Policymakers, researchers, and practitioners discuss the role of central counterparties

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Introduction and summary

Central counterparties (CCPs) are structures that help facilitate the clearing and settlement process in financial markets. They have long been utilized in the derivatives markets, more recently have been adopted in cash securities markets, and currently are experiencing a growing interest in a further expansion of their use. Typical examples of CCPs in the U.S. include the clearinghouses for the derivatives markets in Chicago—the Chicago Mercantile Exchange Clearing House, the Options Clearing Corporation, and the Clearing Corporation.[1] Examples in the European Union include LCH.Clearnet and Eurex Clearing. A more comprehensive, but non-exhaustive, list of U.S. and European central counterparties, with characteristics of each arrangement, is included in Bliss and Papathanassiou (2006) and reproduced in appendix 1.

What are the benefits associated with CCPs? If properly structured, they can offer more effective risk-management procedures than is possible in markets that do not use central clearing and settlement arrangements, resulting in superior safety and soundness. This, in turn, can lead to increased liquidity and deeper markets.

How are these gains realized? The CCP interposes itself between the counterparties to a financial contract. Thus, the CCP becomes the counterparty to each side of the contract. A transaction initiated between customer X and customer Y becomes two separate contracts: one between X and the CCP and one between Y and the CCP. If the CCP has appropriate risk-management processes in place, this "substitution" of the CCP as the common counterparty to each transaction results in a decrease in counterparty risk.[2] Because traders are exposed only to counterparty risk from the CCP, they need not spend time and resources evaluating and managing the risk of other market participants—a job that is performed instead by the CCP. In fact, traders in a centrally cleared market that uses a CCP are completely indifferent to the identity of other market participants, a fact that leads to anonymous trading. This decreases transaction costs and contributes to an increase in market liquidity. In addition, since the CCP is the common counterparty to each trade, the CCP framework naturally allows for multilateral netting of positions, which leads to additional decreases in transaction costs.

In recent years, we have seen significant changes in the financial markets for which CCPs are utilized. Trading volumes have surged, new financial products have been developed, technology has gotten cheaper and become more fully incorporated into the clearing and settlement process, and electronic trading has increased. Risk-management procedures have improved, cross-border trading activity has increased, and exchanges and clearinghouses have consolidated. These developments have had important implications for CCP operations, ownership, and governance. While CCPs have traditionally served one market in one country, they have more recently expanded to serve multiple markets across national borders. The interest of traders in a more efficient use of collateral tends to reinforce this trend and adds to the impetus for a reconsideration of CCP structures.

In response to this growing interest in CCPs, the Federal Reserve Bank of Chicago and the European

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Central Bank sponsored a joint conference on "Issues Related to Central Counterparty Clearing" on April 3 and 4, 2006, in Frankfurt, Germany. The conference featured a multidisciplinary "law and economics" discussion of key legal, risk-management, and public policy issues associated with CCPs, with a special emphasis on issues that arise in cross-border and cross-product transactions.

Over the two-day conference a number of industry executives, policymakers, and research economists evaluated an array of topics associated with CCPs, including:[3]

- Efficiency and systemic importance of current and evolving CCP structures, including ownership and governance structures;
- Management of credit, liquidity, operational, legal, and other risks by CCPs;
- Mutualization of counterparty credit risk;
- Costs and benefits of CCP structures;
- Innovation, competition, and integration initiatives among CCPs;
- Relationships between central banks and CCPs and their clearing participants;
- Similarities and differences in the potential for using CCPs in over-the-counter (OTC) and exchange-traded products;
- Cross-product clearing; and
- Policy issues related to the design, operation, oversight, and supervision of CCPs.

This article provides an overview of the conference and an introduction to this special conference issue of *Economic Perspectives*. Next, in an article that builds on the discussion at the conference, Robert Bliss and Robert Steigerwald discuss common problems of risk management, operational efficiency, liquidity support, and information that are inherent in both exchange-traded and OTC derivatives markets. The article discusses typical clearing and settlement arrangements for those markets and compares the bilateral clearing arrangements typically found in OTC markets with markets that utilize centralized clearing arrangements, such as CCPs.

The remainder of the issue features presentations by the keynote speakers, Gertrude Tumpel-Gugerell, member of the Executive Board of the European Central Bank; Randall S. Kroszner, governor, Board of Governors of the Federal Reserve System; Tommaso Padoa-Schioppa, Minister of Economic Affairs and Finance of Italy and former member of the Executive Board of the European Central Bank; Michael H. Moskow, president of the Federal Reserve Bank of Chicago; and Jean-Claude Trichet, president of the European Central Bank. Given their inclusion in this special issue, little coverage of the keynote addresses is included in this summary article.

Foundations of central clearing parties

Setting the stage

A CCP imposes itself as the legal counterparty to every trade.[4] This substitution of the counterparties by the CCP typically occurs through a process known as novation, which discharges the contracts between the original trading entities and creates two new, legally binding contracts—one between each of the original trading parties and the CCP.

This arrangement places the CCP in a unique position in that it has direct interaction and counterparty risk exposure with each trading party.[5] This gives the CCP the incentive to closely monitor traders, as well as access to the information needed to manage its risk. Market participants, by contrast, are essentially indifferent to the creditworthiness of anyone but the CCP, which significantly decreases the cost of risk monitoring. This is typically considered the most important role of the CCP: what John Trundle (2006) of Euroclear SA/NV called the "collective investment of the market in risk management."

The CCP uses a variety of tools to manage risk. First, it can establish membership requirements, including capital requirements, which the members must satisfy to continue to participate in the arrangement. Again, this eliminates the need for individual participants to be concerned with the risk of the trading partners, because they know that participants must satisfy certain minimum standards to continue to participate in the centrally cleared market.

The most common tool used to manage risk, and many would argue the single most important, is collateral. CCPs typically hold collateral (sometimes called initial margin) from each market participant to serve as a cushion against adverse market fluctuations. The CCP also monitors the position of members and may periodically require additional collateral following market movements to reestablish an acceptable cushion against future losses. Rules are established dictating what assets are allowed to serve as collateral, how much of a "haircut" should be given to specific assets in determining their value as collateral, and how often margin calls should take place.[6] Some have argued that the single most important reason for the existence of CCPs is to have them serve as a collateral facility.[7]

CCPs also typically require members to make periodic payments (sometimes called variation margin) to prevent a buildup of market losses. Payments equaling the "mark-to-market" from a recent settlement

price—often the closing price from the previous trading day—are made to the CCP by those traders whose positions have lost value as a result of market fluctuations. The CCP, in turn, makes payments that, in effect, pass through market gains to those traders whose positions have gained value as a result of market fluctuations. This process of exchanging variation margin permits the CCP to set collateral requirements as low as possible while maintaining its value as a cushion against future losses.

