

Investigation of risks
arising from the emergence of
multi-cleared trading platforms

Joint Regulatory Authorities
of
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Investigation of risks arising from the emergence of multi-cleared trading platforms

Summary

Following the introduction of the Code of Conduct for clearing and settlement in November 2006, and the publication of the Access and Interoperability Guideline in June 2007 (Guideline) a working group of the Joint Regulatory Authorities of LCH.Clearnet Group (JRA)¹ conducted a study regarding the implications of interoperability on the risks to which central counterparty clearing houses ('CCPs') would be exposed.

The study describes and analyses the risks to central counterparties (CCPs) due to links with other CCPs. The JRA is of the opinion that this study should be shared with other regulators at an ESCB and CESR level, in order to contribute to the understanding of the extent to which different approaches to interoperability may give rise to different outcomes in terms of how risk is managed.

The study identifies that CCPs are potentially exposed to additional risks once links with other CCPs have been established. These risks can stem either directly as a consequence of a link and/or indirectly from being a part of a network of CCPs. Risks which may increase include counterparty credit risk, legal risk, liquidity risk, operational and settlement risk, as well as contagion risk. In calculating the position at risk of a CCP towards a linked CCP it should take into account the specific risk profile of the linked CCPs and possibly lower probability of default compared to a clearing member. However, the impact of a failure of a linked CCP may be greater than the impact of failure of a clearing member. Also, it is acknowledged that there is scope for the risk arising from a CCP being a single point of failure to decrease.

The JRA is of the opinion that *in principle* in the current situation the existing regulatory arrangements should be sufficient to address the risks of links where the following conditions are met:

1. CCPs identify, understand and manage any new or increased risks arising from interoperation. In this context, the JRA welcomes initiatives from the industry to develop risk management principles for interoperability;
2. CCPs are under the supervision of a competent authority and are appropriately submitted to a risk-based supervisory regime;
3. The competent authorities are supervising and/or overseeing the CCPs in a proper, co-ordinated and compatible way, such as by assessing the CCPs on a regular basis against the CPSS/IOSCO Recommendations for CCPs or their adherence to other appropriate regulatory requirements;
4. CCPs comply with the requirements of the competent authority, their assessment results are overall satisfactory and they are assessed to be taking effective action to mitigate risks;

If these conditions are met, we can be assured that processes are in place which should lead to interlinked CCPs being sound systems which mitigate risks in an appropriate way, and which should be resilient to the effects of extreme market conditions.

¹ The Joint Regulatory Authorities is a committee composed of the overseers, securities regulators and prudential supervisors from Belgium (NBB and CBFA), France (BdF, CECEI, SGCB and AMF), the Netherlands (DNB and AFM), Portugal (BdP and CMVM) and the UK (BoE and the FSA) aiming at facilitating co-operation and co-ordination between competent authorities in the supervision and oversight of entities within the LCH.Clearnet Group.

However, it is noted that we can not currently have sufficient information to determine whether all these conditions are currently met within the EU, as there are no examples of interoperation under the Code (and few outside of it). Accordingly we can not fully assess whether CCPs have appropriate mitigants for new and increased risks arising from interoperation. A CCP which is indirectly, via another CCP, connected to a third CCP could have insufficient visibility on the risk profile of that third CCP (condition 1). In addition, and as outlined in the paper, there is specifically uncertainty about the compatibility of varying approaches used by the different CCPs and regulators (conditions 2 and 3). There may be differences in how regulators apply and interpret recommendations, such as the CPSS/IOSCO Recommendations, (conditions 3 and 4). Furthermore, the JRA currently have limited information about how other regulators within the EU and beyond it approach these risks and would welcome further international dialogue in this area.

1. Introduction

Competition driven by a number of factors, including changes at the trading level, together with the implementation of the MiFID and the development of the European Code of Conduct for Clearing and Settlement, are acting to change the landscape of the post trading clearing space². If competitive clearing becomes more prevalent, it could lead to the formation of a network of CCPs providing services to trading platforms. Following the Code of Conduct, which states that CCPs should allow interoperability for cash equity services and the publication of the Access and Interoperability Guideline ('Guideline'), a number of requests for interoperability have been made and received by CCPs. This paper aims to describe and analyse the potential risks posed to CCPs from interoperability links.

Parallel to this analysis by the JRA working group a number of institutions and/or working groups are discussing related subjects which could complement the analysis of this paper in the future.

