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Integration of the Securities Market
Infrastructure in the European Union:
Policy and Regulatory Issues

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**Integration of the Securities Market Infrastructure in the European Union:
Policy and Regulatory Issues**

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Abstract

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This paper examines the impact of ongoing cross-border integration of securities market infrastructure in the European Union. In particular, it analyzes the regulatory framework that has evolved to deal with the risks associated with cross-border clearing and settlement and concludes that, due to institutionalized deficiencies, the current cross-border regulatory framework may not be adequate or effective in addressing and preventing a real cross-border crisis. The paper proposes a two-tier regulatory framework for securities infrastructure in Europe entailing the creation of a *centralized* “federal” European regulatory framework for regional systems, in addition to the current national regulatory framework for domestic systems.

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I. INTRODUCTION

Financial market deregulation and the introduction of the euro have accelerated the integration of the securities market infrastructure in Europe. Although there are different views on the ultimate goal, policymakers have undertaken several initiatives and measures in order to promote further integration. The changing securities infrastructure landscape has a profound economic and regulatory impact on the domestic markets as well as at the European level.

The main objective of this paper is to assess whether the current regulatory setting is adequate to deal effectively with the risks associated with cross-border securities infrastructure integration and, in particular, cross-border mergers and alliances.² It is important to note that this paper focuses mainly on post-trading—securities clearinghouses, securities settlement systems, and custody—and covers trading facilities only for the sake of completeness. Another area of relevance for cross-border integration is competition and barriers to entry. In general, public policy interest is to ensure that a competitive environment exists and that competitive abuses are restrained. Although this issue is highly important and has been discussed at considerable length within Europe, this paper does not explicitly deal with it, but instead focuses on financial stability.

This paper is organized as follows. Section II describes the important components of the securities market infrastructure. Section III analyzes the main economic features of the post-trading infrastructure as a potential explanation for cross-border integration. Section IV describes the various models of integration that have emerged in Europe, while Section V discusses the specific risks related to cross-border integration. Section VI examines the response of the public authorities and assesses its adequacy in addressing these risks. Section VII explores an alternative regulatory and supervisory setting.

II. MAIN COMPONENTS OF SECURITIES MARKET INFRASTRUCTURE

The smooth functioning of and confidence in the securities market depend on the efficiency and reliability of its infrastructure. In particular, it is crucial that the transfer of ownership from the seller to the buyer in exchange for payment takes place in a safe and efficient manner.

A securities transaction encompasses a wide variety of components covering trading, clearing, settlement, and custody. These components are complementary to one another and occur in an orderly manner for the provision of a typical securities transaction.

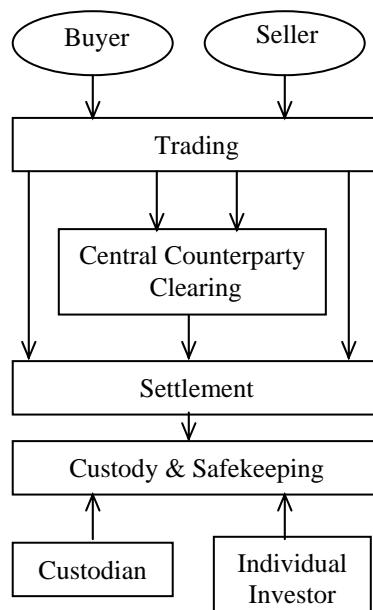
² In this paper, the term “regulatory” covers securities regulation, prudential supervision, and central banks’ oversight.

After a *trade* has been executed, the value chain of a securities transaction continues with the *matching process* that confirms the agreement of the parties on the terms and conditions of a trade, i.e., type of securities, price, volume, payment, settlement date, and counterparty. This matching process is typically carried out by a stock exchange. Trading can also be carried out over-the-counter or internalized within the broker/dealer and in this case matching occurs internally within the firm.

The next step is the *clearing* of the obligations of the counterparties resulting from the matching process. The clearing takes place by computing the obligations of the counterparties on a gross basis (trade for trade) or a net basis (offsetting of mutual obligations). Netting can be carried out either on a bilateral or multilateral basis. While bilateral netting is an arrangement between only two parties to net their bilateral obligations, multilateral netting is arithmetically achieved by summing each participant's bilateral net positions with those of the other participants to arrive at a multilateral net position vis-à-vis all other participants.

When netting is used, this functionality could be offered by either a settlement system (settlement netting) or a central counterparty (CCP) clearing (contractual netting). The main difference between the settlement netting and the contractual netting is that the settlement netting does not normally have any legal impact on the underlying contracts. The counterparties that have conducted a trade remain legally bound and the obligations stemming from all the individual contracts are fulfilled if, and only if, the netting procedure of all the transactions including a particular settlement batch is finalized. The obligations of the counterparties are netted by the settlement system on a multilateral basis. In contractual netting, however, all underlying contracts are “novated” to a single replacement contractual obligation vis-à-vis a CCP that interposes itself between the buyer and seller and assumes their respective rights and obligations.

Box 1: A Typical Value Chain of a Securities Transaction



The next step is the *settlement* process that aims to discharge the obligations of the counterparties through the delivery of the securities from the seller to the buyer and the payment from the buyer to the seller. This function is provided by a securities settlement system (SSS). The settlement of the cash side could occur either in central bank money or in commercial bank money provided by an agent bank and/or by the settlement system. Almost all settlement systems are operated and governed by central securities depositories (CSDs). The settlement of securities normally, but not always, involves the delivery of securities against payment. It could take the form of the delivery of securities without any funds transfer (free of payment) or the delivery of one category of securities against another (delivery versus delivery). The settlement of securities can also be internalized at the level of a custodian bank if both the buyer and seller have a securities account with the custodian. In this case, the settlement of the trade is executed internally in the books of the custodian without the need to affect the books of the CSD, where the securities are issued.

The *custody*, including safekeeping of securities on behalf of the customer, is composed of the issuance of securities either in certificated but mainly immobilized or dematerialized forms (the securities are created and registered exclusively in book-entry form), which permits the transfer of the securities holdings through book entry, i.e., registration on account. It includes also the provision of other related services such as corporate events, including income payments, redemptions, stock splits, capital increases, proxy voting, tax reclaim, and reporting. In the majority of European countries, this function is provided by a CSD, where the securities are issued. In some countries, the issuer may appoint a separate entity to take care of the issuance of securities and the provision of corporate events along the chain of securities holding. Some custodian banks also provide similar services for internationally issued securities. In many countries, custodian banks act as an intermediary between the local CSD and brokers/dealers/end-investors. In some countries, such as in the Nordic countries, the United Kingdom, and Greece, retail and end-investors can also have accounts directly at the CSD.