CCPs also use loss-sharing arrangements to cover any additional losses incurred beyond those covered by a defaulting trader's collateral. Mutualization of losses is a final layer of protection that insures the ability of the CCP to perform its obligations notwithstanding the failure of one or more traders. This also should reduce the potential spillover effects on other members when individual members in the arrangement fail, since the combined group should be better able to absorb losses. There is a realization, however, that mutualization may encourage market participants using a CCP to trade more and establish larger positions, increasing the potential risk for the CCP, and that decisions concerning loss allocation procedures have distributional effects that must be considered when developing the loss-sharing arrangement. For example, setting high (low) margin requirements shifts the burden of individual firm failure toward the defaulting (surviving) firms. Collateral is expensive and imposes costs on all CCP participants. Clearly, the perceived value to the members must offset the potential cost before the specifics of the loss-sharing arrangement can be agreed upon.

The CCPs unique position of being a common, substituted counterparty to all trades in a centrally cleared market greatly simplifies the multilateral netting of trade obligations. Past studies have shown that multilateral netting can result in significant decreases in risk exposure relative to the underlying gross positions—reductions exceeding 90 percent in some cases.[8] This contributes to improved liquidity and deeper markets.

As a result of the centralization of information flows and the standardization of processes, a CCP in a centrally cleared market may enjoy economies of scale and/or scope in the performance of these risk-management functions. For similar reasons, it may also realize economies of scale in the provision of additional administrative services, which may generate cost savings. Consider, for example, the default of a trader with outstanding contracts in a market that is not centrally cleared. Each of the defaulting trader's counterparties must take steps—such as closing out open positions, liquidating collateral, and, if necessary, instituting legal action—to protect itself against losses arising from the default. In a centrally cleared market, however, the CCP acts on behalf of all users of the market in taking actions to protect itself against loss from a trader's default. Finally, there may also be cost advantages in the centralization of various back-office services, such as trade capture, trade matching, reporting requirements, netting calculations, centralized collateral valuation, and settlement services for CCP members.

What does the market want from CCPs?

Diana Chan (2006) from Citigroup started the conference discussion by describing how market participants want to see the CCP environment evolve. At the time of the conference, Citigroup was a member of 38 different CCPs worldwide. Many of Chan's points were echoed by other conference participants throughout the conference.

Chan (2006) stated that the role of CCPs could be expected to grow in the foreseeable future and that new ones would be developed to bring about the associated benefits in other markets. She observed that CCPs create a virtual cycle in growing transaction volumes as they increase participants' ability to trade through a netting process that reduces both regulatory capital requirements and the number of trades to be settled.

However, while CCPs are thought to create significant benefits, the proliferation of disjointed CCPs creates potential problems. As the number of CCPs grows, the coordination cost involved in operating in multiple arrangements increases. Additional pools of collateral must be held and managed, and administrative costs increase as firms need to work with multiple infrastructures having potentially different legal environments, controls, compliance procedures, and processes.[9] Ideally, the heterogeneity across CCPs would be decreased. While this could be achieved in a number of ways, including CCP consolidation, processing harmonization, linkages across CCPs, and CCP cross-memberships, most of the discussion over the two-day conference concentrated on the recent groundswell, particularly in Europe, for CCP consolidation.

Chan emphasized that as consolidation occurs, the market will have to invest heavily to adapt technology and reconfigure processes. However, these expenditures could be justified if they result in internal efficiency gains and maintain an adequate degree of safety. These safety concerns underscored the need for uniform regulatory standards, particularly uniformity across borders, and Chan said she welcomed the recent best practice recommendations for CCPs.[10] However, she suggested there might be a need to go even

further in a number of respects. For example, CCPs could be required to be as robust as top tier banks, meaning they would be subject to the Basel Accord's capital adequacy requirements. This is not uniformly the case—in some countries CCPs are considered banks, while in others they are considered clearinghouses, with correspondingly different regulatory requirements.

Chan also offered a wish list of additional safety issues that Citigroup was interested in including in future CCP arrangements, such as capped loss-sharing for each counterparty when loss-sharing arrangements are negotiated, firewalls between asset classes to protect participants from potential losses in markets for assets they may not use, the ability to opt out of using the CCP for certain products and instead use other means (perhaps bilateral arrangements) to access the product, and differentiated rules for general clearing members that may differ from those of associate members. The desire was to realize the full benefits of the CCP arrangement and to realize and address the specific needs of various segments of the CCP membership.

What does the regulator want from CCPs?

As discussed above, CCPs may generate significant benefits by supporting the netting of positions, providing procedural standards, increasing market liquidity, and allowing for enhanced risk management. However, while risks on these arrangements may be shifted to the CCP, they are not eliminated. Instead risk becomes concentrated at the CCP, which becomes a potential source of systemic risk. Additionally, when the risks are shifted to the CCP and potential losses are mutualized, the incentives of participants may change, and moral hazard makes them more willing to take on additional risks. The financial regulatory authorities, therefore, have a significant interest in ensuring that risk is well managed. Based on economic theory, this is a classic case where there is an economic justification for regulatory involvement.

Stated differently, Trundle (2006) emphasized the need for a role for regulatory authorities based on their unique perspective of market activity. He argued that CCP participants will focus mainly on the management of day-to-day risks, and the public authorities will place more emphasis on the potential for extreme events (with systemic implications). These are low probability, but exceptionally high impact, events in the tails of the probability distribution. Given the mutualization of risk, CCP participants may have an inherent tendency to underestimate the probability of these types of events, since the cost of protecting against such remote events falls principally upon the group of participants. This tendency supports a role for the public sector.

There appeared to be almost complete agreement among conference participants in favor of some regulatory oversight of CCPs.[11] At a minimum, most agreed that there is value in having regulators play a role as coordinators to bring market participants together to develop best practices and standards for CCPs. The example most frequently cited in support of this coordinator role was the recent development of CCP recommendations by the Task Force on Securities Settlement Systems.[12] Given the growing interest in CCPs and the interest in expanding them across both countries and products, the recommendations were developed to help promote safety and stability in financial markets as CCPs expand. The Task Force's report addressed the major types of risk that CCPs encounter and provided general recommendations to manage these risks. The report also includes a methodology for assessing how well the recommendations have been implemented at CCPs. The recommendations are included in appendix 3.

The recommendations were embraced by most of the conference participants and were making inroads into practice. In fact, Yvon Lucas (2006) of Banque de France discussed a recent assessment of LCH.Clearnet against the CPSS–IOSCO standards. LCH.Clearnet is a multi-product CCP that serves exchanges in Paris, Amsterdam, Brussels, Lisbon, and London. It also has a link to the Italian CCP Cassadi Compensazione e Garanzia. LCH.Clearnet is subject to "cooperative oversight" based on Memoranda of Understanding with authorities in countries where it provides services. For the purpose of the assessment, Banque de France coordinated the contributions of the various regulatory authorities.

The assessment was performed using the methodology of the CPSS–IOSCO framework and was based on available data supplemented by interviews. For most of the recommendations, the assessment was considered straightforward and the overall result was that LCH.Clearnet was generally in compliance with the standards. In the areas where deficiencies were found, LCH.Clearnet was asked to provide an action plan to improve future compliance.

