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Securities Trading and Settlement in Europe: Issues and Outlook

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The institutional arrangements for trading and settling securities in Europe remain fragmented along national lines, making cross-border trading costly. Consolidation efforts are under way, however, and major market centers have now emerged in France, Germany, and the United Kingdom. Although the restructuring of trading and settlement systems should bring the European Community closer to its goal of a single capital market, changes in corporate governance and the competitive environment may raise significant regulatory issues.

The countries of the European Community view the development of a single European capital market as a key element of their plan to create a more efficient economy.[1] The introduction of the euro has laid the groundwork for a single capital market by eliminating some intra-European currency risk and simplifying cross-country comparisons of investment returns. In addition, the lifting of restrictions on some pension fund portfolios has given institutional investors more freedom to invest in foreign financial assets across Europe.[2]

The benefits of lower barriers to cross-border securities trading are already being realized. Nevertheless, the institutional arrangements for trading and settling securities in Europe remain in a state of flux. While some consolidation is taking place, securities trading and settlement systems remain fragmented along national lines. As a result, trading across borders can involve high transaction costs—a clear impediment to capital market integration.

In this edition of *Current Issues*, we explore how, and why, European trading and settlement systems are being restructured. Reviewing the consolidation initiatives undertaken in the past decade, we show that disparate systems are coalescing around three main market centers, in France, Germany, and the United Kingdom. We also identify the forms that market integration may take in the future and describe how each could reduce trading costs. Finally, our analysis examines some of the policy issues raised by demutualization—the transformation of exchanges and settlement agencies from user-owned institutions to shareholder-owned, profit-driven corporations. While demutualization is leading to more consolidated trading and settlement systems, it creates the potential for increased operational risk and monopoly pricing. As Europe progresses toward a more unified capital market, careful oversight is needed to ensure the safety and efficiency of the newly consolidated systems.

The Recent Restructuring of European Stock Exchanges and Settlement Systems

Trading activity, market liquidity, and capital market growth depend on safe and efficient trading and settlement systems (see box). Until recently, each country in Europe had its own stock exchanges. In addition, individual countries have their own distinctive legal and regulatory apparatuses.[3] The institutions and arrangements required to execute stock trades were therefore replicated numerous times. This fragmentation along country lines has led to low trading volumes and transactions conducted primarily among local investors.[4] As a result, European markets have experienced lower liquidity for individual stocks and higher trade execution fees charged by exchanges.[5]

Likewise, the institutions and arrangements for settling stock trades have been replicated many times across Europe. This redundancy has also resulted in higher settlement costs, which are often said to be seven to ten

Trade Execution, Clearing, and Settlement

The three principal steps in a securities transaction are described below.

Execution
The trade execution process brings together the buyer and seller of a security. The trade execution platform may be a formal exchange, an electronic trading system, a brokered market, or a matching system where buyers and sellers trade directly.

Clearing
The post-trade clearing process facilitates proper completion of a transaction. The first step is trade comparison, or trade matching, which confirms that the buyer and seller have agreed on the price, quantity, and other details of the transaction. Next, the buyer and seller identify the accounts to which the security and payment should be delivered.

In some markets, large broker-dealers that frequently trade with each other use *central counterparties (CCPs)* to minimize the risks of failure. A CCP "stands between" interdealer trades, becoming the buyer to all sellers and the seller to all buyers. The CCP lowers the risks to dealers by offsetting, or "netting," buy and sell trades. In addition, it reduces the number and size of securities and money movements at settlement.

Settlement
Settlement represents the exchange of a security and its payment. In most developed financial markets, few participants actually hold physical certificates for the publicly traded securities they own. Rather, ownership is tracked electronically through a book-entry system maintained by a *central securities depository (CSD)*. At the depository, ownership transfer at settlement occurs on the system's records.