III. MAIN ECONOMIC FEATURES

This section provides a short description of the main economic features of the securities clearing and settlement industry. Against this background, one can better understand the rationale for the ongoing infrastructure integration in Europe, which is discussed in the following section.

The clearing and settlement industry exhibits *network externalities*, which means that the value of the services and products offered by a clearing and settlement system to an investor depends on the number of investors purchasing the same services and products. Thus, an increase in the number of participants joining the clearing and settlement systems will benefit existing members, who will be able to do business with more counterparties. In particular, participants will be able to clear and settle their transactions within a single system without relying on other systems or financial intermediaries.

The industry is also strongly characterized by the existence of *economies of scale*, which implies that the average cost per transaction diminishes with the increase in the number of transactions. The IT infrastructure, such as a database engine (the clearing and settlement platform), networks, and interfaces, is a component characterized by relatively high fixed costs. Therefore, a horizontal integration resulting in a single database engine that clears and settles many transactions will be more cost-efficient than the juxtaposition of several database engines for a single local market.³

The third feature is the existence of a *strong vertical relationship* between the various components, which are complementary. The settlement process takes place only after the matching and clearing has occurred. Therefore, a further vertical integration along the value chain of a securities transaction allows economies of scope, i.e., the efficiency gains from the joint operation of complementary components of the infrastructure. A single supplier will be able to provide a package of services at a lower cost than if different suppliers provided these services separately. In addition, the participants will benefit from not having to set up different interfaces and implement different procedures in order to reach various components of the infrastructure.

Finally, the securities clearing and settlement industry may suffer from the feature of *incompatibility* between systems, which causes high “switching costs” for participants. The use of a particular type of securities clearing and settlement system requires large investments in human capital and IT infrastructure to be undertaken by the user. Once a user chooses a certain system, then switching to another system is costly because new relation-specific investments have to be made. When compared with larger users, this cost could be relatively high for small and medium-size users.

The above-mentioned features of the clearing and settlement industry, which are common for traditional network industries, were historically considered as a distinctive feature for a *natural monopoly*.⁴ That is the case where a single firm can satisfy the entire market demand at a total cost lower than that of several firms. For these reasons, with the exception of North America, where regulation of private monopolies has a long tradition, the majority of European countries have enforced the establishment of legal monopolies of post-trading infrastructure and, in many cases, with a direct state ownership.

As a part of the evolving public views with regard to the deregulation of financial markets, not all segments of post-trading activities are considered as a natural monopoly any longer. For instance, the clearing function can be separated from the settlement function and can be provided by different service providers. Furthermore, the related custody activities such as

³ However, the impact of economies of scale might be relatively low for a global system, due to the relatively high cost associated with the complexity of such a system.

⁴ For more discussion, see Economides (1996) and Katz and Shapiro (1994).

safekeeping and corporate actions can be provided by a custodian bank and not necessarily by a CSD. This view has, during the 1990s, led to a radical shift in the regulation paradigm of the securities clearing and settlement infrastructures. In most European countries, a regulatory reform was introduced, where the entities operating clearing and settlement systems have first undergone a process of demutualization and “corporatization,” by being transformed into limited public companies owned by the private sector, at the expense of diminishing public authorities’ ownership and becoming for-profit organizations. In many countries, the clearing and settlement systems for government debt instruments have been moved out of the central banks and merged with the local privately owned systems for equities. Thus, in reality, the securities settlement infrastructure in Europe, during the 1990s, was transformed from public-owned monopolies to private-owned monopolies with profit maximization as an objective.

IV. INTEGRATION OF THE SECURITIES MARKET INFRASTRUCTURE IN EUROPE

This section describes the various models of integration of the securities market infrastructure in Europe. As the integration process is determined by many and potentially conflicting interests, a short description of the impact of financial deregulation on various market players is provided.

A. Changing the Post-Trading Landscape

During recent years, the securities markets have experienced growing globalization and further integration, particularly in Europe. This development was fostered by the liberalization of the national capital markets, rapid technological progress, and major advances in telecommunications. This has created new investment and financing opportunities for investors who, by entering new markets, needed to have access (preferably directly or via a third party) to the local securities market infrastructure. Furthermore, the institutional financial community has also increased its expectations of immediate access at any time to accurate information from every local market, as well as immediate and streamlined execution of transactions. All this, in turn, has put pressure on service providers to deliver cost-efficient and safe securities infrastructure both at the national and cross-border levels. Consequently, all parties concerned — institutional investors, financial intermediaries, and securities clearing and settlement service providers — have quickly adjusted the level and the features of the services they offer in order to cope with the new situation in Europe.

Furthermore, the introduction of the euro has eliminated currency segmentation, which has increased the homogeneity of the European securities markets. This has progressively altered the behavior of large professional investors, such as fund managers and broker/dealers, from a national investment approach to a pattern based on European-wide industry sectors. This trend, in addition to the globalization of the national economies, has triggered a huge increase in cross-border transactions, which highlights the importance of efficient clearing and settlement facilities at a cross-border level. In this context, investors, in particular global

investors, urged the need for a further restructuring of securities clearing and settlement systems in Europe, leading to a single or very few settlement service providers.⁵

Furthermore, operational costs for institutional investors have escalated in terms of access, connectivity, communication standards, processing, collateralization and margining, liquidity pooling, accounting, and reconciliation, as a result of increasing transaction volumes and the expansion of operations into several European markets. In order to reduce their costs—particularly the cost of developing, maintaining, and upgrading the securities processing systems—investors and, especially, fund managers and brokers/dealers are outsourcing significant parts of their back-office and middle-office operations to other financial intermediaries such as regional and global custodians. By outsourcing these activities, fund managers and brokers/dealers will be able to replace the fixed costs for securities processing with flexible costs dependent on the level of their activities. This will also enable them to focus more on providing value-added services to end-investors.