However, the exercise brought out a number of issues that other CCPs may find problematic in performing their own assessments. For example, how should links to other CCPs be treated relative to other membership relationships, given the unique nature of these links? The thought was that CCP links bring very different risks into play than those brought by other participants. Additionally, there was a feeling that certain recommendations—particularly those dealing with efficiency and governance—were open

to interpretation. Finally, some felt terms, such as "normal market conditions," should be more clearly defined. Generally, however, the standards were seen as a valuable first step in assessing the resiliency of CCPs and in guiding their evolution.

Discussion of the major issues

The conference presentations and discussion frequently returned to the issues of CCP consolidation, the appropriate public policy role in the evolution of CCPs, governance issues, and risk management.

Consolidation

Many participants expressed a desire to take advantage of potential economies of scale and economies of scope from CCP consolidation, thereby significantly reducing the number of CCPs, particularly across Europe. Lucas (2006) argued that consolidation was probably the single most important issue facing the industry today. There were differences of opinion, however, on the perceived benefits of consolidation, the tradeoffs associated with it, and how the process should proceed.

Alberto Giovannini (2006) of Unifortune Asset Management SGR and others insisted that fixed cost within CCPs made up the bulk of operational expenses and that the marginal cost of clearing and settlement operations was essentially zero over a wide range of output levels. Thus, there were obvious reasons for consolidation, since the industry has the textbook characteristics of a natural monopoly. This aligned well with a general view by many European market participants that it is an opportune time to break down current barriers and encourage cross-border and cross-product consolidation with a goal of a single European CCP.[13]

Some speakers, however, did question the extent of the benefits that could be realized from consolidation. In response to the claim that marginal costs were zero, Daniel Gisler of Eurex, David Hardy of LCH.Clearnet Limited, and Kimberly Taylor of the Chicago Mercantile Exchange stressed in their panel discussion that all costs were not fixed and, although low, marginal costs were not zero. Gisler (2006) indicated that personnel costs could change, and expenditures directed at innovation were significant and "lumpy" as CCP activity increases.

However, most of the disagreement centered on the role of competition in determining the direction of industry consolidation. The audience tended to fall into two general camps: one supporting the idea that competition should be the driving force leading industry structure and consolidation, and the other indicating that competition in the industry "was not real" and artificial barriers stood in the way of a movement toward a single CCP with natural monopoly characteristics.[14]

The former camp emphasized that it was not obvious that there is a need for public authorities in Europe to push for consolidation of clearinghouses. Private entities operating in their own self-interest should be allowed to determine whether consolidation would, on net, be beneficial to stakeholders. With any movement toward a more concentrated industry, certain parties will benefit from the change and others will be harmed. The views of *all* stakeholders, including the CCP owners, users, full members, and associate members, as well as large and small participants, should be considered. The marketplace is probably best situated to allow the net benefits to be analyzed and decisions made as to how industry structure should change. Competition across CCPs does exist, as does competition between CCPs and alternative clearing mechanisms, such as those used for over-the-counter products. The marketplace should determine how to proceed.

The "pro-coordination" camp held that, to a great extent, CCPs have developed as "silos" because of unique legal characteristics and other peculiarities of the countries in which they operate. Economies do exist, but cannot be exploited as long as these national barriers remain in place. Competition will not drive the industry toward the optimal structure because each CCP has monopoly-like control over the market it serves. The potential cost savings from decreasing the number of CCPs in Europe to one or two are so great that coordination may be justified to overcome barriers to consolidation.

Another difference between the two camps is in the type of inefficiency they identify. The "pro-consolidation" camp takes the view that significant economies of scale could be exploited if consolidation took place because, they assert, CCPs have natural monopoly characteristics. Per unit costs could be driven significantly lower with consolidation.

An alternative form of efficiency that the other camp is considering is technical efficiency, which is a measure of how effective management is at operating efficiently, *given* the current scale of operations. Stated differently, economies of scale are captured by a movement along a declining average cost relationship as output is increased and is a function of the production process. Technical efficiency is a measure of how close firms are to operating on the average cost relationship, where the cost relationship is representative of the best practices in the industry and is a function of the effectiveness of management.

In banking in the U.S., technical efficiency has been shown to dominate scale inefficiency.[15] This may or may not be the case for CCPs, but certain speakers expressed concern that technical inefficiency might offset any efficiencies that may be realized from increasing the scale of production. Taylor (2006), for example, questioned any policy encouraging the development of a monopoly, since history has shown monopolies to be relatively slow in innovating and notoriously poor in providing high quality service. She gave the example of the Department of Motor Vehicles (DMV) in the U.S., where state governments monopolize the provision of automobile drivers' licenses. Taylor said she did not "believe many people think of the DMV as a model of efficiency."

A possible alternative to CCP consolidation would be to have some form of interoperability through linkages across CCPs. This could take the form of CCPs having memberships with other CCPs in an attempt to allow participants in any one of the linked organizations to have indirect access to each of the other linked organizations. While this was generally viewed as being suboptimal, it was considered a possible intermediate step before actual changes took place in industry structure. Hardy (2006) argued that while some "spaghetti" form of interoperability would likely gravitate toward one CCP in the longer run, the market might accept this as a short-term, second-best solution. However, concerns were also expressed about the potential costs of moving in this direction, and some argued that CCPs would have to make significant investments to develop the linkages.

Among those that favored industry consolidation, a significant proportion thought the idea of one single, pan-European CCP was unrealistic. Concerning the optimal number of CCPs, Chan argued that while there was significant room for industry consolidation, two CCPs were probably better than one. While there are significant scale advantages from consolidation, the differences between cash and derivatives markets are so significant that separate CCPs may be necessary. As a result, Chan argued, it may be necessary to forego some potential cost savings of consolidation. Trundle (2006) also stressed these market differences. With derivatives, there is a time gap between the initial trade and the settlement of the transaction. This gap is the essence of the product, as traders explicitly want to take (and manage) position risk. In the cash market, the gap is shorter, is incidental to the process, and, ideally, could be eliminated. The general impression was that while there could be potential economies of scope from combining the cash and derivative markets, in practice there may be few cost synergies to be realized.

Finally, Jill Considine (2006) of the Depository Trust and Clearing Corporation (DTCC) discussed the evolution of the DTCC, which provides clearing and settlement services for the U.S. securities markets and has subsidiaries that act as CCPs for various segments of the market.[16] She characterized the DTCC as a monopoly created by the marketplace—because the market wanted a monopoly to take advantage of industrywide economies of scale in the clearing and settlement of the cash securities market. While being careful to emphasize that different considerations came into play in determining the structure of the DTCC than those for the European markets, she noted that the cost savings from consolidation were significant. These occur in the form of collateral savings and other standard processing efficiencies, as well as at the periphery in the form of reduced business continuity and technology costs. Considine emphasized, however, that consolidation in these markets was industry driven and was not the result of a mandate by industry regulatory forces.

