Securities Market Infrastructures

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INTRODUCTION

After the introduction of the euro a large part of Europe has one single currency, as is the case in the USA. However, the euro area’s securities markets are less integrated than those of the USA. The costs of trading securities vary within the euro area due to e.g. the lack of integrated clearing and settlement systems. At the same time it is remarkable that recent years’ consolidation of the securities market infrastructure in Europe has included business enterprises from outside the euro area.

The financial markets in Europe were formerly dominated by national financial structures. Trading took place on national stock exchanges between domestic customers, and securities were held at national central securities depositories (CSDs). However, in recent years there has been a growing interest in cross-border trading of securities. This can be attributed primarily to the introduction of the euro, but also to stronger focus on risk diversification, as well as the relaxation of the rules concerning placement of pension savings.

In principle, national borders are of little significance in the securities market, since similar investment products will typically be offered in several countries. At the same time, electronic trading is gaining ground, which makes physical location less important.

Cross-border securities trading is thus functioning more smoothly, while the subsequent clearing and settlement are still complicated. Completing a trade in which the buyer is not a resident of the country where the securities in question are held still entails relatively high costs. This has led to pressure from investors and authorities alike to reduce the cost of cross-border activities.

The introduction of the euro represented a giant leap towards the establishment of a single financial market in the EU for the benefit of all investors and business enterprises requiring capital. The integration of the underlying financial structures is a further precondition for a well-functioning single financial market.
This article reviews the current securities infrastructure in the EU. The potential future development of the infrastructure is assessed. Harmonisation of the legislative framework is a precondition for the creation of a single financial market in the EU. This harmonisation work undertaken by the EU is outlined at the end of the article.

THE SECURITIES MARKET’S INFRASTRUCTURE

A securities transaction can be regarded as a chain. The first step is the trading of the security, followed by clearing and settlement of the trade, and finally custody at a CSD. Together these stages constitute the securities market infrastructure, cf. Box 1.

The infrastructure of the European securities markets has undergone significant changes in overall terms as vertical or horizontal consolidation. Vertical consolidation is consolidation downwards through the chain, e.g. between a marketplace, a clearing house and a CSD, while horizontal consolidation takes place across the chain, e.g. between two marketplaces. The economic background to vertical consolidation is pri-
mainly economies of scope, including easier access to use Straight Through Processing (STP), whereby a transaction is automatically forwarded for clearing and settlement. Horizontal consolidation is motivated primarily by economies of scale, since the systems are associated with high overheads and low marginal costs. The advantages are thus seen mainly in the implementation and application of a common technical platform such as a single trading system.

Whether consolidation in general will be beneficial to the economy depends particularly on whether competition can be retained. In this respect particularly vertically consolidated structures may exploit their position, which can be a source of concern for the authorities. Such structures can e.g. prevent competing trading platforms from gaining access to clearing and settlement, or subsidising selected links in the chain.

Recent trends indicate that horizontal consolidation is gaining ground where vertical consolidation was previously dominant. Table 1 outlines the main elements of the current securities infrastructure in Europe. It presents a complex picture, as the Table shows. Several companies thus participate in both a horizontal and a vertical structure.

**SECURITIES TRADING**

The principal stock exchanges in Europe are currently the London Stock Exchange, Euronext and Deutsche Börse, which together accounted for approximately 75 per cent of stock trading on European stock exchanges.
in 2002. Chart 1 shows that the Nordic stock exchanges are relatively small, and overall account for approximately 6 per cent of stock trading on European stock exchanges.¹

Recent years have seen several cases of cross-border consolidation and cooperation agreements between European stock exchanges. In 1998, the Copenhagen Stock Exchange and Stockholmsbörsen concluded a memorandum of understanding on the establishment of a single Nordic securities market based on independent stock exchanges — NOREX. The alliance was later expanded to include Oslo Børs and Islands børs. Euronext was formed in 2000 as a merger of the stock exchanges in France, the Netherlands and Belgium, and in 2002 Euronext was expanded to include the Portuguese stock exchange and LIFFE, the UK derivatives exchange. In May 2003, a merger was announced between the Swedish OM group, which owns Stockholmsbörsen, and HEX in Finland, which owns the Finnish stock exchange and two Baltic stock exchanges. The new company, OM HEX, will be domiciled in Stockholm and consist of two divisions, i.e. HEX Integrated Markets, domiciled in Helsinki, and OM Technology, domiciled in Stockholm. HEX Tallinn, HEX Riga and Stockholmsbörsen will retain their current names, while the Finnish