In recent years, custodian banks and CSDs have been competing on providing similar services to institutional investors. As the demand from fund managers, brokers/dealers, and small banks for clearing and settlement activities increased, custodian banks expanded their clearing and settlement capacity by investing heavily in their in-house systems. This has allowed them to clear, settle, and safekeep more transactions in-house rather than forward them directly to the local clearing and settlement systems. Some banks are also setting up separate legal entities to “insource” the middle-office and back-office activities of other financial intermediaries. Another development in the insourcing business is that many groups of banks such as savings banks and cooperative banks are setting up common entities, which offer securities processing facilities to all banks that are members of the cooperative or association. The changing role of the custodian banks to quasi-system represents new challenges for securities regulators and central banks overseers. However, this subject, which is of relevance for financial stability, deserves a separate treatment.

Moreover, the legal monopoly for the establishment and operation of CSDs and CCPs has been abolished in almost all countries in Europe. However, as discussed in more detail below, it is important to keep in mind that, due to the existence of several barriers, the local CSD and CCP still, de facto, act as monopolists in the local market. Nevertheless, the products and services provided by CSDs are becoming increasingly sophisticated and are in direct competition with custodian banks by offering collateral and risk management facilities, securities lending, etc. The CSDs and CCPs are also expanding their activities beyond national borders by developing new communication links between themselves, aimed at reaching foreign investors and, thereby, competing with other financial intermediaries such as regional and global custodians.

⁵ See ESCB/CESR (2004).

To sum up, clearing and settlement activities are considered to be a lucrative business in their own right by all market players, including service providers, custodian banks, etc. Furthermore, increased competition in clearing and settlement implies that market participants have diverging views on the ultimate objective of infrastructure integration in Europe and what parts of the life cycle of a securities transaction should be exposed to competition and what parts should be handled within a common infrastructure.

B. Recent Trends in the Securities Infrastructure

The changing functions of different categories of financial entities, including institutional investors, custodians, and service providers, have played a crucial role in shaping the direction of the current post-trading integration in Europe, although the integration process has not yet ended. Whereas there is a consensus that integration would lead to more efficient and less risky securities processing, there is no common understanding among market players as to the model of integration to be achieved in Europe. In particular, custodian banks would like to see the integration in Europe results in a single infrastructure providing only a traditional clearing and settlement in central bank money without value-added services. On the other hand, the service providers would be satisfied if the integration in Europe would result in harmonizing procedures and processes without the need to reduce the number of the CSDs and settlement systems in Europe. This latter attitude is reflected mostly in small financial markets in Europe.⁶ It is also important to keep in mind that the consolidation of the infrastructure in Europe would occur at the expense of the reduction in importance or marginalization of some domestic marketplaces.

This sub-section describes briefly recent trends with regard to the consolidation of the trading, clearing and settlement industry.

Two models of cross-border integration can be distinguished: (i) the interlink of the national infrastructures across countries, and (ii) consolidation of the infrastructures due to mergers and alliances.

Interlink model

The interlink model consists of technically connected national clearinghouses and securities settlement systems across countries. This mechanism allows the cross-border transfer of securities and cash from one national system to another country's system. According to this model, the national system will act as a "nominee" on behalf of their participants, when the securities are transferred to the foreign national system. In addition to the technical linkages, a minimum harmonization of business practices and technical procedures is necessary in

⁶ Integration could be achieved by integrating the functionalities, mechanisms, and processes without reducing the number of service providers, while "concentration" would end in fewer service providers as a result of legal mergers.

order to allow efficient and safe transfer of securities. For instance, securities settlement systems would need to agree on settlement procedures, measures for handling settlement failures, cut-off time to receive transfer orders, operating hours, etc. In reality, the majority of securities settlement systems and most clearinghouses in Europe are linked to each other directly or indirectly, resulting in hundreds of links (“Spaghetti model”).

This model of integration has been widely criticized by market participants and, in particular, by custodian banks, as it has not yet delivered the anticipated cost reduction and settlement efficiency of cross-border transactions. European and global intermediaries have been using the transaction cost that prevails in the United States as a benchmark to be achieved in the European market. At present, the cost of securities clearing and settlement of cross-border transactions in Europe is between two and three times higher than in the United States.⁷ Furthermore, the interlinking model has its own limitation in providing cross-border value-added services in an efficient and cost-effective manner. Many cumbersome procedures and routines need to be implemented in order to allow transfer of value-added services between two settlement systems. Both service providers and custodians have opposite interests with regard the use of cross-border links. In particular, inefficient links between securities settlement systems would benefit custodian banks, as they will be able to continue to offer settlement and custody services to foreign investors. On the other hand, efficient links between settlement systems that are able to provide value-added services would reduce substantially the role of custodian banks in cross-border clearing and settlement.

The use of links between securities settlement systems for the cross-border securities transfer has so far been very limited. There is no published figure on the size of activities channeled through the links, but as an indicator, securities transferred via cross-border links accounted only for 15 percent of the total cross-border transfers of securities used as collateral for central banks’ credit in 2005.⁸ The major part of cross-border collateral is provided through the correspondent central banking model (CCBM) implemented by the Eurosystem.⁹

Consolidation model

The second model of cross-border integration is the consolidation of existing securities infrastructures through mergers and alliances, resulting in fewer systems in Europe. Consolidation may occur at the “horizontal” or “vertical” level. Horizontal consolidation implies the merger of systems and entities that provide *similar* services and products.

⁷ For a more details, see Lannoo and Levin (2001). See also European Commission (2006).

⁸ Schmiedel and Schonenberger, 2005.

⁹ The CCBM ensures that all assets eligible for use for monetary policy operations and intraday liquidity in TARGET, the Eurosystem payment system, are available to all its counterparties—regardless of where in the euro area the assets or the counterparty are situated. The CCBM is also available to counterparties to the Bank of England, Danmarks Nationalbank, and Sveriges Riksbank. The Eurosystem is composed of the ECB and the national central banks of countries that have adopted the euro.

Vertical consolidation includes the merger of systems and entities that provide *complementary* services and products along the securities transaction value chain, such as trading, matching, clearing, settlement, and custody. Four different stages of consolidation could be noticed.