On a cross-border trade, settlement becomes more complex. To settle such a trade—say, a French institutional investor purchasing a German stock—the investor has to take possession of securities held in the foreign CSD. Thus, the investor must be linked, either directly or indirectly, to the foreign depository. Because most institutional investors use a *custodian*—a financial entity that offers safekeeping and administrative services for financial assets—the custodian must be linked to the foreign depository. This linkage can be established in several ways. For example, the investor may use a local custodian that is a member of the foreign depository or it may use a *global* custodian, typically a global bank, that is a member. (A direct link from the custodian to the foreign depository may not be necessary if the domestic depository provides a link to its foreign counterpart, although this seldom occurs at present.) Alternatively, the foreign security may be deposited in an international CSD that, unlike a purely domestic CSD, may hold international securities, such as eurobonds, as well as securities from several countries.

Regardless of the mechanism used to link an investor and a foreign securities depository, completion of a cross-border trade clearly requires more complicated institutional arrangements. Moreover, settlement problems can arise from differences across countries in settlement cycles (the time between trade execution and settlement), in currencies (which may require a separate settlement process for conversion), in the legal systems, and in the myriad settlement arrangements for different types of securities.

times higher than costs for domestic trades in the United States (see, for example, Hobson [2000]). Although it is difficult to substantiate these estimates, other studies confirm the significantly higher settlement costs in Europe.[6]

In response to the high "all-in" costs of trading securities—the sum of the trade execution costs and the post-trade costs of clearing, settling, and safekeeping—Europe has gradually consolidated some of its stock exchanges and settlement agencies over the past decade. The first wave of consolidations took place in the early 1990s, when exchanges within an individual country were consolidated into national exchanges; later, mergers occurred between several cash and derivatives exchanges, again within an individual country.[7]

A more recent phenomenon has been the cross-border merging of stock exchanges along with a consolidation of settlement agencies. These developments have resulted in the emergence of three major market centers, or "poles," in Europe—a partial solution to the problem of nationally fragmented trading and settlement systems (Exhibit 1). In early 2000, one pole formed when the Paris, Amsterdam, and Brussels exchanges each began to allow trading of stocks listed on the other two exchanges; that September, the exchanges merged into Euronext.[8] Subsequently, the French, Dutch, and Belgian central securities depositories merged with a key international securities depository, Euroclear. The central counterparty of France, Clearnet, is also expanding to serve members of the three-country exchange.

A second pole is now centered on Germany's Deutsche Borse Exchange. In 1999, the German securities depository, Deutsche Borse Clearing, and the other main international depository, Cedel, merged to become Clearstream. Although a central counterparty has not yet

Exhibit 1
Securities Settlement "Poles"

	Belgium, France, the Netherlands	Germany	United Kingdom	Other, smaller systems
Exchange	Euronext	Deutsche Bourse	London Stock Exchange	
Central counterparty	Clearnet		London Clearing House	
Central securities depository	Euroclear	Clearstream	Crest	

Notes: At the end of 2001, the London Stock Exchange had the largest market capitalization of European exchanges, followed by Euronext and the Deutsche Bourse; the Deutsche Bourse had double the market capitalization of the next-largest exchange. Other, smaller systems represented about 35 percent of the total market capitalization of European exchanges at year-end 2001.

been established within this pole, the Deutsche Borse and Eurex, the large German derivatives exchange, have discussed an arrangement whereby Eurex would provide a central counterparty service for cash market transactions executed on the Deutsche Borse. A third pole exists in the United Kingdom. Although the London Stock Exchange, the London ClearingHouse (the United Kingdom's central counterparty), and Crest (the United Kingdom's securities depository) maintain separate ownership and governance structures, these organizations have aligned their operations more closely. In addition to these three main poles of activity, several smaller systems are in place in Europe.

Drivers of Structural Change in Europe

Securities firms, institutional investors, regulators, and infrastructure providers are now debating the next steps toward the future integration of European trading, clearing, and settlement systems.[9] Discussion among these market participants has been motivated by the impressive growth over the past decade in market values, volumes traded, and number of listed companies in individual European equity markets.[10]

European securities trading—cross-border trading in particular—is likely to expand even further, owing to several important factors. The pending European Pension Fund Directive, for example, will relax restrictions on ownership of foreign securities, and the continuing regulatory convergence in the European Community is producing directives on common accounting and legal standards. Furthermore, potential cutbacks in public pension programs and substitution into private investments will likely strengthen the demand for private-sector securities. Finally, the Maastricht public debt ceilings that apply to the countries of the European Economic and Monetary Union—ceilings that limit the issuance of new debt and constrain the supply of government bonds from member countries—could cap the supply of public debt available for private portfolios, fueling the demand for private-sector securities.