As is perhaps evident from the preceding discussion, the most significant disagreement at the conference concerned the appropriate role of regulators and policy setters in "assisting" industry consolidation. The current push toward CCP consolidation in Europe was originally encouraged by statements from the European Commission.[17] Therefore, it was no surprise that conference participants were looking forward to the comments of Mario Nava of the European Commission. Nava (2006) began by stating that he would not present a new directive from the Commission aimed at a further integration of European clearing and settlement institutions and instead discussed limitations to the Commission's ability to have influence in this area.

He discussed the role of the Commission in industry structure issues and the scope of competition rules. The internal market rules of the Commission are intended to encourage competition and allow it to intervene in cases of anti-competitive behavior. While the rules may address the framework for a pro-competitive environment, the Commission cannot set up new institutions. Most importantly, Nava explained, the Commission does not have the power to establish a single CCP. Rather, it will rely on other means such as competition and moral suasion to achieve its goals. He stressed that the industry should critically evaluate its options and move forward, with full consolidation and interoperability offered as current alternatives. Nava described interoperability as pragmatic, although it may not bring the level of efficiency associated with full consolidation. The Commission's "intervention role," if there is indeed such a role, would be to

assist the industry by facilitating movement toward the industry's choice of outcomes.

Exchange & CCP relationships and governance

In the U.S., there has been a recent movement away from the traditional model of mutual ownership of exchanges and their clearing and settlement providers, toward a for-profit, stock ownership.[18] The movement could have a potential impact on the incentive structure and, possibly, the risk aversion of the organizations. Similarly, since 2001, there has been a robust dialogue within the European Union on adequate governance arrangements for central securities depositories and CCPs for two reasons. First, there is concern that vertical integration of stock exchanges with depositories and clearinghouses in a vertical silo may impede integration across national borders. The European markets aspire to ensure open access to financial market clearing and settlement services, regardless of the nationality of the participant.[19] Thus, structures that hinder open access would not be in line with European Union policies. Second, there has been significant debate in Europe as to what extent governance is a tool that can ensure appropriate management of service providers that combine a wide range of services having different risk profiles in the same legal entity. At the conference, this discussion of governance focused on two issues: the relationship between exchanges and CCPs, and the perceived advantages and disadvantages of the mutual governance model.

Tomoyuki Shimoda (2006) of the Bank of Japan discussed the relationship between exchanges and the CCPs that serve them. He stressed the need for close communications and cooperation when dealing with exposure control, the monitoring of participant positions, and price movements. Exchanges and the CCPs that serve them are normally both interdependent (for example, the number of contracts is a source of revenues for both parties, since they have the same participants) and complementary (it may be possible to reduce the costs for participants if exchanges and CCPs jointly monitor the common members). However, he expressed concerns about situations where there may be potential conflicts between the exchange and the CCP. For example, if an exchange is the monopolist owner of the CCP, conflicts may arise if the financial resources for risk management of the exchange and the CCP are pooled.

The recent rush toward demutualization and public listing has resulted in more complex situations involving potential conflicts among the various stakeholders in exchanges and the CCPs that support them. Shimoda illustrated this potential for conflicts by relating recent events involving the Osaka Stock Exchange. Following public listing of the exchange, an investment fund acquired a large position and ultimately became the exchange's largest shareholder (10 percent of the capital). The investor then sought a "cashing out" of the financial resources held by the CCP for use in case of a member default. A cashing out of the resources used by the CCP to mitigate counterparty risks would have reduced the market's ability to absorb the losses and would have transferred the cost of losses to members of the exchange through the loss-sharing arrangement. This case brought to the attention of the Japanese regulators the need for what has been called an "optimal degree of intimacy" among different stakeholders when designing the governance mechanisms of exchanges and CCPs.

While there can be a number of governance models for exchanges and CCPs—nonprofit, mutual ownership, for profit, and hybrids of these models—the main advantage typically associated with the mutual governance model is that the users have a long-term interest in the viability of the institution and are less likely to sacrifice those interests for short-term gains. This is sometimes thought to ensure that financial markets operate in line with public policy objectives. Concerns are sometimes expressed that moving away from this governance model may make the alignment of public and private concerns more difficult. However, even with the mutual governance model, Lee (2006) argued that there are numerous practical obstacles in the application of governance rules and that the purported benefits of the model may not be realized.

For example, often there are strict confidentiality requirements for the members of the governing boards of exchanges and CCPs. They are not supposed to share confidential information, nor are they to make decisions based on their own self-interests. However, since board members are often users of the exchanges and CCPs they govern, inherent conflicts arise. Additionally, Lee questioned whether it is possible to achieve the goal of reflecting the diversity of the user community in its governing board, noting that such boards typically have only 20 to 25 members. Alternatively, a board of 20 to 25 members can have practical problems in decision-making, particularly when the very nature of the business necessitates an understanding of many technical details to evaluate policy implications of such decisions. However, board members may tend to have a strategic vision of the business rather than detailed knowledge of the technical aspects of the business. These strategic and technical needs can be very difficult to reconcile. Lee therefore stressed that the differences across governance models may

not be as great as implied by the theory. There are difficulties in each model. This is somewhat consistent with Taylor's view that CCP behavior and performance are not necessarily driven by the ownership structure of the firm.

Risk management

Risk management may be the single most important function of CCPs, because they are a substitute for active risk evaluation and management by users of the CCP. As the markets evolve, there are issues as to how effective current risk-management procedures are and how the cost of these processes may change in light of projected changes in the structure of the CCP industry. Papers presented at the conference aimed to describe the current state of the art in CCP risk management and to address some of these projected changes.

One session presented research evaluating the use of *collateral and margins* in the securities and settlement industry. Froukelien Wendt (2006) of De Nederlandsche Bank described the role of margin, the various types of margins collected by CCPs within their risk-management frameworks, the current use of intraday margins in Europe, and the costs and benefits of intraday margin.

Replacement cost risk is the risk that a counterparty to a transaction will default before final settlement has occurred. Since the CCP is the counterparty to each transaction, it is exposed to the cost of replacing the original transaction at current market prices. Because prices may have changed since the contract was originated, the CCP could suffer a loss when it fulfills its side of the contract. To manage replacement cost risk, CCPs require member firms to deposit collateral or margin. Initial margin is set to cover potential future losses on open positions and is typically based on calculations of the greatest loss that the position could sustain. Variation margin calls are periodic supplements to manage risk that bring the margin back into line with recent changes in market prices, and Wendt argues that they are typically made at the end of the day. In her definition, the variation margin can be held at the CCP (actually collateral to supplement initial margin) or passed through from trading losers to winners.[20] She discussed the increasing use of intraday margin calls that allow the CCP to offset replacement risk and position changes on a timelier basis.