- ***Stage 1: Horizontal consolidation within the domestic markets***

The first stage of infrastructure consolidation occurred in Europe within the domestic markets and was a horizontal consolidation, in particular, mergers among stock exchanges and/or among securities settlement systems. The first trend was the merger of the stock exchanges with the derivatives exchanges in all Nordic countries and some continental European countries during the mid-1990s. Another example of horizontal consolidation was the merger of the settlement systems handling government debt instruments, managed by the central banks, with the systems for equities and corporate instruments. The common approach was to transfer the systems, operated by the central banks, to the systems managing the equities. This was the case in France, the Nordic countries, and the United Kingdom. An alternative model, which was applied in Spain, was to set up a new independent entity that owned both the system for debt instruments, managed by the central bank, and the system for equities, operated by the stock exchange. The horizontal merger at the national level was mainly driven by the objective of reducing the cost for developing and maintaining new systems, rather than the intention to strengthen the national systems in the face of foreign competition. At that time, almost all stock exchanges and settlement systems had a legal monopoly and foreign competition was not allowed.

- ***Stage 2: Vertical consolidation at the national level***

The second stage was the vertical consolidation at the national level. Having achieved a horizontal consolidation, resulting in a single entity for a specific transaction function, some countries went further and achieved a merger between the stock exchange, clearinghouse, and the securities settlement system, i.e., the creation of a securities infrastructure silo for equities, debt instruments, and derivatives. Deutsche Börse was the first group to integrate all the functions of a securities transaction into a single company. It became the only shareholder of the subsidiaries providing post-trading activities. Market participants, due to technical features, were automatically forced to use these facilities when trading on its stock exchanges, including derivatives products. Borsa Italiana and Bolsas y Mercados Españoles followed the model of Deutsche Börse Group, at a later stage.

- ***Stage 3: Cross-border horizontal consolidation***

The third stage was characterized by cross-border horizontal consolidation, with the stock exchanges leading this trend. The most prominent example is the creation of Euronext in 2000, which was the result of the merger of the Paris, Brussels, and Amsterdam exchanges and adding, later on, the Lisbon stock exchange. The most significant cross-border consolidation in the field of securities settlement systems was the merger of

Euroclear Bank, an international central securities depository (ICSD), with Sicovam (France), Necigef (Netherlands), CrestCo (United Kingdom), and CIK (Belgium). Euroclear Bank also subsequently took over the clearing and settlement functions of the Irish CSD. Another important consolidation was the merger of Deutsche Börse Clearing (Germany) with Cedel (Luxembourg) and the creation of Clearstream International. In the field of central counterparty clearing, the most notable cross-border consolidation was the merger of the London Clearing House (United Kingdom) and Clearnet (France) and the creation of LCH.Clearnet, which serves the markets in France, the United Kingdom, Belgium, Netherlands, Portugal, and the MTS markets. Another example is the creation of Eurex clearing, which serves the German and Swiss markets.

- ***Stage 4: Creation of “marketplaces” across national borders***

The fourth stage of consolidation was the creation of “marketplaces” across national borders, covering the entire securities transaction chain. The most obvious example was the merger of the Stockholm (OMX) and Helsinki (HIX) stock exchanges, which also included Vilnius and Tallinn stock exchanges and the securities clearinghouses in Sweden and Finland and the securities settlement systems in Finland, Estonia, and Latvia.

C. Less Market-Driven Consolidation

The securities market infrastructure in Europe has obviously been reshaped during recent years by the creation of cross-border groups of stock exchanges, clearinghouses and securities settlement systems. So far, the consolidation has mainly taken place at the level of ownership and not by consolidating the local infrastructures into single solutions. For instance, a typical cross-border merger between two settlement systems has been achieved by the creation of a holding company that owns the existing local entities, as subsidiaries, which continue to serve their local market. The cross-border merger has not decreased noticeably the number of entities providing similar services and products in Europe. Consequently, the anticipated cost savings still need to materialize. On the contrary, the mergers may have led, in the short term, to additional costs for the merged entities due to increased administrative layers, such as the creation of new positions and functions at the level of the holding company.

There is no doubt that the optimal outcome of the European securities market infrastructure integration should result from open and fair competition and be driven by business opportunities. It should not be determined by political decisions. However, this has not entirely been the case so far. Several reasons can be provided to explain why the consolidation in Europe is currently resulting in regrouping the national clearing and settlement systems under a holding company structure rather than closing some of the merged systems. The most important reason is the direct involvement of national policymakers in the mergers and alliances process.

In particular, some national authorities are not in favor of accepting the closure of the national system and allowing the domestic securities markets to be served by a foreign

system. The view of the public authorities reflects, to some extent, the attitude of the financial community. For instance, large cross-border banks have a clear interest in consolidated infrastructure leading to very few systems in Europe, while smaller local banks and investment firms prefer local infrastructure. In the same vein, some countries shield the local custody activity of their local banks from foreign custody competition. Cross-border consolidation would reduce the role of local custodian banks, in particular, that of smaller custodian banks.

Secondly, policymakers have used the legal framework governing the issuance of national securities as an argument in order to prevent the closure of the merged entities and, in particular, to maintain a national CSD. Some countries argue that, in order to ensure legal certainty, it is mandatory that the immobilization and dematerialization of listed national securities be exclusively governed by national legislation. Therefore, it is argued that those securities should exclusively be deposited at the national CSD even in the event of the merger of the national systems with foreign systems.

Even at the supranational level, the message with regard to the ultimate outcome of the consolidation has not been clearly articulated. The European Central Bank (ECB) and the European Commission (EC) have been encouraging a consolidated securities infrastructure in Europe. At the same time, both entities, due to their concern about subsidiarity and decentralized monetary policy operations, have been reluctant to take the leadership and guide the integration of securities infrastructure in a particular direction.

However, the ECB has recently issued a policy statement aimed at accelerating the emergence of a pan-European clearing and settlement system. On July 2006, the Governing Council of the ECB decided to explore the possibility of setting up a securities settlement service for securities transactions in central bank money, leading to the processing of both securities and cash settlements on a single platform through common procedures.¹⁰ This facility will be connected or integrated with TARGET2, the second generation of the Eurosystem payment system.

Although the business features and technical specifications of the TARGET2-securities system still need to be defined, the establishment of a single European settlement system by the ECB would alter the entire securities clearing and settlement landscape in Europe. In particular, a single system, which has an implicit guarantee by a central bank and reduces the credit and liquidity risk by settling in central bank money, will attract the lion's share of clearing and settlement in the European market. Consequently, the role of the domestic systems could be reduced to depository function such as securities issuance and corporate events management. However, these systems may still play an important role in settling domestic securities that are targeting domestic investors and/or have relatively low liquidity.