¹ Bond trading is not included in the Chart, since bonds are typically not traded on stock exchanges in Europe.
stock exchange will resume the name of Helsingin Pörssi. Another consequence of the merger is that the stock exchanges of the Nordic countries and two of the Baltic states will use SAXESS as the securities trading system.

The consolidation of marketplaces is strongly motivated by economies of scale, such as merger of IT systems and the establishment of a common trading platform. These areas are characterised by considerable overheads. A common trading platform may contribute to increasing the trading volume and the number of investors. At the same time it eliminates parallel trading in the same securities, which can enhance the transparency of price formation in the market. However, consolidation of different systems will often entail considerable initial costs. Firstly, the development of new IT systems or the interlinking of existing systems is associated with considerable costs. Secondly, the costs payable by the users (members) of the trading system may increase in areas such as software, hardware and training of employees. The first type of costs can be relatively easily estimated by the marketplaces, while the second type is considerably more difficult to estimate since they are user costs. As a result, it may be difficult to estimate the total costs, and it may take a long time for a consolidation to yield positive results.

The securities trading landscape in Europe is expected to change even more in the coming period. All indications show continued consolidation, centred on the three largest stock exchanges in Europe, i.e. the London Stock Exchange, Deutsche Börse and Euronext. A merger between two of the three largest stock exchanges is also a possibility. The London Stock Exchange and Euronext are currently the most likely candidates as they comprise already merged underlying links in the value chain, cf. Table 1. Minor stock exchanges in Europe can probably choose to be associated with one of the large stock exchanges, or alternatively to remain or become specialised marketplaces for less liquid securities.

**CLEARING OF SECURITIES TRANSACTIONS**

In most European countries clearing of a securities transaction for settlement is undertaken by a central counterparty, cf. Box 2. Transactions on the Euronext exchanges are cleared by Clearnet in which Euronext owns 80 per cent of the shares, while the central securities depository, Euroclear, owns the remainder. Clearnet is the result of a merger between the clearing houses in the Netherlands, Belgium and France. In the UK, London Clearing House is the central counterparty for transactions on the London Stock Exchange and the derivatives exchange LIFFE, as well as on other exchanges.
In June 2003, London Clearing House and Clearnet announced the merger of the two companies to a new company, LCH.Clearnet, by the end of 2003. The merger was not unexpected due to such factors as the recent inclusion of LIFFE, one of London Clearing House’s major clients, into the Euronext group. As previously stated, the other Euronext exchanges rely on Clearnet as their central counterparty. The merger implies significant concentration in this area.

For transactions on Deutsche Börse a central counterparty, Eurex Clearing, was established recently. This is also the central counterparty for transactions on the Eurex derivatives exchange. No central counterparties have been established in the Nordic countries where clearing takes place in the respective countries’ CSDs. At VP, the transactions are netted in the clearing process, followed by settlement in four consecutive blocks.

Clearing is a typical network benefit since the advantages to the investors are enhanced as the number of participants increases. A high degree of horizontal consolidation in the clearing area thus offers clear benefits. An appropriate structure at European (global) level could thus be few, but large, pan-European (global) central counterparties with the

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1 In the spring of 2003 Eurex Clearing signed a memorandum of understanding with Board of Trade Clearing Corporation, which is the largest US central counterparty for futures, with a view to creating a global solution for clearing of derivatives trading.
2 There is one exception, however, since the FUTOP clearing house acts a central counterparty for trading in futures and options quoted on the Copenhagen Stock Exchange.
3 A telephony network is another example of a network benefit.

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capacity for cross-border netting of transactions and commitments. This structure could contribute to reducing the costs of cross-border securities trading. The advantages could, however, be offset by impediments to competition and concentration of risk.

