

Consolidation in central counterparty clearing in the euro area

Since the introduction of the euro in 1999, there has been a dramatic rise in securities trading (in particular equities trading) in the euro area. As a result, it has become increasingly convenient for market participants to settle market transactions on a net basis instead of on a transaction by transaction basis. Moreover, the increasing size of the risks involved and the growing role of anonymous trading have reinforced the need for market participants to have the risks associated with the netting process managed by a central counterparty (a financial institution which interposes itself between buyers and sellers).

Several central counterparty clearing houses already exist in the euro area, but they mainly handle derivatives. There are also a number of projects under consideration or under implementation relating to securities. However, economies of scale and network externalities would favour a higher degree of concentration. As a result, a group of major global investment banks has supported the idea that Europe needs only one central counterparty clearing house, which would be multi-currency and multi-product (equities, bonds, derivatives and commodities).

The ECB is carefully monitoring and analysing these developments. Indeed, central counterparty clearing could affect the smooth execution of monetary policy operations, the sound functioning of payment and settlement systems and the stability of the financial markets in general. The consolidation process adds to the complexity of the issue: on the one hand, consolidation in central counterparty clearing could help to increase efficiency in the clearing and settlement of securities; on the other hand, the potential systemic consequences of a central counterparty's failure increase with its size.

This article describes how central counterparty clearing houses function, discusses questions related to consolidation and analyses issues of concern for central banks. The ECB is obviously more directly interested in issues related to its "domestic" infrastructure, i.e. systems that mainly or exclusively handle assets denominated in euro.

I The functioning of central counterparty clearing

What does a central counterparty clearing house do?

A clearing house determines the obligations that result from debit and credit positions arising from the trading of financial assets and calculates the amounts which need to be settled, typically through securities settlement systems. Financial obligations may be settled one by one, i.e. on a gross basis. They may also be settled net, whereby only the difference between debit and credit positions is settled. "Settlement netting" refers to situations when a clearing house or a securities settlement system computes positions without taking risks itself. "Central counterparty netting" refers to situations when the clearing house interposes itself as a buyer to the seller and as a seller to the buyer, thus creating two new contracts which replace the original single contract. The legal process of replacing the original counterparties and becoming the single

counterparty for all participants is generally called novation.

Netting can be bilateral or multilateral (see Box I). Bilateral netting reduces the bilateral flows between each pair of counterparties to one single "net" obligation. Multilateral netting provides for the netting of all obligations stemming from participants in the system and produces one single obligation due to or from each counterparty within the netting group. Central counterparty clearing houses use multilateral netting because it minimises the number of obligations to be settled.

However, central counterparty clearing houses do not necessarily have to be used for clearing, since transactions can be sent directly after trading to the relevant securities settlement system for settlement.

Box I

The securities clearing and settlement process

One of the main services which central counterparties provide is netting. It is important to distinguish between two types of netting arrangements. In some cases, netting means the pure calculation of net obligations arising from trades without affecting the underlying contracts. In other cases, netting results in the substitution of the original contractual obligations for equivalent obligations with a central counterparty interposed between the seller and the buyer. The terminology commonly used for these two types of netting varies. In this article, “settlement netting” is used to describe the case where net obligations are calculated without any impact on the contractual obligations. “Netting by novation” is used to describe the netting process

which also includes the replacement of the original contracts. Settlement netting can be provided not only by central counterparties, but also by securities settlement systems which mainly offer custody services and final delivery of securities from the seller to the buyer. By contrast, netting by novation can only be provided if a third party becomes the legal counterparty in a trade, i.e. the central counterparty.