¹⁰ See European Central Bank (2006).

Furthermore, the EC recently requested the clearing and settlement industry to commit itself to work on a code of practice, which is expected to deliver real benefits to the financial markets.¹¹ In particular, the EC wants the industry to undertake a series of measures to improve price transparency, by developing a roadmap and conditions for ensuring effective rights of access on a fair, transparent, and nondiscriminatory basis. Furthermore, the EC has requested separate accounting of the main clearing and settlement activities and price unbundling of the main services and activities.

Nevertheless, further cross-border consolidation would add challenges for both securities regulators and central banks, as it would have an impact on the orderly function of the national securities markets as well as on the stability of the national financial systems. This issue is the main topic of the rest of the paper.

V. IMPACT OF INFRASTRUCTURE CONSOLIDATION

In addition to a natural monopoly tendency, the specific risks associated with post-trading infrastructure that affect the entire financial markets have motivated public intervention. In particular, public authorities are keen to foster public trust in the clearing and settlement system and its provider in order to allow such a system to transfer securities and monetary values. Furthermore, safe and efficient systems are critical to the safety and effective functioning of the entire financial sector. This section explores the specific risks related to post-trading infrastructure, followed by a discussion on the impact of cross-border integration.

A. Main Risks of Post-Trading Activities

The securities clearing and settlement industry plays a critical role in the smooth operation of the capital markets by processing financial values of considerable amounts. Systems with especially high numbers and values of transactions have the highest risk of contagion to many economic areas and markets, in particular, if they are interlinked to the real time gross settlement system (RTGS) payment systems run by central banks with high processing and finalization speed. For instance, a malfunction or a system failure can be a source of *systemic disturbance* to securities markets and jeopardize the stability of the financial sector. This is because participants would not be able to settle their transactions on time, or have access to intraday liquidity that is generated by repo transactions.

Furthermore, the clearing and settlement systems act as channels by which *shocks* can be transmitted very quickly across domestic and international financial systems and markets, creating *systemic risk* at both national and global levels. The failure of a large participant to meet its obligations would easily affect other participants within the system and, in the end, spill over very quickly to other sectors. Even the failure of a small participant might trigger

¹¹ See the European Commission (2006).

substantial financial shocks, if the effects are amplified and spread by the adoptive behavior and protective chain reactions of other participants (e.g., freezing of transactions). Therefore, the appropriate design of the system, including adequate risk management procedures that strengthen its resilience, should help to prevent risks being amplified and creating systemic disruptions.

Several important risks are associated with securities clearing and settlement activities.¹² By far the largest financial risks occur in connection with the settlement of transactions. Counterparties are exposed to *principal risk*, i.e., the risk that one of the counterparties to the trade delivers the security or cash but does not receive the counter value. The undelivered full value of the trades could be so substantial that it causes the other participants to fail on their own obligations. A chain reaction, due to contagion spreading through the system, may affect the stability of the entire financial community. The securities settlement systems are also prone to *liquidity risk*, i.e., when a counterparty does not receive the securities when due and may have to borrow the securities in order to honor its obligation. An *operational failure* of the system resulting in delayed settlement may give rise to negative financial consequences for all participants in the system. Increased *legal risk* due to uncertainty in the enforcement of the transactions could also cause financial losses to the counterparties. Finally, *custody risk* related either to a delay in gaining access to the securities held in custody or to their loss, due to insolvency or technical problems, could also expose the counterparty to financial losses.

B. Specific Risks of Cross-Border Activities

Integration of the securities market infrastructure in Europe is altering the magnitude of cross-border activities and, consequently, the level and the nature of the risks involved. A consolidation of the infrastructure, resulting in a single system, located in a single country and serving several national markets, would have a direct impact on the stability of the other countries' financial markets. In addition, integration of the infrastructure by establishing links between various domestic systems would have risk contagion effects in the event that a national system would not be able to settle or deliver securities to another system.

Risk concentration. The consolidation of the infrastructure into a single or a very few systems would lead to risk concentration, compared to an infrastructure landscape comprised of several systems. This would accentuate the systemic risk across countries due to the increased systemic importance of the remaining systems. Any failure of these systems might lead to severe disruption of the securities markets across countries. This risk is also present in the domestic market when consolidating the national infrastructure.

¹² For a comprehensive description of the various risks, see the CPSS/IOSCO Recommendations for Securities Settlement Systems, November 2001, and Recommendations for Central Counterparties, November 2004.

Legal risks. The integration of infrastructure allows participants to have direct access to foreign systems and to clear and settle trade transactions from multiple jurisdictions. This magnifies the legal and operational complexities, compared to domestic clearing and settlement arrangements. Cross-border participants would be confronted with several potential risks, for example, transfer of ownership, achieving finality of the settlement, enforcement of collateral, and conflict of laws. Furthermore, the rules that ensure the protection of the customers' assets may vary among countries. Different legal environments for the segregation and protection of customer's assets may delay access to the securities in the event of financial distress or bankruptcy.

Operational risks. Linkage between systems can increase the complexity and level of operational risk. For instance, in order to ensure that no securities are lost or have been created through link transactions, special procedures are required to realign and reconcile positions and accounts. Furthermore, there is a need to put in place specific requirements and procedures in order to handle disruptions in the communication network, inconsistent blocking and matching, and settlement failure. Moreover, an operational failure in one system may cause a settlement failure in the linked system and expose its participants to financial losses.

Financial risk. An integrated infrastructure would affect the liquidity management of the participants by either pooling their cash and/or securities in a single system or redistributing them to other systems reflecting the size of their activities in each market. A higher degree of interdependency of liquidity management across systems to address potential defaults and operational inefficiencies may increase the financial risk across countries.

Cross-market and cross-currency clearing risk. Central counterparties manage the credit risk of trade transactions by assuming the risk of both the seller and buyer. This would simultaneously lead to the concentration of the credit risk of the marketplaces in a single entity. The integration of clearinghouses would allow participants to offset their risk exposure by making use of cross-product clearing and/or cross-currency clearing. This would transmit risk from one market and/or currency area to another in the event of the financial distress of a central counterparty.

