÁKK of dealers authorised to carry out forint and FX issues may have a similar effect.

Dealing in Hungarian government securities after accession to the euro area

Significant changes ensued from the introduction of the euro in the government securities markets of the current euro area member states. These changes were similar in all the member states, therefore conclusions can be drawn from them on the future of the Hungarian government securities market.

The introduction of the single currency automatically changes the denomination of government securities to the euro, thus the government securities issued by the Hungarian state in forint will compete directly with the government securities issued by other euro area member states in the market of euro-denominated securities. Evidently, the differences in the credit ratings of the various governments and the liquidity of individual instruments will remain unchanged. However, the elimination of the FX risk associated with the differences in denomination will eliminate the primary obstacle with respect to substitutability with the securities of the other euro area sovereign issuers. This also implies risks for the issuer, as it acts as a single sovereign risk-free issuer[55] in the forint market, whereas it will have several competitors in the euro market.

On the other hand, several factors will counterbalance this risk:

- Although the liquidity premium will become relatively higher with respect to the margin of Hungarian government bonds due to the elimination of the FX risk (the smaller series and lower liquidity will represent a relative disadvantage compared

[55] Apart from the issuers of the euroforint, the ad-hoc issues of these do not present serious competition for the Hungarian state at present.

with the large euro area member states), the absolute level of liquidity premiums will decrease because government bond interest rate positions will be much easier to hedge in the euro area, using the developed interest swap and forward government bond markets. This, in absolute value, will significantly increase the possibilities to hedge the Hungarian government securities positions in the derivatives market, which will most likely reduce liquidity premiums.

- Along with the appearance of the Hungarian supply of government securities, the current domestic and foreign investor base of Hungarian government securities will increase demand for euro-denominated government securities; furthermore, the scope of potentially accessible investors will increase considerably and will undergo diversification.

- The structure of the secondary market for government securities is also expected to go through major changes, as following the introduction of the single currency in all of the current euro member states, the significance of domestic actors in the government securities markets diminished to a great extent, and the role of foreign (mostly London-based) market actors increased. This is also indicated in Chart 6 (Chapter III), which shows that, in all member states, foreign banks have become predominant among primary dealers. The reason for this phenomenon is that the single currency greatly facilitates and rationalises the centralisation of trade in euro-denominated government securities within the global banks that have typically concentrated this type of activity in London. At the same time, the process was facilitated by and also assisted the emergence of electronic trading, as the same dealers doing business in the various government securities markets have become accustomed to this form of trading, making it easier for them to obtain an overview of the markets.

- The instruments accessible to debt managers (strategic leeway) will also increase in number, as the Hungarian state can choose between an auction and a syndicated form of issue (the latter is currently used by ÁKK for the sale of FX bonds, whereas it uses the former for forint bonds). In general, the debt managers of the euro area select the banks to participate in syndicated issues/borrowings on the basis of the activities of their primary dealers at auctions and secondary markets. This will strongly encourage primary dealers to aggressively place bids at auctions, which diminishes debt managers' financing costs. The Hungarian debt manager cannot use this technique at the moment, because the group of domestic primary dealers is not identical to the large foreign banks able to complete major foreign operations. The debt manager is planning to change this situation.

5.3 SUMMARY

To summarise, the processes bolstering transparency in the European Union and the euro area will have a decisive effect over the medium term in the market of Hungarian government securities as well. The initiative relating to the MiFID indicates that European authorities consider transparency in financial markets extremely important, and are thus ready to act contrary to the interests of dealers and other market intermediaries. As regards the bond markets, regulatory coercion towards greater transparency implies risks that the European Commission will presumably acknowledge, and therefore the introduction of strict requirements similar to those applicable in equity markets is not expected. This however, does not mean that this process will leave the bond markets unaffected by regulation. The most probable outcome is that stricter, more uniform regulations on the publication of post-trade data will be introduced in the bond market at the EU level.

The market of Hungarian government securities is less transparent than its Western European counterparts, due to the lack of interbank electronic trading platforms, but at present, its development is hindered by other regulatory factors as well. Elimination of these factors may further improve the quality of the market. Introduction of the euro will lead to a transformation in the trading of the Hungarian government securities, which will be manifested in the increased significance of foreign market actors and the concurrent reduction in the role of domestic market actors.