Chart A

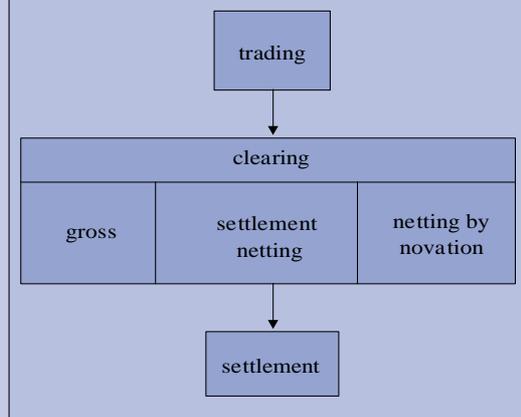


Chart B

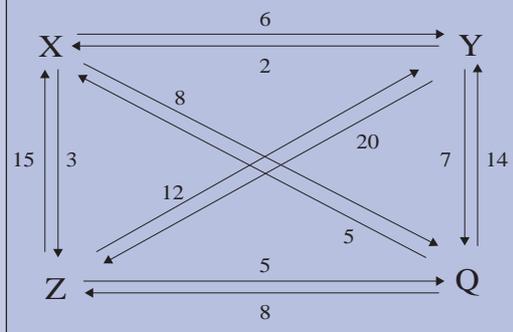
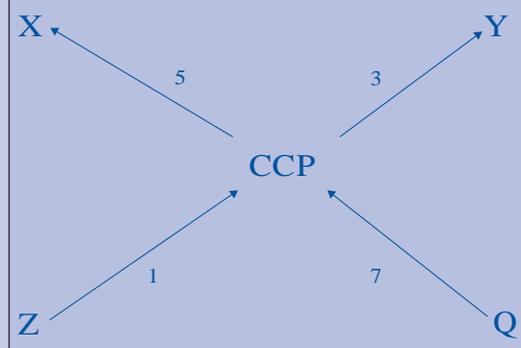


Chart B may help to illustrate the effect of multilateral netting. Four market participants (X, Y, Z and Q) are assumed to be trading with one another. Chart B indicates the amounts of a specific asset which the individual market participants are consequently assumed to owe one another.

All obligations due to or from each market participant are further assumed to be replaced by substituting a central counterparty which receives the assets from net debtors and distributes them to net creditors. In Chart B, the counterparties X and Y are net creditors, while Z and Q are net debtors. For instance, X is to receive assets of $15+2+5$ and is to deliver assets of $3+6+8$, which results in a net amount of 5 to be received. In cases where there are three or more market participants, the positions of any net creditor may not mirror that of any single net debtor, so the existence of an intermediary is indispensable. The result of introducing multilateral netting is depicted in Chart C.

This example demonstrates that netting can be used to reduce the number of settlements (in the previous example down to four). In addition, if the central counterparty assesses the risks against their clearing members at a net level, the netting of obligations may also reduce the margin required to collateralise current and potential future credit exposures.

Chart C



What are the main benefits of central counterparty clearing?

Many of the benefits of central counterparty clearing can be attributed to *multilateral netting*. Multilateral netting allows for a substantial reduction in the number of settlements and, therefore, in operational costs, including settlement fees. In addition, “netting by novation” (see Box I), a service offered by central counterparty clearing houses, allows for a reduction in individual contractual obligations, thus affecting market participants’ books and balance sheets. To the extent that national legislation limits the trading volume of a participant to a certain fraction of its balance sheet, netting by novation could create more trading opportunities for that participant. Netting by novation may help to reduce the margin required to collateralise current and potential future credit exposures. Central counterparty clearing may also help to reduce the capital required to support participants’ trading activity. In addition, central counterparty clearing helps to *sustain anonymity* where the trade execution process itself is anonymous, which can be a valuable service when market participants fear a market impact as a result of their trading activities.

In addition to multilateral netting, central counterparty clearing creates benefits mainly by providing *risk management services*. When engaging in a securities trade, market participants are exposed to the risk that their trading counterparties will not settle their obligations when due (liquidity risk) or will not settle their obligations at all (counterparty credit risk). In order to protect themselves against such risks, market participants can take protective measures such as exposure limits and collateralisation. Central counterparty clearing houses manage risks for their members, replacing exposures to multiple counterparties with a single exposure to a single central counterparty. Central counterparties thus enable market participants to trade without having to worry about the creditworthiness of individual counterparties. This does not mean that

central counterparty clearing houses eliminate counterparty credit risk, but they manage and redistribute it much more efficiently than market participants could do in isolation.

Central counterparty clearing creates benefits not only for individual participants, but also for the economy as a whole. For instance, since the interposition of a single counterparty makes it easier for market participants to manage counterparty credit risk, the number of trading opportunities increases. *As a result, market liquidity increases, trading is stimulated, transaction costs diminish and the functioning of capital markets improves.*

What are the main risks to which a central counterparty clearing house is exposed?

Like any market participant, central counterparty clearing houses are exposed to legal risks and to technical risks. These are not specific to central counterparty clearing houses and are, therefore, not analysed any further here. However, it is particularly important that these risks are appropriately mitigated because of their potentially systemic implications.