VI. REGULATORY AND SUPERVISORY RESPONSE

A. Objectives

In the past, the focus of public attention was on trading, while post-trading activities were considered as a back-office responsibility, with the associated risks being seriously underestimated. However, in recent years, public authorities have become more aware that the smooth functioning of securities market infrastructure is vital for the proper functioning of the market economies and the stability of the financial systems. In this context, the main public concern is to ensure that the design and operations of this infrastructure are sound, safe, and efficient. Another issue of public interest is to promote efficiency and competition

in the financial sector; the latter would increase the social benefits by mainly reducing transaction costs, and efficient securities settlement systems are also crucial for the reduction of transaction costs. Another public objective, which is related to stock exchanges and is not dealt with in this paper, is to ensure market fairness, i.e., all investors have a reasonable opportunity to trade at the best price available for their transaction size.

Within the European context, public authorities—central banks, securities regulators, and banking supervisors—have another objective, which is to foster the creation of an integrated securities market infrastructure for the European single market. The ultimate goal is that investors within the European Union should face similar costs and conditions whether they are settling a domestic trade transaction or a European-wide trade transaction. For this reason, European regulators are trying to create a consistent basis for the adequate regulation of securities clearing and settlement systems that reduces entry barriers and ensures a minimum level of safety, soundness, and efficiency.

However, when they are pursuing their objectives at the European level, public authorities are facing the challenge of a trade-off between the safety and efficiency of the infrastructures. For example, in the field of clearing, the creation of a single CCP would offer cross-border multi-product and multi-currency services that would yield higher benefits to the participants, as compared to a domestic or specialized clearinghouse for each segment of the financial market and currency. On the other hand, a regional multi-product and multi-currency clearinghouse could also entail a greater potential risk. In the event that the risk management of a CCP is not adequately addressed, a default within the clearinghouse may affect more than one market and could be transmitted from one currency area to another. The regulatory aspects are especially complex for a regional system compared to a domestic system, due to the number of regulatory/supervisory bodies involved and to the spillover risk from one currency area to another. This issue is addressed in more detail in the following sections.

B. Specific Interest of Central Banks

For central banks, securities clearing and settlement systems play a crucial role for the implementation of central bank's three core functions: smooth implementation of monetary policy, financial stability, and smooth functioning of payment systems. In particular, central banks rely heavily on securities settlement systems for the settlement of collateral and repo transactions with their monetary policy counterparties. Furthermore, central bank's intraday credit, either for monetary policy or payment systems (i.e., RTGS) purposes, is heavily dependent on the timely delivery of collateral.¹³ As most collateral transfers are operated by settlement systems, the inappropriate functioning of the latter is likely to affect the smooth execution of monetary policy operations and the smooth functioning of payment systems.

¹³ This is especially true for the Eurosystem and other national central banks in Europe, while the U.S. Federal Reserve Bank does not fully collateralize its credit operations.

Moreover, in order to limit settlement risks, securities settlement systems have adopted so-called delivery-versus-payments (DVP) mechanisms.¹⁴ However, with a DVP mechanism, any difficulty related to the transfer of securities has an automatic impact on payment systems because participants do not receive payments stemming from the cash leg of the securities settlement on time. In addition, possible liquidity shortages, linked to settlement problems in settlement systems, can be magnified by an RTGS-based payment system. In such systems, in contrast with traditional net-settlement systems, should participants not receive expected funds in time, severe liquidity problems (gridlocks) could occur at any time of the day.

Finally, any problem in settling securities transactions in due time would create disturbances in the functioning of the securities markets. The money markets could be severely affected and, in exceptional circumstances, central banks might have to act as lender of last resort (especially in the event that systemic risks materialize), an eventuality which could, in the short run, affect de facto the chosen monetary policy stance.

With regard to collateralization of its credit operations, a central bank may face additional legal and operational risks when accepting cross-border collateral. Many times, it is critically important for a central bank to receive immediately the corresponding collateral when providing liquidity to the market or when smoothing the functioning of the payment systems. Secondly, a central bank may face different collateralization techniques. In some countries, collateralization is achieved through repo transactions, whereby the ownership of the securities is transferred to the central bank, while in other countries collateralization is achieved by pledging the securities for the benefit of the central bank. These collateralization techniques have different features and risks, and, therefore, the central bank needs to assess on a regular basis its risk exposures when accepting collateral. However, the risk is relatively high when accepting cross-border collateral, due to the potential conflicting legal environment and complicated procedures to enforce the realization of the collateral, when it is needed.

Another important aspect of infrastructure integration for central banks is the risk associated with the settlement of the cash leg of securities transactions. In order to contain the potential systemic risk, central banks are keen that the ultimate cash payment of securities transactions should carry no credit or liquidity risk. In almost all European countries the ultimate settlement of domestic securities transactions takes place in central bank money—that is, the transfer of payments between participants takes place on the books of the central banks. In the case of ICSDs, such as Euroclear Bank and Clearstream International, the settlement of the cash payment takes place on their own books. The mergers between local CSDs and ICSDs may lead to a change in the way the cash is settled in both systems. This issue, which

¹⁴ For more details on this issue, see the BIS report on “Delivery versus payment in securities settlement systems,” Basel, September 1992.

remains outside the scope of this paper, has important implication for financial stability at the European level.

In view of the interdependencies between monetary policy operations, payment systems, and securities settlement systems, central banks have been directly involved in the oversight of the post-trading infrastructure. Their main objective is to ensure that the design and the functioning of clearing and settlement systems do not have any adverse impact on financial stability and cannot negatively influence the implementation of monetary policy.

C. Institutional Setting

Although from quite different perspectives, both securities regulators and central bankers share the common objective of promoting safe, sound, and efficient securities clearing and settlement systems. In particular, securities regulators are concerned with the orderly functioning of the capital markets and protection of the investors' securities holdings, while central banks address this issue based on their responsibility for financial stability and smooth functioning of payment systems. Banking supervisors in some countries are also involved in the supervision of the securities infrastructure, in particular, in the CCP that is licensed as a credit institution.

To cope with the reshaping of the securities market infrastructure in Europe, public authorities have been keen to set up institutional arrangements both at the domestic and European levels. So far, the cross-border cooperation between public authorities in the field of securities clearing and settlement systems has followed the *home country principle*, applied in the financial sector. In this context, the home country authority (i.e., regulator, supervisor, and overseer), where the consolidated system is legally located, acts as the *lead authority*. It is responsible for coordinating the regulatory work with the other relevant authorities. It also handles all the information requests or queries regarding the common services provided by the merged system, including those from other relevant authorities. The lead authority also ensures that the assessments related to the common services are performed in a coordinated way.