Wendt identified three types of potential intraday margin: a routine intraday margin call (similar to the end of day call), a nonroutine call that is triggered by a significant price change, and a nonroutine call that is triggered by a significant position change by a particular trading member (that is, the trigger is quantity driven). The major benefit of an intraday margin call is to enable the CCP to better manage counterparty risk by reducing it in a timely manner and/or to allow for the early detection of a troubled member. It may also better align collateral with the trading patterns and resulting exposure of day traders. Additionally, since traders are maintaining margin in line with the risks they pose to the CCP, they are bearing the additional costs of holding their positions. Such arrangements should decrease moral hazard, since traders have risk-management incentives that are consistent with the interests of the CCP and the market as a whole.[21]

However, these benefits come at a cost. The CCP will have to put systems in place that allow for the prompt determination of positions and margin needs. Similarly, the members must have facilities in place to obtain the necessary funding to satisfy the call and back-office procedures in place to verify their positions and reconcile any discrepancies.

Wendt noted that all European CCPs currently have the authority and operational capacity to initiate an intraday margin call on a nonroutine basis, and more are moving toward having a routine intraday call. While she described the routine call as an industry best practice, she said it may not be optimal for all CCPs. There are associated costs and benefits from putting procedures in place, and each arrangement should be carefully analyzed for the net benefits of initiating this change.

Next, Alejandro García of the Bank of Canada and Ramo Gençay (2006) of Simon Fraser University discussed how they combined statistical methods with risk measures to determine how best to value collateral, particularly to protect against unexpected market events. Accurate valuation is important because there is delay between the time the collateral is pledged and the time when it has to be sold to cover losses. In the interim, the collateral can change value and to account for this possibility, haircuts are placed on the value of the collateral. García and Gençay focused on the tradeoff between requiring additional (costly) collateral as a result of increasing the haircut and the resulting lower risk associated with an extreme (tail) event because of the additional collateral. Their work evaluates commonly used practices to calculate the haircuts and finds favor with extreme value theory, arguing that it leads to efficient haircuts and adequately accounts for events that could significantly affect the value of the collateral.

The researchers' goal is to develop a measure of the risk–cost frontier that indicates the tradeoff between the probability of an extreme tail event occurrence and the increased costs associated with holding

additional collateral. To develop the measure, García and Gençay used alternative measures of the cost of risk—measured as value at risk (VaR) and expected shortfall (the average loss given that the VaR has been exceeded, also noted as ES)—and alternative distributional assumptions concerning the returns on the assets. Extreme events are in the tails of the distribution, and past studies have shown that the assumption of normally distributed returns probably understates the true probability of the extreme events. To account for this, the authors use extreme value theory, which allows for a return distribution with "fat tails." They then do a comparison using the alternative return distributions and different measures of the cost of risk—VaR or ES. Using simulated equity returns data, they find that using extreme value theory results in accurate risk measures when using either VaR or ES. Thus, extreme value theory leads to efficient measures of haircuts that adequately reflect the risk derived from the tail of the return distribution.

Additional analysis using real data from the Canadian airline industry produced similar results. In future research, they intend to extend the analysis to cover portfolios of collateral instead of individual securities and to analyze the valuation of debt instruments for extreme events.

The final paper in this session was by John Cotter of University College Dublin and Kevin Dowd of Nottingham University and was in the same vein as García and Gençay. However, Cotter and Dowd (2006) focused on the choice of a risk measure and the resulting characteristics of the measure. The risk measures considered include VaR, ES, and the spectral risk measure (SRM). Moving from VaR to ES allows the model to take into account additional information by calculating the average loss once the VaR is exceeded. Going still further, the SRM allows the model to take into account the degree of risk aversion of the users—that is, the attitude toward losses. It could do this by placing different weights (greater, for example) on higher losses further out in the tail of the loss distribution. Thus, a clear expected pecking order emerges, with ES being preferred to VaR, and SRM estimators better in principle than the ES.

The authors applied the analysis to real data on heavily traded futures contracts—S&P500, FTSE100, DAX, Hang Seng, and the Nikkei225—from 1991 to 2003. Somewhat surprisingly, they find all risk measures lead to similar estimates. The S&P500 and FTSE100 contracts appear to be the least risky and the Hang Seng the most risky contract. The VaR and ES estimates have fairly similar degrees of precision, but SRM estimators were found to be somewhat less precise.

The discussant for this session, Jean-Charles Rochet of the University of Toulouse, praised the authors for providing clear descriptions of current state-of-the-art risk-management approaches. However, he argued that he would like to see a clearer conceptual framework for evaluating the alternative measures. Is there a means to determine how to optimally combine different risk-management tools, such as margin requirements, clearing funds, and capital? How are risks and costs traded off? And how is it optimally done with a multiple tool set? He stressed the need for a more comprehensive optimization process that should take into account all relevant parties and not just the clearing service providers.

Another session evaluated the implications of alternative CCP risk-management arrangements in light of recent industry innovations. John P. Jackson and Mark J. Manning (2006) of the Bank of England considered the potential impact of two distinct trends in the clearing arena: an expansion in the range of products cleared via CCPs and the recent trend toward CCP industry consolidation. They approached the problem by constructing an analytical framework that expands upon the central idea of earlier work by Baer, France, and Moser (2004) that collateral has a cost that must be incorporated when deciding on optimal risk-management procedures. They then simulate the implications of the industry moving from a single product, bilateral clearing arrangement to a multiproduct, multilateral clearing arrangement for replacement costs and risk.

To summarize their results, moving from bilateral to multilateral netting results in significant decreases in risk and costs. Benefits increase, but at a decreasing rate, as the number of members in the clearing arrangement increases. Margin-pooling benefits are also realized when multiple assets are cleared through a single CCP. The extent of the risk reduction is shown to depend on the variance and covariance of price changes and trading positions in the assets held. Finally, the benefits of consolidation were found to increase more if margin was set on a portfolio basis instead of an asset-by-asset basis. Applying data from LIFFE (London International Financial Futures Exchange) on open interest in the EURIBOR (Europe Interbank Offered Rate) and FTSE100 futures contracts, their analysis shows that the expected replacement cost losses were 20 percent lower when contracts cleared through separate CCPs were consolidated into one.

Finally, Rajna Gibson and Carsten Murawski (2006) of the Swiss Banking Institute emphasized the distinct difference in the performance of exchange-traded derivatives and OTC derivative products.

While exchanges have not recently experienced notable credit events, the same cannot be said of OTC market products. On the surface, they suggest that it appears that risk-mitigation mechanisms used by the exchanges have been relatively more effective than those used in the OTC market. In general, however, the authors argued that the impact of risk-mitigation mechanisms is not fully understood and needs to be more fully analyzed. To initiate that analysis, they evaluate the affect of various mechanisms on market liquidity, default risk, and the wealth of market participants. The risk-mitigation procedures considered include initial margin, initial margin plus variation margin, and initial and variation margin combined with a CCP arrangement.

The authors conducted their analysis within a dynamic model of swap contracts where all market participants are hedgers—thus, there are no speculators to add liquidity to the market. Banks are given an initial endowment and use the funds to trade derivatives contracts with each other to hedge the price risk to their initial endowment. Given the complexity of the model with numerous nonlinearities, the model is analyzed via simulations. While the model is an abstraction from actual markets, it is thought to capture the features of derivatives markets. These features include significant market concentration, significant credit exposures in derivatives contracts, participants' requirement to pledge cash as collateral, and a zero capital requirement to cover default risk exposure for contracts supported by a CCP.