As the counterparty to its members, the clearing house is exposed to the risk that one or more clearing members may default. In the field of securities, this may trigger, in particular, principal risk and replacement cost risk. Principal risk is the risk run by the clearing house if it delivers a security, but is not able to receive the related payment, or if it makes a payment, but does not receive the security it bought. In principle, this risk has been largely eliminated by the introduction of delivery versus payment mechanisms in securities settlement systems. It is, however, very important that central counterparties settle their obligations only in settlement systems which can demonstrate that they have put in place delivery versus payment mechanisms which are effective and legally sound.

Central counterparty clearing houses are also exposed to replacement cost risk, a type of risk which is not prevented by delivery versus payment mechanisms. Replacement costs result from the need for the solvent party to buy (or sell) the securities which have not been delivered (paid for) at a time when market conditions may have developed unfavourably. This kind of risk cannot be eliminated and has, therefore, to be mitigated.

What are the main risk management procedures employed by central counterparty clearing houses?

Safeguards against the default or insolvency of a participant can be divided into three categories. First, there are safeguards designed to minimise the probability of failure of a market participant. In particular, financial and operational requirements for membership in the central counterparty clearing house are used for this purpose. Second, there are safeguards designed to minimise the loss to the central counterparty if a clearing member fails. This category relates to margin required to collateralise the current and the potential future credit exposures arising from the trades of a participant. Participants have to deposit margin requirements in the form of cash or high-quality bonds. Another way to minimise losses is to limit the build-up of such exposures by periodically settling positions, especially in the derivatives markets. In highly volatile markets,

sophisticated systems are used to calculate, if needed during the day, additional margin requirements which have to be provided immediately. Third, there are safeguards designed to cover losses which exceed the value of the defaulting member's margin collateral. For this purpose, central counterparty clearing houses maintain own resources and guarantees such as capital, guarantee funds, insurance schemes and member guarantees.

Why is there growing demand for central counterparty clearing services?

There are several reasons why demand for services provided by central counterparty clearing houses has increased, particularly within the euro area. First, the growing volumes in securities trading (and in particular in equities trading) have increased the demand for netting. Second, the internationalisation of securities trading, the introduction of new electronic trading platforms, the switch to order-driven anonymous trading systems in national stock exchanges, and cross-border mergers of stock exchanges have made it increasingly difficult for trading parties to control counterparty risk themselves. There is, therefore, a rapidly growing need for guaranteed clearing and settlement. The introduction of the euro and the progressive merger of 12 domestic markets, which it entails, have made these two factors particularly relevant in the euro area.

2 The need for consolidation

What is the situation in the euro area today?

In the euro area, most countries have established central counterparty clearing houses which are attached to particular local organised markets (stock exchanges or derivatives exchanges), most of which provide services mainly, or exclusively, for derivatives. As a result, the central counterparty clearing

houses in the euro area have traditionally confined their services to single countries.

However, the pattern of a single central counterparty clearing house serving one market in one country is changing. For instance, Euronext (the result of a merger of the Amsterdam, Brussels, and Paris exchanges) intends to use Clearnet, formerly the central counterparty of the Paris

exchange, as the single central counterparty clearing house for the group. Eurex Clearing, the central counterparty clearing house of the Eurex exchanges in Frankfurt and Zürich, has also indicated plans to expand its services to securities. This means that by merging institutions which provide the same services, Clearnet and Eurex have experienced some horizontal integration. However, until now in the euro area, vertical integration within the securities market infrastructure – the so-called “silos” – has been much more pronounced than horizontal integration. Vertical integration is the integration between institutions providing different services along the value chain (i.e. trading, clearing, settlement and custody). This is the case, for instance, in Germany where the Deutsche Börse provides the trading platform and is the main shareholder of both the central counterparty clearing house (Eurex) and the settlement system (Clearstream Germany).

Why is there a need to consolidate?

The introduction of the euro has accelerated the consolidation process in the securities markets infrastructure within the euro area. Developments in technology and legal harmonisation at the European level are also highlighting the need for further consolidation. In this context, competition and network externalities are further increasing the pressure for a more integrated and efficient infrastructure both at the global and at the domestic level.