The institutional architecture for cross-border cooperation among public authorities exists both at the horizontal and vertical levels. The *horizontal cross-border cooperation* model largely reflects the general model applied within the European Union for regulating and implementing European-wide financial regulations. For instance, European securities regulators discuss post-trading activities within the Committee of the European Securities

Regulator (CESR),¹⁵ while the central banks discuss their oversight role in this field within the Eurosystem and the ESCB fora.¹⁶

The *vertical cross-border cooperation* model between public authorities is a recent trend and consists of the establishment of communication channels and fora between public authorities with different statutory responsibilities. For example, the Governing Council of the ECB and the CESR have set up a committee composed of representatives of both bodies. The main objective of the ESCB-CESR Committee is to develop common rules, recommendations, and standards for securities clearing and settlement systems, based on the CPSS/IOSCO recommendations for securities settlement systems and central counterparty clearing.

Some countries have taken this vertical cross-border cooperation further and set up specific committees and working groups to handle common issues resulting from the integration of their domestic securities market infrastructure. For instance, as a consequence of the consolidation of the Euroclear Group, the relevant national authorities have devoted considerable attention and resources to coordinating their regulatory and oversight responsibilities. They have set up specific working groups and signed memoranda of understanding (MOUs) among themselves.¹⁷ The main aim of these MOUs is to set principles for collecting and disseminating information and procedures for acting in the event of disturbances, including crisis management aspects. However, the current framework for regulation and oversight is still organized along national lines, which means that each national authority supervises and oversees the segment of the group located within its jurisdiction.

D. The Effectiveness of the Current Regulatory Setting

The regulatory, supervisory, and oversight framework to deal with cross-border consolidation in the field of post-trading is based on a decentralized and segmented approach, where

¹⁵ For more details, see CESR (2006).

¹⁶ As noted previously, the Eurosystem is composed of the ECB and the national central banks of those countries that adopted the euro, while the European System of Central Banks (ESCB) comprises the ECB and the national central banks of the whole European Union.

¹⁷ Four MOUs have been concluded between the Belgian authorities and those countries where the national CSDs are part of the Euroclear Group:

- MOU between French and Belgian authorities (Banque de France (BdF), Autorité des Marchés Financiers, the National Bank of Belgium (NBB), and the Banking Finance and Insurance Commission (CBFA));
- MOU between British and Belgian authorities (the Bank of England, the FSA, the NBB, and the CBFA);
- MOU between Dutch, French, and Belgian authorities (De Nederlandsche Bank (DNB), the Financial Market Authority of the Netherlands, the BdF, the AMF, the NBB, and the CBFA) relating to settlement of transactions concluded on Euronext markets; and
- A bilateral protocol has also been concluded with the Central Bank and Financial Services Authority of Ireland (CBFSAI) as a result of the service agreement related to the settlement of Irish Government Bonds in Euroclear Bank.

several authorities with different statutory responsibilities are involved, and the home country authorities where the system is located act as the lead coordinator. For several reasons, this model may raise some concerns with regard to the effectiveness of the cross-border regulatory framework applied currently in Europe.

Lack of an adequate legal basis. A decentralized regulatory framework implies that the definition and implementation of national responsibilities will be determined and guided by national laws and domestic institutional arrangements. Furthermore, the agreements set up by the authorities concerned, such as the MOUs, are voluntary and cannot be legally enforced. This framework, which depends on the national mandates and local rules and regulations, may not provide enough legitimacy to the national regulators, supervisors, and overseers to react quickly and adequately to issues that affect the other countries' financial markets.

Lack of a common understanding. The behavior and action of regulators, supervisors, and overseers have evolved over time within the specific national environment and perspective. Consequently, it is not clear whether the national regulators, supervisors, and overseers where the system is located, would assess and deem, for example, issues related to risk and efficiency in a similar way to the other countries' regulators and/or market participants, where the services are provided. For these reasons, there is a risk that public authorities may not respond quickly and effectively to cross-border events considered serious by both national and host countries' authorities.

Risk of regulatory deficiency. Since several types of authorities—securities regulators, prudential supervisors, and central bank overseers—are involved, there is a need for ongoing and intensive coordination to reach common objectives, assign responsibilities to various authorities, and establish mechanisms to react quickly and effectively to events before they become critically important and affect adversely the financial markets of the countries concerned. This requires that relevant expertise and adequate financial resources from the relevant authorities be devoted to cross-border issues, in addition to the resources needed to carry out their regular tasks in the domestic markets. Due to financial restrictions or lack of political will, some authorities may not be able to devote the needed resources for cross-border issues, and this would affect the entire cross-border regulatory structure.

Conflicting interests. It is important to keep in mind that public interest is not homogenous across Europe and could lead to a conflict of interests between the achievement of national objectives and European-wide ambitions. For instance, the interest of national authorities is to promote the national financial market and, thereby, to strengthen the position of the domestic securities infrastructure, whereas the interest of the “supranational authorities,” such as the ECB and EC, is to increase the integration and consolidation of the European financial market, including the securities infrastructure. Their main objective is to strengthen the European financial market by reducing costs, increasing efficiency, and making it easily accessible to foreign investors.

Against this background, the application of the home country principle for cross-border consolidated securities infrastructure may not be the most efficient framework for delivery of the optimal result to identify in good time and contain the risks associated with the cross-border merged systems.

VII. AN ALTERNATIVE APPROACH: A TWO-TIER REGULATORY FRAMEWORK

Although securities market infrastructure integration in Europe is still at an early stage and its impact will continue to change, two main distinctive integration models have so far emerged: (i) the creation of *regional systems* located in one country but serving several markets, and (ii) the existence of *cross-border integrated domestic systems* through the establishment of communication networks and harmonized technical and business procedures.

In the light of the discussion above, this paper proposes a two-tier cross-border regulatory and oversight framework for post-trading infrastructure in Europe. This would entail the creation of a *centralized* “federal” European regulatory framework for regional systems, on the one hand, and the current national regulatory framework for domestic systems, on the other hand.

A. Institutional Arrangements

Several supranational bodies and networks already exist in the European Union such as the EC, CESR, and ECB. Each body has specified statutory responsibilities.