The analysis is conducted in a period of extreme stress when risk-mitigation mechanisms are deemed to be most needed. Under these conditions, the authors' analysis indicates that default rates actually *increase* as risk-mitigation efforts are increased. Introducing initial margin generates perverse effects as it increases default severity (losses given default). Having margin combined with a central counterparty tends to reduce loss-given default but, in some cases, impairs a bank's ability to hedge and, on net, has negative consequences for the bank's wealth. Thus, the authors conclude that default-risk-mitigation mechanisms might have a negative effect on wealth at times when market participants expect them to be most valuable.

The discussant for this session, James Moser of the Commodity Futures Trading Commission, raised issues related to the assumptions employed in the modeling of risk-mitigation behavior. However his major point was one directed at market regulators. There is frequently a tendency to believe that, without regulators, exchanges would be slow to respond to risks. In fact, Moser's research finds exactly the opposite result, that is, the market responds relatively quickly to mitigate risks. This does not occur because exchanges are more risk averse, but rather because the inclination to manage risk results from an interest in increasing trading volumes. Thus, it is in the interest of the exchanges to mitigate risk. Firmly establishing the self-interest of exchanges adds to the credibility of their risk-mitigation efforts and affects policy choices. Research, such as the two papers in this session, can be seen as attempts to identify and begin to understand the linkages between trading activities and the risk-management practices of exchanges.

Conclusion

One goal of the conference was to bring together policymakers, researchers, and industry practitioners to engage in a multidisciplinary discussion of key legal, risk-management, and public policy issues relating to central counterparty clearing arrangements. Toward that goal, the participants debated how these structures might best evolve to meet the clearing and settlement needs of the dynamic and growing financial markets around the world.

Another goal of the conference sponsors was to encourage further research concerning the clearing and settlement of payments, with special interest in risk-mitigation processes. Thus, there was an attempt to bring together top researchers in this area to discuss their current work and explore the potential for future research. The conference clearly succeeded in gathering together in one place researchers who have done seminal work in this area. This was evident in John Jackson's comments about the state of the economic literature concerning CCPs. Looking at the audience and his fellow panelists, Jackson noted "…. you're all here!" Whether the conference promotes further research in this area remains to be seen. The sponsors are hopeful that it will.

NOTES

[1]The Clearing Corporation, formerly known as the Board of Trade Clearing Corporation, was the clearinghouse for the Chicago Board of Trade until the creation of the "common clearing link" for the Board of Trade and the Chicago Mercantile Exchange.

[2]As further discussed later in this article, it is imperative that the substitution of the CCP for each of the counterparties be legally binding. This is often achieved via a process known as novation.

[3]The complete program is included in appendix 2. Additional information, including drafts of some of the presentations, is available at www.ecb.int/events/conferences/html/ccp.en.html

[4]For discussions of the historical evolution of clearing and settlement arrangements, see Moser (1994, 1998), Kroszner (2000), and Schaede (1991).

[5]More accurately, it has exposure to each clearing member of the CCP. Traders that are not members of the CCP must have their trades cleared by clearing members.

[6]Haircuts are discounts applied to the market value of securities that have been posted as collateral.

[7]See Koeppl and Monnet (2006).

[8]See for example, Considine (2001). See also Baer and Evanoff (1991) for a discussion of netting in payments more generally.

[9]Bliss and Papathanassiou (2006) stressed the problems associated with legal uncertainty and the efforts in both the U.S. and Europe to address the concerns.

[10]See appendix 3 for the Bank for International Settlements, Committee on Payment and Settlement Systems and the Technical Committee of the International Organization of Securities Commissions (CPSS–IOSCO) best practice recommendations for CCPs.

[11]While not disputing the point, Rubin Lee (2006) of the Oxford Finance Group made the argument that he thought that concerns about the systemic risk associated with clearing and settlement institutions were "exaggerated."

[12]See Bank for International Settlements, Committee on Payment and Settlement Systems and Technical Committee of the International Organization of Securities Commissions (2004). The Task Force was jointly established by the Committee on Payment and Settlement Systems (CPSS) of the central banks of the Group of Ten countries and the Technical Committee of the International Organization of Securities Commissions (IOSCO).

[13]The push for consolidation in Europe is exemplified in comments by McCreevy (2005) and joint statements by AFEI/Assosim/FBF/LIBA/SSDA (2005, 2006). The 2006 statement is exceptionally far reaching and calls for "…the imposition of the unbundling of the vertical silos if private stakeholders do not start the process on their own" [italics added].

[14]Broadly speaking, Gisler and Taylor took positions consistent with the former group, and Giovannini and Chan with the latter.

[15]See, for example, Berger, Hanweck, and Humphrey (1987) and Evanoff and Israilevich (1995).

[16]The National Securities Clearing Corporation (NSCC) acts as a CCP for broker-to-broker equity, corporate bond and municipal bond, exchange-traded funds, and unit investment trust (UIT) trades in the U.S.; the Fixed Income Clearing Corporation (FICC) acts as a CCP for government securities and certain mortgage-backed securities; and the Emerging Markets Clearing Corporation (EMCC) acts as a CCP for emerging market securities.

[17]See McCreevy (2005) and joint statements of AFEI/Assosim/FBF/LIBA/SSDA (2005, 2006).

[18]CCPs are typically associated with exchange-traded products. However, there has been a recent push to move OTC contracts to CCPs when the characteristics of the products allow it; for example, when products are sufficiently standardized. The conference discussion covered some of these issues, but most of the discussion concerning a (non-CCP) facility introduced by the Depository Trust and Clearing Corporation to help in administrative issues, such as trade confirmation, matching, assignment, and reconciliation. See the comments of Peter Axilrod (2006) of the DTCC.

[19]The Directive on Markets in Financial Instruments of 2004 has already required this for CCPs (2004/39/EC).

[20]Wendt uses the term to describe the funds that are paid by a clearing member to settle any losses resulting from price changes, independent of whether the funds are maintained at the CCP or are passed through to the members profiting from the price change. However, whether the funds are held or passed through by the CCP has implications for its ability to manage member defaults.

[21]This point was raised by the discussant, Jean-Charles Rochet.