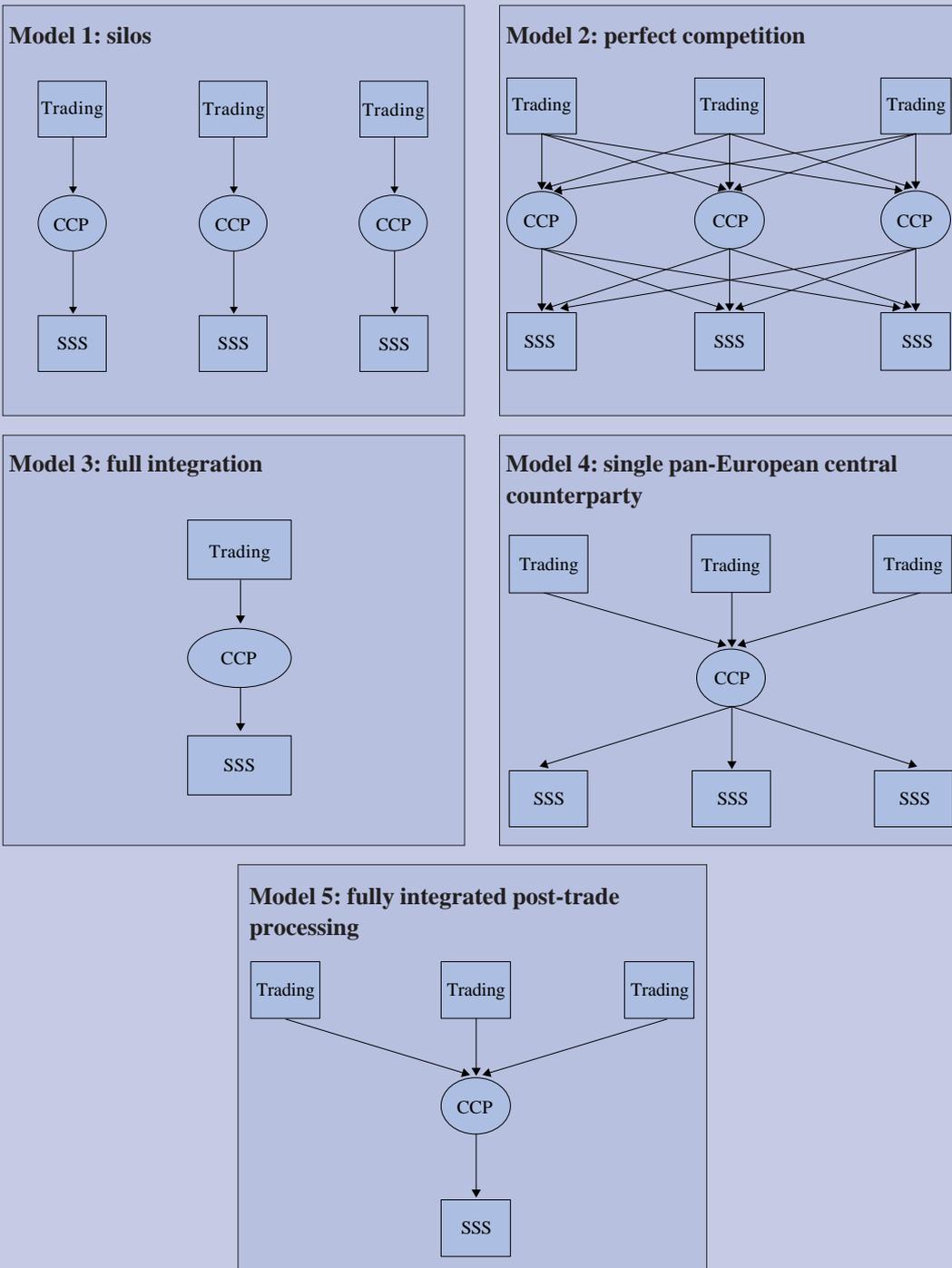
The increasing number of transactions and the availability of several (traditional and/or automated) platforms to trade the same securities has made it increasingly useful for market participants to settle market transactions in a single location and on a net basis rather than on a gross basis. Moreover, the increasing size of the transactions and the growing role of anonymous trading have reinforced the need for market participants to have the risks associated with the netting process managed by a central counterparty.

At present, there are several central counterparty clearing houses operating in the euro area. There are also several projects under consideration to set up new central counterparty clearing houses in countries where there is currently no such market infrastructure. However, the need for multiple central counterparty clearing houses could be challenged on the grounds that economies of scale and network externalities favour a high degree of concentration. In particular, an uncontrolled proliferation of clearing infrastructures could create inefficiencies. For instance, the existence of a fragmented infrastructure would oblige banks and investment firms to participate in more than one central counterparty clearing house, and therefore to maintain several interfaces and to cope with different standards, market practices and clearing rules. Service providers may also face inefficiencies in terms of multiple investments used to maintain, enhance and develop central counterparty technology.