6 Conclusion

The infrastructure of financial markets can be divided into three segments as regards the services provided to trading processes. The first of these is trading infrastructure, which ensures that buying and selling interests are brought together and that transactions are concluded. With regards to developed financial markets, a sign of their growing integration (globalisation) is that national markets – consisting of the traditional national stock exchange and domestic OTC markets which previously existed independently of each other – have undergone significant changes. A prominent result of increased cross-border trading and the demand for diversification by international investors was the emergence of international electronic trading platforms in the second half of the 1990s, and their rapid spread in the early years of the 21st century. Market actors have much more freedom in determining the venue and form of trading than 20 years ago. Although until recent years the media and the academic literature primarily concentrated on equity markets when analysing trading infrastructure, the interest of researchers and regulators in the trading environment of bond markets has significantly increased over the past 2-3 years.

Theoretical and empirical literature show that increased transparency improves market efficiency (price disclosure function), but its effect on market liquidity is less clear. Whereas the loss of anonymity most likely leads to reduced liquidity, the transparency of the quantity and price of concluded transactions will increase liquidity. The emergence of interbank (B2B) electronic platforms has facilitated pre-trade transparency and any possible adverse effects of transparency can be avoided through these systems (hidden quotations, the involvement of a central counterparty). Increased post-trade transparency, along with clearly improved efficiency is less likely to diminish liquidity. In this respect, whether actors access immediate or only delayed information, and what dimensions of transactions they learn of (price, quantity, name) are important. The safest method is the publication of delayed anonymous data that only include price and volume. Nevertheless, for the time being, theoretical literature can be deemed inconclusive on the precise assessment of the effect of transparency on liquidity.

The emergence of electronic trading in bond markets is similarly important to that in equity markets, but the basic structure of trading in bonds – primarily its alignment with the presence of institutional market actors – has remained unchanged and with no indications of future changes. Trading is carried out in two segments: between dealers (B2B) and between clients and dealers (B2C). The above two market segments are served by two separate electronic trading platforms.

Today, almost the entire B2B turnover is traded electronically in the American government securities market, which is considered the most developed market, while according to estimates, half of turnover is completed electronically in the second largest, euro area market. At the same time, there are government securities markets considered liquid (e.g. the British gilt-edged market, Japanese government bonds), where electronic trading, although present, has not been able to obtain a similar share of total turnover. Stock exchange trading does not generate significant volume in any developed bond market, thus it can be stated that it is a global phenomenon that no trading is done with government bonds on exchanges.

The situation of the market for forint-denominated government securities issued by the Hungarian state is similar to the government securities markets of the other emerging economies. No interbank trading platform exists in the forint market, but easily accessible data vendor or other platforms with low costs, serving the B2C segment, have appeared in this segment. Their turnover, however, is very low compared to the overall turnover of the market; over 90 per cent of trading is concluded via traditional OTC channels (direct bilateral trading and the use of voice brokers). This also means that third party actors which do not trade in the market on a regular basis, but are interested in market processes and prices find it difficult to obtain quality, real-time price information in Hungarian government securities. Although government securities are quoted on the Budapest Stock Exchange, the spreads are wide and turnover is weak. Thus, the exchange does not provide real price disclosure for these instruments. The domestic market may also be affected by the European-level MiFID initiative, which may lead to the similar regulation of the bond market following the harmonisation and tightening of transparency-related rules in equity markets.

The largest expected shock in the structure of the forint-denominated government securities market is the introduction of the euro in Hungary. Structural convergence is visible in the euro-denominated government securities markets, and this convergence will presumably also bring about changes in the forint-denominated market. Hungarian government securities

will have to compete for investors in the euro market, which may involve risks but will also present several advantages. Debt managers will have increased leeway; at the same time, the major actors of the government securities markets will not be the current domestic actors but, most probably, global London-based banks interested in the centralisation of the foreign exchange-based trading of government securities. On the basis of the general spreading of electronic trading in the euro government securities market, electronic platforms are likely to gain ground in the Hungarian market as well after the introduction of the single currency.

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