**SETTLEMENT OF SECURITIES TRANSACTIONS AND CUSTODY OF SECURITIES**

A CSD will typically undertake settlement, whereby traded securities are exchanged for cash, thereby finalising transactions as well as the subsequent custody of securities. There are 21 CSDs in the EU, of which the two most important are Clearstream and Euroclear. Clearstream is the result of a merger between Deutsche Börse Clearing and the international CSD (ICSD), Cedel. Euroclear is the result of a merger of the ICSD, Euroclear, and the central securities depositories in France, the Netherlands and Belgium, and Crest in the UK as from the autumn of 2002. Euroclear is in the process of developing a common settlement platform for the merged CSDs.

In terms of the value of the securities in custody at the two CSDs, Euroclear is the largest, particularly after the merger with Crest, cf. Table 2. The Nordic countries have national central securities depositories with no cross-border constellations, unlike the trading area.

Consolidation of central securities depositories can be beneficial on the condition that a common settlement system is established. Consolidation may also enable an investor to have all his securities in custody at one CSD, thereby creating a basis for smoother liquidity management. The background is that many securities are eligible as collateral for credit (liquidity) granted by central banks. Liquidity is very important to efficient payment systems and securities settlement. However, legisla-

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**VALUE OF SECURITIES IN CUSTODY (BILLION EURO)**

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2002</th>
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<tbody>
<tr>
<td>Euroclear</td>
<td>8.700</td>
<td>8.600</td>
</tr>
<tr>
<td>Crest</td>
<td>2.600</td>
<td>2.000</td>
</tr>
<tr>
<td>Clearstream</td>
<td>7.668</td>
<td>7.144</td>
</tr>
<tr>
<td>Monte Titoli (Italy)</td>
<td>1.542</td>
<td>1.575</td>
</tr>
<tr>
<td>Iberclear (Spain)</td>
<td>567</td>
<td>507</td>
</tr>
<tr>
<td>VP</td>
<td>427</td>
<td>435</td>
</tr>
</tbody>
</table>

Note: Crest and Euroclear are included separately to illustrate the differences in size. Crest and Euroclear merged in autumn 2002.

Source: Annual reports from the institutions.

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1. The Danish settlement structure is described in further detail in Danmarks Nationalbank, *Financial Stability 2002*. 

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In order to settle a securities transaction both parties to the transaction must have access to systems for respectively delivery and receipt of the securities. In a cross-border securities transaction one – or both – parties are located in a country other than the country where the paper is held (in a custody account at a CSD). It is therefore necessary to establish access to the settlement system in question, or links between the settlement systems in the various countries.

There are five channels for the settlement of cross-border transactions:

1. The investor may have direct access to the national CSD as a member. According to BIS’ Report on Consolidation in the Financial Sector of 2001 this solution is costly and not widespread.
2. The investor may use an international CSD with direct access to the national CSD or indirect access via a local agent, usually a financial institution.
3. The investor may use a local agent who is a member of the national CSD. This is the most common solution for equities.
4. The investor may use a global custodian. Global custodians operate in many markets and offer the investor registration of securities at the custodian, which again directly or indirectly registers the securities to a collective custody account at a CSD.
5. The investor may use a direct link between the domestic and the foreign (national) CSD if such a link exists. This facilitates the investor’s liquidity management since it provides for concentration of securities to be used as collateral in one custody account. This is typically a more expensive solution.

Settlement of cross-border securities transactions requires that the various national systems are able to communicate, which can be ensured in several ways, cf. Box 3, which all include intermediaries that raise the costs. This is one of the obstacles making cross-border trading relatively expensive. The further integration of settlement systems is therefore a precondition for a reduction of costs\footnote{In the report: Cross-Border Clearing and Settlement Arrangements in the European Union, November 2001 (see http://europa.eu.int/comm/economy_finance/giovannini/clearing_settlement_en.htm) the Giovannini Group estimates the direct costs for clearing and settlement of cross-border securities transactions in the EU to be approximately 11 times the level for domestic transactions.}

So far settlement systems have often been integrated via links between the central securities depositories. However, the establishment and maintenance of links is relatively cost-intensive\footnote{Linking of \(n\) central securities depositories requires \(n^2(n-1)\) links. This currently corresponds to 420 links for the EU.} for a high number of central securities depositories. In view of this concern several major central securities depositories are working on an alternative solution with significantly fewer links. The idea is for the individual central securities depositories to manage their links via a few central hubs that can communicate with each other\footnote{This is popularly known as the hub and spokes model as it resembles a bicycle wheel.}, cf. Chart 2. Furthermore, this model provides for continued national custody of securities, which can be expedient in view of the variations in legislation between the individual countries.