As yet it is still unclear which model of integration will eventually prevail in the euro area. Indeed, there are a number of barriers to consolidation, including legal difficulties, a lack of standardisation and vested interests. Other forms of integration in central counterparty clearing such as joint ventures and interoperability could also be considered. Interoperability enables co-operation between central counterparties at a technical level by agreeing on common processes, methods, protocols and networks. A common feature of all of these approaches is that they could help to improve the efficiency of the systems. However, they should only be considered as “second best” in the event that consolidation proves too difficult to achieve in the short run.

Is securities clearing a natural monopoly?

The present situation in Europe has led the European Securities Forum, a group of global market participants, to promote the

Box 2**Consolidation models**

At least five integration models can be identified as illustrated above.

The first model represents the situation which is emerging today: consolidation takes place around a few “silos” which offer integrated services for trading, clearing and settlement. In the short run, silos facilitate automated processing (straight-through settlement), but, in the long run, they may perpetuate the drawbacks of the monopoly solution (absence of competition) and those of fragmentation (limited economies of scale).

The second model represents a situation in which clearing houses would be created in many countries, but in which market operators would be free to choose which infrastructure they wish to use at the level of trading, clearing and settlement. In theory, this model would allow competition to play its role efficiently. However, it would be very expensive to implement because it would multiply the number of infrastructures. Costs for users would be high because of the low degree of economies of scale. User costs could even increase further owing to the absence of a high degree of standardisation and the number of interfaces required. In any case, this model may not be stable in the medium term because market forces would probably soon eliminate some elements of this complex infrastructure.

At the other extreme, the third model represents full integration at all levels (trading, clearing, and settlement) with only a single entity serving the whole euro area (or even the whole of Europe). This solution would entail maximum benefits from economies of scale and network externalities. However, the model would trigger the traditional drawbacks of monopolies. There would be no freedom of choice for the users and no competition.

Another model would derive from a situation where there would be horizontal integration only at the level of central counterparty clearing, where the network externalities and economies of scale are thought to be the greatest. Competition would be maintained at the trading and settlement levels.

Eventually, if the cost saving potentials were equally large in both clearing and settlement, the fifth model could result from the consolidation process. It depicts a situation that would allow for full integration in clearing and settlement, but leave trading subject to competition.

establishment of a single pan-European central counterparty clearing house. They have expressed concerns that the current securities clearing and settlement systems in Europe might soon become unable to process the expected increase in trading in European securities. Moreover, market participants active in several European markets are worried by the prospect of having to finance several identical market infrastructures in several different countries. Furthermore, the costs of cross-border transactions in Europe are said to be at least ten times higher than the costs of domestic transactions. This obviously constitutes a handicap for European capital markets in comparison to the United States.

According to the European Securities Forum proposal, the single central counterparty clearing house would not only be pan-European (i.e. multi-currency), but also multi-product. Indeed, technically, a clearing process could be used to clear a wide range of products. And if the market movements of different products are correlated, their clearing in a single place would also allow for

a reduction in margin requirements (for instance, margin against a long position in a bond futures contract might be offset against margin against a matching short position in the “cash” market (i.e. in bonds)).

The United States, which is often given as a model for the consolidation of central counterparty clearing houses in Europe, still has separate central counterparties for different products. But there are also plans to foster consolidation across products¹.

This proposal raises the important issue of whether or not central counterparty clearing is a natural monopoly. Indeed, the theoretical case for a high degree of concentration exists (economies of scale and network

¹ In the United States, there are several central counterparty clearing houses in operation, each of which focuses on the clearing of different products. The National Securities Clearing Corporation (NSCC) is the sole clearing house for all equity, corporate debt and municipal bond transactions. Other central counterparty clearing houses provide services for various kinds of options and futures. Central counterparty clearing in the United States has thus achieved full consolidation at the level of each product type, but there is little consolidation in clearing across different products.

externalities). However, the question of whether or not central counterparty clearing should be regarded as a natural monopoly is controversial. It is clear that, in the short term, a single infrastructure would maximise network externalities and economies of scale. However, these short-term advantages have to be balanced against the inefficiencies traditionally triggered in the long run by the absence of competition (lack of dynamism, lack of innovation). At a time when former natural monopolies, in the fields of telecommunications, energy and transportation for instance, are being progressively dismantled, the emergence of new monopolies in the financial sector might be questionable.