APPENDIX 1: DERIVATIVES AND OTC CENTRAL COUNTERPARTIES[a]

A. Organizational information on CCPs in the European Union

Member state	CCP	Corporate form	Ownership structure	Instruments and products cleared
Austria	Central Counterparty Austria GmbH (CCP.A)[b]	Commercial entity	50% Wiener Börse, 50% Oesterreichische Kontrollbank (the settlement bank)	Derivatives and securities
Belgium	LCH.Clearnet S.A., a subsidiary of LCH.Clearnet Group	Bank	See France	See France
Denmark	Stockholmsbörsen AB[c]	Commercial entity	Group owned; see Sweden	Derivatives
Finland	Stockholmsbörsen AB[d]	Commercial entity	Group owned; see Sweden	See Sweden
France	LCH.Clearnet S.A., (Banque Centrale de Compansation) a subsidiary of LCH.Clearnet Group	Bank authorized by the "Comité des Etablissements de Crédit et des Entreprises d'Investissement" with their ongoing supervision being performed by the "Commission Bancaire." Its rules have to be approved by the Autorité des Marchés Financiers (AMF)	Subsidiary of Euronext, branches in Belgium and Amsterdam. LCH.Clearnet Group is owned 45.1% by exchanges; 45.1% by former members of LCH; and 9.8% by Euroclear. Of the 45.1% owned by exchanges, Euronext owns 41.5%, but its voting rights are limited to 24.9%	Equities and bonds; warrants; exchange-traded derivatives; swaps; commodity and energy; interest rate & commodity futures and options; equity and index futures & options; OTC-traded bonds and repos
Germany	EUREX Clearing AG	Commercial entity	Public company, 100% affiliate of Eurex Frankfurt AG, an 100% affiliate of Eurex Zurich AG, which owned in equal parts by Deutsche Börse AG and the SWX Swiss Exchange	Equities, derivatives, repos and bonds, OTC options, and futures corresponding to those contracts admitted for trading on Eurex Deutschland and Eurex Zurich
	Clearing Bank Hannover	Commercial entity		Agricultural and energy products
Greece	ADECH	Commercial entity	A 99% subsidiary of Hellenic Exchanges, which is owned by local banks and foreign and local investors	Derivatives and repos
Hungary	KELER	Public limited company	Owned by Magyar Nemzeti Bank (53.33%), Budapesti Stock Exchange (26.67%), and the Budapest Commodity Exchange (20%)	Derivatives, spot markets, OTC
Ireland[e]	EUREX Clearing AG	See Germany	See Germany	Irish securities and exchange-traded funds (ETFs)

APPENDIX 1: DERIVATIVES AND OTC CENTRAL COUNTERPARTIES[a] (CONTINUED)

Member state	CCP	Corporate form	Ownership structure	Instruments and products cleared
Italy	Cassa di Compensazione e	Commercial entity Garanzia (CC&G)	Since 2000, the Italian Stock Exchange has the majority with 86%	Exchange-traded derivatives and equities since 2003
Netherlands	LCH.Clearnet S.A., a subsidiary of LCH.Clearnet Group	Bank	See France	See France
Portugal	LCH.Clearnet S.A.	Bank	See France	See France
Spain	MEFF	Commercial entity, division of MEFF Exchange	Group-owned by MEFF–AIAF–SENAF Holding de Mercados Financieros	Exchange traded derivatives; OTC trades
Sweden	Stockholmsbörsen AB	Commercial entity	Group-owned by OMHEX Group	Derivatives; OTC fixed income products
United Kingdom	LCH.Clearnet Ltd; founded in 1888 as The London Produce Clearing House, Limited	Commercial entity; recognized Clearing House (RCH) supervised by the FSA under the UK's Financial Services and Market Act 2000 (FSMA).	Group-owned, a subsidiary of LCH.Clearnet Group, see also France	Equities, derivatives, repos, and swaps

[a]From Bliss and Papathanassiou (2006). The list should not be considered exhaustive.
[b]Operational as of January 2005.
[c]Operational as of February 2006.
[d]Operational as of January 2005.
[e]As of December 5, 2005.

APPENDIX 1: DERIVATIVES AND OTC CENTRAL COUNTERPARTIES[a] (CONTINUED)

B. Organizational information of derivatives clearing organization in the U.S.

CCP	Corporate form	Ownership structure	Instruments and products cleared
AE Clearinghouse, ILLC	Subsidiary of the Actuarials Exchange	Exchange owned	Cash settled OTC contracts excluded from the Commodity Exchange Act (CEA) executed on a board of trade exempted from the CEA.
The Clearing Corporation (CCorp)	Commercial entity; first founded in 1925 as the Board of Trade Clearing Corporation	Owned by its members	Euro denominated products traded on Eurex Futures and options on futures
Chicago Board of Trade (CBOT)	As of 2005, stock company (exchange founded in 1848)	As of 2005, stock, for-profit holding company with stockholders (CBOT Holdings) and Board of Trade of the City of Chicago, Inc., a nonstock, for profit derivatives exchange subsidiary with members (CBOT)	From 2004 to 2008, the CME provides clearing for CBOT and CME products, with the possibility of extension through the Common Clearing Link. Futures and options on futures
CME Clearing House	Clearing division of the Chicago Mercantile Exchange Holding, Inc. (CME), a Delaware corporation founded in 1898	Exchange owned. Since 2002, CME has been (the first) publicly traded exchange in the U.S.	CME provides clearing to CME products; futures and options related to agricultural commodities, equity index, foreign exchange, interest rate, weather, energy. With effect as of 2004, CME provides clearing for all CBOT products
Hedge Street, Inc.	Division of Hedge Street Inc. a Delaware corporation	Exchange owned; affiliate of Hedge Street Inc.	Fully collateralized cash settled futures and options listed for trading on the market HedgeStreet Inc.
Kansas City Board of Trade Clearing Corporation	Commercial entity, wholly owned subsidiary of the Exchange Kansas Trade Clearing Corporation	Exchange owned; the exchange is member owned	Futures and options
LCH.Clearnet Ltd. (LCH)	Commercial entity, subsidiary of LCH Ltd	See Belgium	OTC interest rate swaps and commercial energy products, financial futures and options
MGE Clearing House	Department of the Minneapolis Grain Exchange, a private company (MGE)	Exchange owned. The MGE is a nonprofit, membership organization	Futures and options

APPENDIX 1: DERIVATIVES AND OTC CENTRAL COUNTERPARTIES[a] (CONTINUED)

B. Organizational information of derivatives clearing organization in the U.S.

CCP	Corporate form	Ownership structure	Instruments and products cleared
New York Clearing Corporation (NYCC)	Not-for-profit Corporation under the Laws of the State of New York founded in 1915, designated clearing organization for the Board of Trade of the City of New York, Inc. (NYBOT). NYBOT is the only designated contract market after the merger of the Coffee, Sugar & Cocoa Exchange, Inc. (CSCE) and the New York Cotton Exchange (NYCE) was completed in 2004	Exchange owned, subsidiary of the NYBOT, a member owned exchange.	Futures and options
NYMEX Clearing House	Division of the New York Mercantile Exchange (NYMEX)	Exchange owned	OTC energy contracts, futures
The Options Clearing Corporation (OCC)	Corporation under the laws of Delaware founded in 1973	Exchange owned. It is equally owned by the American Stock Exchange, the Chicago Board Options Exchange, the International Securities Exchange, the Pacific Exchange, and the Philadelphia Stock Exchange	Equity derivatives, securities options. Security futures Commodity futures and options on commodity futures

[a]From Bliss and Papathanassiou (2006). The list should not be considered exhaustive. Summary information on CCPs associated with the DTCC is provided in footnote 16 of the article.
[b]Operational as of January 2005.
[c]Operational as of February 2006.
[d]Operational as of January 2005.
[e]As of December 5, 2005.