- The EC is responsible for proposing and ensuring the implementation of common European legislation.
- The CESR is responsible for improving coordination among securities regulators, ensuring more consistent and timely day-to-day implementation of community legislation in the field of securities, and for acting as an advisory group to assist the EC in its preparation of draft implementing measures of EU framework directives in the field of securities.¹⁸
- The ECB is the central decision-making and policy-setting body of the European System of Central Banks, which is responsible, among other things, for safeguarding the stability of the financial markets and ensuring the smooth functioning of the payment and settlement systems.

A common European regulatory and supervisory framework for securities clearing and settlement systems has not yet evolved, although several public and private sector initiatives

¹⁸ The Lamfalussy process identifies four levels for the division of responsibilities between the EC and CESR and for the cooperation within CESR. For more details, see CESR (2006).

and efforts have been undertaken in order to address the fragmented securities clearing and settlement systems in Europe.¹⁹ It was envisaged that the EC would prepare a common European Directive on clearing and settlement, which would ultimately be enacted by the European parliament and Council. However, the Directive proposal has been put on hold for the time being, as the Commission has opted for the “code of practice” to be met by service providers.

Nevertheless, it is crucial that the scope of the directive be broad enough and be focused on issues related to barriers to entry, governance, and transparency, in order to allow the integrating securities clearing and settlement industry to evolve in line with market expectations. Such legislation could grant to the CESR and ESCB the role of regulating and overseeing the securities clearing and settlement systems in Europe. These entities would jointly enact and implement rules, standards, recommendations, etc., and monitor and assess the relevant systems. Due to their different interests, the CESR should mainly focus on competition and investors’ protection issues, while the focal point of the ESCB should be financial stability, safety, and efficiency. This approach would also require the set-up of a supranational but “federal” European body or authority, which should be entrusted with the responsibility to regulate the European securities clearing and settlement systems. This body should be given the exclusive mandate to define and enforce regulation on such systems, including assessment, onsite supervision, and oversight. The CESR and ESCB would need to set up a dedicated body to execute their responsibilities in this field.

For the effectiveness of that body, it is crucial that its mandate and responsibilities be recognized and legally enforced in all concerned jurisdictions. In particular, it is crucial that the common European legislation provides this body with a relatively strong governance structure, in particular, a central decision-making organ, which allows it to undertake and implement decisions that may not always be in line with the national interests of some countries. The board of the joint CESR/ESCB body should be composed of a sufficient number of independent directors, who would be able to pursue European interests. The Board’s composition, mandate, responsibilities, and working procedures, which could be the subject of a separate paper, should be defined in details in order to clarify its accountability and increase transparency.

On the other hand, the member central banks and national securities regulators would play a key role in the preparation of policies and enforcement of regulations. In terms of operational supervision, the national central banks and securities regulators would operate in a framework defined by the central body, and under its full authority. Indeed, in line with its “federal” structure, the central body should also decide on the supervisory and oversight arrangements for European securities clearing and settlement systems.

¹⁹ See ESCB/CESR (2004), and European Commission (2006).

B. Supervisory and Oversight Arrangements

The supervisory and oversight arrangements could differ between (i) strictly local systems, (ii) a truly regional or European-wide system, and (iii) cross-border integrated linked systems. On the basis of the above-mentioned institutional arrangements, the supervision and oversight of securities clearing and settlement systems could take place along the following lines:

Local systems

Local clearing and settlement systems could be supervised and overseen by the national securities regulators and central bank. However, the central CESR/ESCB body should be responsible for defining the policy stance and issuing rules and recommendations. This would allow a harmonized regulatory framework throughout the European Union.

Regional or European-wide system

From a systemic risk perspective, the design and operation of the regional or European-wide system would have an impact on the local as well as the foreign markets that it would serve. This is due to the magnitude of risk stemming from the value/volume handled by the system and the number of participants, including participants located in other countries. Furthermore, it would increase the degree of risk concentration due to the central role that the system would play in the financial markets of several countries. The stability of these markets would be entirely dependent on the resilience and risk management procedures of the regional system. This is very crucial, in particular, if the system serves all segments of the market, including equities, debt instruments, and derivatives.

Due to its cross-country systemic importance, it is indeed questionable whether the local authorities, where the system legally is located, should be given the exclusive mandate to regulate and oversee such a system. Furthermore, due to the institutionalized deficiencies within the cross-border coordinated regulatory framework, discussed above, it is also disputable whether this regulatory model would be adequate and effective in preventing or addressing a real cross-border crisis situation.

Therefore, the centralized regulatory and oversight framework would be particularly effective and efficient for a regional or European-wide system. The main strengths of such a model are effective decision-making, quick and timely reaction to any event that may potentially create market disturbance, and a single policy orientation that would allow consistent policy measures to address risks and efficiency at a regional or European level.

In theory, this centralized approach could be implemented by: (i) extending the power of the home country, where the system is located, to cover all cross-border entities belonging to the group, or (ii) entrusting the regulatory task to a supranational body. However, from a

political sensitivity viewpoint, and in order to ensure neutrality among national public interests, the supranational body can be considered as the most realistic option.

In line with the centralized approach proposed by this paper, the regulation, supervision, and oversight of regional or European-wide securities clearing and settlement systems should be under the direct authority of the central CESR/ESCB body. It should have the exclusive mandate to impose rules, monitor, assess, and carry out on-site inspection. Due to operational efficiency, this central body may entrust the relevant national regulators and central banks to implement its policy and decisions. However, the central body would determine the mandate and responsibilities of national regulators and central banks, in particular, on the basis of the territorial range of a given system, but also giving due consideration to the operational constraints of the respective national authorities.

Cross-border integrated linked systems

As discussed above, the significance of the cross-border linked domestic systems in terms of contagion risk is relatively limited compared to consolidated regional systems, because a national system will always be able to serve its national market in the event of the malfunction of a linked foreign system. It is, however, true that the national system may not be able to transfer to some participants securities delivered by the foreign system when this system is facing difficulty.

Nevertheless, for cross-border linked systems, this paper considers the current cooperative framework among regulators and central banks to be adequate in order to address the risks related to the linked systems. However, this paper proposes to put this framework under the auspices of the central CESR/ESCB body. This means that the central body will be responsible for defining the policy and reviewing the assessments of the systems, while the national regulators and central banks of the countries in which the systems are located would execute the operational supervision/oversight.

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