It is often argued that appropriate governance could mitigate the risk of inefficiencies. This generally means that a single central counterparty clearing house should be governed by its users. However, it is not certain that this would be sufficient because there will inevitably be conflicts of interest between different categories of user (e.g. between global players and local players) or between the owners/management of the clearing house and its users. Global custodians and central counterparty clearing houses are also potential competitors, because global custodians provide netting facilities to smaller participants such as fund managers and brokers/dealers.

In any case, the market should decide whether consolidation means that only one system should remain. But, obviously, if this is the case, appropriate regulation should be set up in order to mitigate the risk that monopoly positions will be abused.

Even if securities clearing could be considered as a natural monopoly, the logical geographical scope of the monopoly is likely to be the euro area. Each major monetary area tends to have its own domestic market infrastructure (i.e. its own payment systems, securities settlement systems and stock exchanges etc.). In particular, infrastructure may trigger liquidity problems which can only be addressed by the competent local authorities, in particular by central banks. Now that the demand for securities clearing is growing significantly, it would appear logical for a coherent domestic infrastructure to develop within the euro area in the field of central counterparty clearing.

The existence of a domestic infrastructure does not prevent the emergence of international infrastructures, such as the Continuous Linked Settlement Bank in the field of payment systems or the International Central Securities Depositories in the field of securities settlement. However, international infrastructures are superimposed on domestic ones and are not designed to replace them.

3 The interests of central banks in central counterparty clearing

Why are central banks interested in the smooth functioning of securities clearing and settlement systems?

In the second half of the 1990s, central banks around the world started to devote more attention to the consequences of the very substantial increase in securities trading. The possible consequences of major disruptions in the securities clearing and settlement process were analysed in depth. In particular, central banks forced securities settlement systems to adopt delivery versus payment

mechanisms. More recently, market willingness to adopt the use of central counterparty clearing houses has encouraged central banks to become more aware of the risks involved.

Central banks have an interest in ensuring the smooth functioning of securities clearing and settlement systems because of the potential impact a major disruption may have on two of their key responsibilities: the smooth implementation of monetary policy and the smooth functioning of payment systems.

Monetary policy can be affected because central banks provide liquidity to banks through collateralised loans. If collateral cannot be delivered on time, the implementation of the chosen monetary policy stance would be affected. Moreover, disruptions in the functioning of securities clearing and settlement systems could substantially affect financial markets.

In the area of payment systems, central banks have two main concerns: first, that collateral to secure overdraft positions might not be delivered in time; and, second, that a disruption in the securities clearing and settlement process might prevent market participants from receiving funds on time, which they had intended to use to make other payments. In both cases, the risk of bottlenecks in the payment systems would be very large. In practice, the development of delivery versus payment mechanisms to safeguard securities settlement, and the development of real-time gross settlement to safeguard payments, have created interdependencies between payment systems and securities clearing and settlement systems.

What are the central banks' main concerns?

In relation to securities clearing, the central banks' main concerns can be summarised as follows:

- *Concentration of risk*: central counterparties concentrate risk more than any individual participant in a decentralised market; as a result, the consequences of an inappropriate design of the system or of inappropriate management would be correspondingly larger than for individual market participants.
- *Moral hazard*: given the potential systemic effects of the failure of a major clearing house, there is a risk that the market participants will assume that central banks will bail out an ailing central counterparty ("too big to fail" effect).

- *Information asymmetry*: market participants may hesitate to trade with counterparties they have little information about. This is particularly true in times of financial crisis when there is a general suspicion that counterparties may be close to collapse. The existence of a single counterparty reduces the level of information asymmetry only if there are no doubts about the solvency and competency of the central counterparty clearing house itself. If there were fears about the solvency of a central counterparty, the whole market might stop trading.

- *Race to the bottom*: competition between central counterparties entails the risk that these service providers may try to improve competitiveness by applying more lenient risk management standards.

- *Contagion effects*: clearing houses typically undertake activities which support the securities settlement process, such as the matching and netting of trade orders. Problems on the clearing side could, therefore, spill over to the settlement side. Moreover, in the case of cross-product clearing and/or cross-currency clearing, there is a risk of contagion from one market to another in the event of the failure of a central counterparty (or even in the event of doubts over the creditworthiness of the central counterparty).

Given the potential systemic implications of securities clearing and settlement systems, the establishment of standards for risk management is essential. The process of setting standards has already started, with initiatives being driven by market participants or pursued in the framework of international co-operation between regulatory bodies. The European Association of Central Counterparty Clearing Houses (EACH) has developed standards for central counterparties which should now be assessed by the appropriate authorities.