With system consolidations and expanded securities trading proceeding rapidly in Europe, our analysis points to two central considerations likely to drive the outcome of the debate over structural changes. One consideration is the costs and benefits of alternative methods of consolidating the still-fragmented infrastructure of exchanges and settlement systems; the other is the ownership and corporate governance structures of the trading and settlement systems, which could facilitate—or block—consolidation, and may influence system efficiency and safety.

Cost Considerations

High costs are a major impetus to the consolidation of European exchanges and settlement systems. Economic theory suggests that industries with high ratios of fixed costs to marginal costs are prone to long-term consolidation. These high fixed costs are prevalent in stock exchanges and securities settlement systems, where long-lived and costly investments are made in information technology, communications systems, and legal and regulatory structures. Recently, some exchanges and settlement agencies have made large investments in information technology and communications systems, mostly out of a desire to stay competitive. Moreover, the marginal costs of additional securities or trading volumes, once all necessary systems are in place, are small relative to the fixed costs. At the same time, there has been some regulatory convergence across European financial markets. These developments have heightened the incentives for exchanges and settlement agencies to consolidate in recent years. Institutional investors have also been pushing for consolidation in the hope that such a move will substantially reduce their all-in trading costs.

To appreciate how consolidation can generate savings, one must first understand the costs—direct and indirect—that arise following the execution of a trade in Europe (Exhibit 2). Direct settlement costs include safekeeping and transaction fees paid to a central securities depository or a central counterparty, along with forgone interest income. These costs may account for about 30 percent of post-trade expenses.[11]

Indirect post-trade costs are the other costs incurred by broker-dealers and investors in utilizing clearing and settlement systems. These costs are magnified by the redundancies and inefficiencies inherent in the fragmented nature of these systems. For example, a broker-dealer wishing to settle foreign securities trades may have to engage foreign custodian banks, maintain business relationships and telecommunications links with several settlement organizations, hold collateral at multiple clearing organizations, and suffer settlement delays. According to industry estimates, the indirect component of post-trade costs is at least twice as large as the direct component.[12]

To date, the various consolidation proposals to reduce the excess costs associated with system fragmentation have met with mixed success. Below, we briefly consider four types of consolidation that have occurred or been proposed; their relative savings are reported in the table.

Introduction of a pan-European central counterparty. Such a counterparty would consolidate in a central location the clearing of all interdealer trades on European exchanges and would enable buy and sell trades to be offset. These actions could substantially reduce trade servicing costs such as transaction fees.

Establishment of bilateral links between central securities depositories. This proposal would allow an investor to take ownership of foreign securities through its local or home central securities depository. Bilateral links could reduce direct and indirect settlement costs somewhat because a participant would not have to pay for membership in both depositories or pay a foreign or global custodian to take ownership of the foreign securities. However, the all-in savings would likely be low because the duplicate infrastructure would remain in place.

Mergers of central securities depositories. These combinations would simplify settlement of and custodial arrangements for cross-border trades. Unlike bilateral links, these depository mergers could result in substantial decreases in both direct and indirect post-trade costs by eliminating duplicate operational and business functions.

Additional savings could be realized by lowering the number of service providers (custodians and cash correspondents), reducing operational costs and risks associated with the synchronization of settlement times in different local markets, and shrinking the costs of financing.

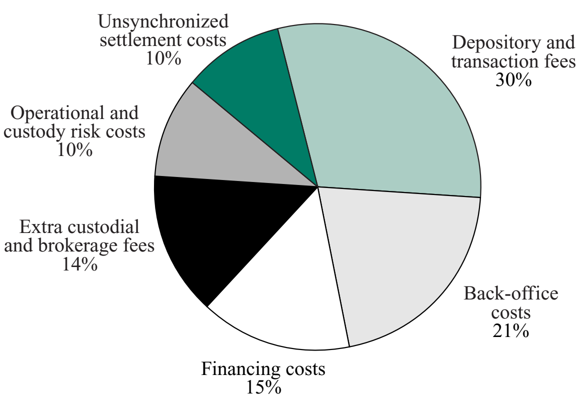
Mergers of exchanges. Although such unions would reduce trade execution costs only and not have an immediate effect on settlement costs, they could ultimately generate the greatest savings if they also facilitated mergers of the central securities depositories associated with the exchanges.