The model is a proposal for the integration of cross-border settlement in the medium term. In the longer term, settlement and custody can be expected to be concentrated on fewer units.

**THE INTERESTS AND INITIATIVES OF EUROPEAN AUTHORITIES**

The securities markets channel capital to business enterprises and households. It is therefore in the interest of the authorities to ensure a well-functioning, efficient and safe securities infrastructure.
The smooth execution of monetary policy is important to central banks. So the counterparties must be able to provide securities as collateral for loans as part of the monetary-policy operations quickly and easily. Another important factor is to ensure robust clearing and settlement systems since financial stability may be seriously jeopardised by a problem spreading among the participants.

Furthermore, horizontal as well as vertical consolidation in the securities area may impede competition, which needs to be assessed by the authorities. There is a need for monitoring the monopolistic institutions to ensure that they do not exploit their position.

Under the auspices of the EU work is in progress to develop a legislative framework for the single financial market. Several draft directives that will affect the infrastructure on the securities market have been submitted and adopted.

Among the directives is the prospectus directive that was adopted during the Danish presidency in the autumn of 2002. The purpose of the directive is to establish a "European passport" for prospectuses, whereby prospectuses for stocks or bonds approved in one EU member state can be used freely for the supply or quotation of the same paper in another member state. The directive also simplifies the language requirements. This directive is expected to augment competition between stock exchanges, which may lead to further consolidation.

Towards the end of 2002 the European Commission submitted a proposal for a new investment services directive. The proposal harmonises the rules for the various types of marketplace for listed securities. For example, alternative trading systems or multilateral trading facilities (MTFs) will now be subject to rules that are rather more lenient than the rules concerning stock exchanges. Previously, MTFs were not subject to EU regulations.

With regard to EU legislation concerning clearing and settlement the finality directive of 1998 has significantly diminished the legal uncertainty in net settlement of securities in the EU. Furthermore, the directive on financial collateral arrangements (the collateral directive) of 2002 may contribute to enhancing the legal protection of cross-border collateral arrangements.

In addition, the Giovannini Group has prepared two reports on behalf of the European Commission. The first report identifies 15 barriers to efficient clearing and settlement of cross-border securities transactions.

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1 The group consists of experts from the financial sector and has the mandate to advise the Commission on issues related to financial markets. The two reports are entitled: Cross-Border Clearing and Settlement Arrangements in the European Union from 2001 and Second Report on EU Clearing and Settlement Arrangements from 2003.
in the EU, see Box 4. The group's second report from April 2003 suggests measures to remove these barriers. Against this background, during the autumn the Commission is expected to submit a plan of action, including measures to promote the integration of this area.

Finally, on 1 August 2003, the European System of Central Banks (ESCB), in cooperation with the Committee of European Securities Regulators (CESR), submitted a report for public consultation. The report proposes standards for securities clearing and settlement systems to enhance the security and efficiency of the systems. It also proposes that some of the standards also be applied to large custodian banks that
undertake clearing and settlement of securities, but are not regulated as such.

CONCLUSION

A current characteristic of the infrastructure of the European securities markets is that the individual units are becoming increasingly larger. Previously, the tendency was towards vertical consolidation, i.e. between various links in the infrastructure, but recent years have seen strong development of horizontal consolidation, whereby the same links in the infrastructure are merged into larger and larger units. There is prospect of considerable concentration.

In theory large institutions are an advantage, especially in the clearing area. This is one reason that many observers expect further consolidation as the establishment of large central, cross-border counterparties. The integration of the settlement structures is a precondition for reducing the costs of cross-border trading and enhancing the integration of the financial markets.

The securities markets’ structure will be monitored to a greater degree by the authorities, not least at EU level where further initiatives from the European Commission are expected.