APPENDIX 2: ISSUES RELATED TO CENTRAL COUNTERPARTY CLEARING
JOINT CONFERENCE OF THE EUROPEAN CENTRAL BANK AND
THE FEDERAL RESERVE BANK OF CHICAGO

Monday, April 3, 2006

Opening Remarks: Gertrude Tumpel-Gugerell, Member of the Executive Board of the European Central Bank

Panel 1 Setting the Context
Chair: Patrick M. Parkinson, Board of Governors of the Federal Reserve System

Diana Chan, Citigroup
Yvon Lucas, Banque de France
Tomoyuki Shimoda, Bank of Japan
John Trundle, Euroclear SA/NV

Lunch
Keynote Speech: Randall S. Kroszner, Governor, Board of Governors of the Federal Reserve System

Invited Session I

CCP Foundational Issues
Chair: Robert Steigerwald, Federal Reserve Bank of Chicago

Derivatives clearing, central counterparties and novation: the economic implications
Robert Bliss, Wake Forest University, and Chryssa Papathanassiou, European Central Bank

Central counterparties
Thorsten Koeppl, Queen's University, and Cyril Monnet, European Central Bank

Discussant: Charles Kahn, University of Illinois

Invited Session II
Collateral and Margins
Chair: Douglas Evanoff, Federal Reserve Bank of Chicago

Intraday margining of central counterparties: EU practice and a theoretical evaluation of benefits and costs
Froukelien Wendt, De Nederlandsche Bank

Valuation of collateral in securities settlement systems for extreme market events
Alejandro García, Bank of Canada, and Ramo Gençay, Simon Fraser University

Extreme spectral risk measures: an application to futures clearinghouse margin requirements
John Cotter, University College, Dublin, and Kevin Dowd, Nottingham University

Discussant: Jean-Charles Rochet, University of Toulouse

Conference Dinner
Dinner Speech: Tommaso Padoa-Schioppa, Minister of Economic Affairs and Finance, Italy, and
Former Member, Executive Board, European Central Bank

Tuesday, April 4, 2006

Panel II
Industry Structure and Developments

Chair: Alberto Giovannini, Unifortune Asset Management SGR

Peter Axilrod, The Depository Trust and Clearing Corporation
Daniel Gisler, Eurex
David Hardy, LCH.Clearnet Limited
Kimberly S. Taylor, Chicago Mercantile Exchange

APPENDIX 2: ISSUES RELATED TO CENTRAL COUNTERPARTY CLEARING JOINT CONFERENCE OF THE EUROPEAN CENTRAL BANK AND THE FEDERAL RESERVE BANK OF CHICAGO (CONTINUED)

Session III
CCP Risk Management
Chair: Jens Tapking, European Central Bank

Comparing the pre-settlement risk implications of alternative clearing arrangements
John P. Jackson and Mark J. Manning, Bank of England

Default risk mitigation in derivatives markets and its effectiveness
Rajna Gibson and Carsten Murawski, Swiss Banking Institute

Discussant: James T. Moser, Louisiana Tech University and Commodity Futures Trading Commission

Lunch
Keynote Speech: Michael Moskow, President, Federal Reserve Bank of Chicago

Panel III
CCPs and the Future Development of Financial Market Clearing and Settlement
Chair: Daniela Russo, European Central Bank

Jill Considine, The Depository Trust and Clearing Corporation
Ruben Lee, Oxford Finance Group
Mario Nava, European Commission

Concluding Remarks: Jean-Claude Trichet, President, European Central Bank

APPENDIX 3: CPSS–IOSCO TECHNICAL COMMITTEE RECOMMENDATIONS FOR CENTRAL COUNTERPARTIES (CCPS)

CPSS–IOSCO Recommendations for Central Counterparties (CCPs)

1. Legal risk
A CCP should have a well founded, transparent, and enforceable legal framework for each aspect of its activities in all relevant jurisdictions.

2. Participation requirements
A CCP should require participants to have sufficient financial resources and robust operational capacity to meet obligations arising from participation in the CCP. A CCP should have procedures in place to monitor that participation requirements are met on an ongoing basis. A CCP's participation requirements should be objective, publicly disclosed, and permit fair and open access.

3. Measurement and management of credit exposures
A CCP should measure its credit exposures from its participants at least once a day. Through margin requirements, other risk-control mechanisms or a combination of both, a CCP should limit its exposures to potential losses from defaults by its participants in normal market conditions, so that the operations of the CCP would not be disrupted and participants that are not in default would not be exposed to losses that they cannot anticipate or control.

4. Margin requirements
A CCP that relies on margin requirements to limit its credit exposures to participants should have sufficient margin requirements to cover potential exposures in normal market conditions. The models and parameters used in setting margin requirements should be risk based and reviewed regularly.

5. Financial resources
A CCP should maintain sufficient financial resources to withstand a default by the participant to which it has the largest exposure in extreme but plausible market conditions.

6. Default procedures
A CCP's default procedures should be clear and transparent, and they should ensure that the CCP can take timely action to contain losses and liquidity pressures and to continue meeting its obligations. Key aspects of the default procedures should be publicly available.

7. Custody and investment risks
A CCP should hold assets in a manner whereby risk of loss or of delay in its access to them is minimized. Assets invested by a CCP should be held in instruments with minimal credit, market, and liquidity risks.

8. Operational risk
A CCP should identify sources of operational risk and minimize them through the development of appropriate systems, control, and procedures. Systems should be reliable and secure and have adequate, scalable capacity. Business continuity plans should allow for timely recovery of operations and fulfillment of a CCP's obligations.

9. Money settlements
A CCP should employ money settlement arrangements that eliminate or strictly limit its settlement bank risks, that is, its credit and liquidity risks from the use of banks to effect money settlements with its participants. Funds transfers to the CCP should be final when effected.

10. Physical deliveries
A CCP should clearly state its obligations with respect to physical deliveries. The risks from these obligations should be identified and managed.

11. Risks in links between CCPs
A CCP that establishes links either cross-border or domestically to clear trades should evaluate the potential sources of risks that can arise, and ensure that the risks are managed prudently on an ongoing basis. There should be a framework for cooperation between the relevant regulators and overseers.

12. Efficiency
While maintaining safe and secure operations, CCPs should be cost-effective in meeting the requirements of participants.

13. Governance
Governance arrangements for a CCP should be effective, clear and transparent to fulfill public interest requirements and to support the objectives of owners and users. In particular, they should promote the effectiveness of the CCP's risk-management procedures.

14. Transparency
A CCP should provide market participants with sufficient information for them to identify and evaluate accurately the risks and costs associated with using its services.

15. Regulation and oversight
A CCP should be subject to transparent and effective regulation and oversight. In both a domestic and an international context, central banks and securities regulators should cooperate with each other and with other relevant authorities.

Sources: Bank for International Settlements (BIS), Committee on Payment and Settlement Systems of the central banks of the Group of Ten countries (CPSS) and Technical Committee of the International Organization of Securities Commissions, 2004, exhibit 1.

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