Ownership and Corporate Governance

The need to restructure stock exchanges and securities settlement systems in Europe has led to substantial changes in the corporate governance of these systems. Historically, exchanges and central securities depositories have been mutually owned, that is, owned by their users. Compared with shareholder-owned entities, mutually owned organizations generally place greater emphasis on equal access, safety in rule making, and democratic decision making. Yet these organizations can be relatively slow to implement changes.

Recently, many exchanges and depositories, spurred by increased competition and technological advances, have demutualized or have begun doing so.[13] In theory, by separating membership from ownership, demutualization can result in more dynamically efficient organizations. For example, demutualization creates publicly traded equity shares that can be used to obtain financing in equity markets, to underwrite takeovers, and to facilitate mergers and acquisitions—even cross-border combinations. Moreover, demutualization can promote faster decision making by replacing a democratic structure with a more clearly defined hierarchical one. It can also pave the way for strategic moves that had been considered by an organization

Exhibit 2
Post-Trade Settlement Costs



Source: Clearstream, as reported in *Securities Industry News*, September 10, 2001.

Note: Depository and transaction fees are direct costs; all others are indirect costs.

Relative Cost Savings from Clearing and Settlement System Consolidation

	Settlement Costs		
Form of Consolidation	Direct	Indirect	All-In Costs
Pan-European central counterparty	Low	Medium	Medium
Bilateral central securities depository links	Low	Low	Low
Mergers of central securities depositories	High	High	High
Mergers of exchanges	None, but potentially the highest[a]	None, but potentially the highest[a]	None, but potentially the highest[a]

[a] If mergers of exchanges trigger mergers of central securities depositories, all-in settlement costs would be reduced and trade execution would be more efficient.

but had been blocked by users who viewed the moves as a potential threat to one or more of their businesses.[14]

In practice, however, demutualization raises some concerns. First, its ability to enhance efficiency depends on who controls the demutualized organization. If control rests primarily with domestic intermediaries, for example, they may hinder the full participation of foreign intermediaries, thereby interfering with robust competition. Second, concerns arise over operational risks in the demutualized entity. For example, in the mutual structure, when a bank or securities firm is both a user and an owner of a central securities depository, it has a strong incentive to ensure that operational risks are minimized. In the demutualized structure, the new owners are typically not customers of the institution. As such, they will not bear the full costs—both as customer and owner—of a large-scale clearing and settlement failure.[15]

Third, if demutualization is successful at facilitating industry consolidation, an unintended consequence may be less long-run innovation. Diminished competition may also reduce service providers' incentives to allocate resources toward improving processes for their customers, especially small, niche players. These concerns all suggest a greater need for external oversight of demutualized organizations.

Finally, consolidation and for-profit ownership could increase the threat of monopoly behavior, which could be manifested in high prices for services or price discrimination across users. Anticompetitive behavior could also take the form of a contractual tying of settlement services to trade execution, which might exclude rival clearing or settlement agencies. In other words, broker-dealers executing trades on a particular stock exchange may be forced to use the clearing or settlement agency affiliated with that exchange. Here too, the potential effects of demutualization may warrant more intense scrutiny by public authorities.

Where Is Europe Heading?

Although some early benefits of financial reforms are being realized, the institutions and arrangements for trading and settling securities in Europe are still fragmented across national lines. In response to this fragmentation, some of the institutions that provide the securities industry's infrastructure have begun to consolidate, and the advantages offered by consolidation suggest that this process is likely to continue. Although it is difficult to predict the exact path and pace of changes, we can make some reasonable assessments.

Over the medium term, European stock markets may become more liquid, owing to the increased cross-listing of blue-chip firms, additional mergers of exchanges, or the growth of alternative trading platforms. Large broker-dealers, for example, have already established quasi-exchanges among themselves, bypassing the formal exchange system altogether. If the outcome of these actions is not a single pan-European stock exchange, Europe may instead develop two-tiered capital markets segmented by liquidity and company size or credit quality, where small firms may face higher funding costs in less liquid, niche markets.

In terms of securities settlement, smaller clearing and settlement agencies could continue to consolidate, possibly in response to stock exchange mergers. However, extensive consolidation beyond the current three market poles may test the competition policies of the European Community. Complete consolidation may be difficult to achieve because of the tied ownership and corporate governance structures within the clearing and settlement organizations in the respective poles.

If in fact more efficient trading and settlement systems emerge, the systems are likely to spur capital market growth. The lower transaction costs that are a by-product of consolidation should encourage higher trading volumes and enhance the liquidity of European capital markets. In more liquid markets, the trend away from traditional banking products and toward increased corporate securities issuance may accelerate. These changes could shrink the costs to firms wishing to raise funds by issuing equity or debt and allow for financing under a wider variety of terms than bank lending alone offers. Moreover, bonds and equities—by providing investors with a fuller range of choices along the risk-return frontier—could expand the opportunities for portfolio diversification.

Overall, the needs and strategic goals of securities firms, institutional investors, and infrastructure providers—as well as the governance structures and the regulatory processes of individual countries—are likely to play an important role in the evolution of the organizations that underpin the European securities industry. An equally important role will be played by regulatory authorities in Europe, who will face the challenge of securing the benefits of eliminating redundant service providers while promoting innovation and carefully overseeing the resulting concentration of risks and market power.

Notes

1. A series of policy objectives and specific measures to improve the "single market for financial services" was outlined in an action plan adopted by the European Commission in May 1999.

2. Previously, institutional investors such as pension funds were restricted by currency matching rules or by maximum weights on foreign-denominated assets in their portfolios.

3. Similar developments have also affected trades in government bonds, corporate bonds, and derivatives contracts.

4. An exception is the stock of blue-chip European firms, which is commonly cross-listed on several exchanges.

5. Because of lower liquidity and higher fees in Europe, the average cost per transaction at the end of 1996 was estimated to be three times higher than in North America (International Federation of Stock Exchanges 1997). These higher costs have reduced the ability of European exchanges to attract listings from the rest of the world, while the opposite has occurred for U.S. exchanges. In fact, the European exchanges with the highest trading costs have fared the worst in attracting new foreign listings (Pagano, Roell, and Zechner 2001).

6. For example, Domowitz, Glen, and Madhavan (2001) estimate that broker fees and commissions paid by investors for stock trades executed on major European exchanges—which should incorporate any settlement costs paid by broker-dealers—are three to five times as high as those paid for stock trades executed on U.S. exchanges.

7. Cybo-Ottone, Di Noia, and Murgia (2000) provide a survey of recent exchange and settlement agency consolidations in Europe and the United States.

8. Euronext currently represents Europe's only large cross-border stock exchange merger. There have been proposals for other mergers, as well as alliances, joint ventures, and other combinations short of full-fledged mergers.

9. Several industry and regulatory bodies have issued discussion, or "white," papers on the pending consolidation of these systems, including the European Securities Forum (2000), the European Central Bank (2000), and the European Central Securities Depository Association (2000).

10. The number of stocks listed on European exchanges increased 28 percent from 1990 to 2000, and the market value of these equities rose almost 300 percent, according to data from the International Federation of Stock Exchanges, <http://www.fibv.com>.

11. Typically, interest is paid on the member's funds held in reserve in the event of a settlement failure. In the case of international securities depositories, interest is also paid on the member's funds on deposit with the depository.

12. These are Clearstream's estimates, reported in *Securities Industry News*, September 10, 2001, p. 25.

13. See International Organization of Securities Commissions (2001).

14. For example, central securities depositories might find it attractive to enter the securities lending business, where global custodians currently compete. Because the custodians have large ownership stakes in the depositories, they might block the depositories from lending securities and effectively competing with themselves.

15. When stock exchanges are mutually owned, the members' wealth is often highly concentrated in their exchange membership and therefore not well diversified. These members have greater incentives than more diversified shareholders to use resources to avoid low-probability, high-impact contingencies associated with catastrophic failure.

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