- 1 *EACH*³: a working group consisting of risk managers of EACH members are investigating the risk impact of interoperability requests and designing a set of guidelines and principles for risk management in this respect. Its mandate is limited to credit risk associated to a link. It does not include legal or operational risk, nor the risks associated to a network of CCPs. Both risk managers of Ltd and SA take part in this working group and have supplied the JRA Working Group with information.
- 2 *CESR Post Trading Expert Group (PTEG)*: a sub committee of CESR investigating the current regulatory responses to requests for interoperability.
- 3 *ESCB-CESR*: The *ESCB-CESR working group* is intending to publish recommendations for clearing and settlement in the European Union, which will include a recommendation on links between CCPs.
- 4 *ECB*: the ECB has published an article on links between CCPs in July 2007.

² The signatories of the Code of Conduct are not legally bound by this agreement to interoperate.

³ European Association of Clearing Houses

Related to Interoperability are the articles 34, 35 and 46 of MiFID which 'prohibit undue restrictions to the admission of transactions for CCP clearing and stipulate that trading platforms are free to choose their post-trading service providers. Regulators should avoid duplicate controls of such providers in cases where these providers are subject to the supervision of other regulators'.

2. The concept of interoperability

The Guideline defines four types of links between a requesting CCP (the CCP seeking access to another CCP to extend their service provision to other markets or products) and the receiving CCP (the CCP that is approached by the requesting CCP):

1. Transaction Feed: Access by a CCP to a transaction feed from or to another organisation, i.e. from a trading platform to the CCP, or from the CCP to a CSD, eventually via another CCP.

Three other types of link are distinguished between CCPs whereby the CCPs become counterparties of each other:

2. Standard Access: A CCP is a standard clearing member in another CCP. The Rulebook of the receiving CCP applies in full to the requesting CCP.
3. Customised Access: A CCP is a clearing member in another CCP, but in addition certain parts of the service offering to the requesting CCP are customised. The Rulebook of the receiving CCP applies partly to the requesting CCP.
4. Interoperability: a scenario in which the receiving CCP recognises the requesting CCP in its nature and regulatory status as a CCP and vice versa. Interoperability implies an advanced form of relationship where a CCP is not generally connecting to the existing standard service offerings of the other CCP but where mutual arrangements are made.

All types of link specified above can be a one or a two-way in nature, which refers to whether or not both interlinked CCPs clear one or more markets which were initially cleared by the other CCP. In case of a one-way link the market(s) of one of the CCPs is cleared by both.

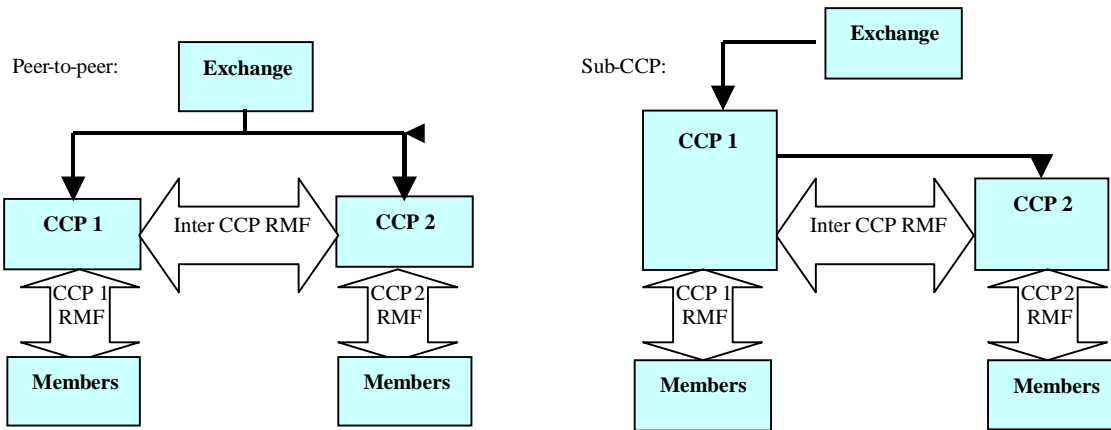
The Guideline has defined two interoperability models, depending on how the transaction feed is flowing, namely a 'peer to peer model,' as outlined in paragraph 4 above, where each CCP receives the trade feed directly from the trading venue and a 'sub-CCP' model, where the 'sub-CCP' receives its trade data from the prime CCP, as illustrated by the figure 1 below.

This paper focuses on Standardized Access⁴, Customised Access and Interoperability, since these types of links affect the risk profile of the CCPs. In this paper 'link' will therefore refer to these three types of access. A request for a trade feed will not as such change the risk management framework of the CCP. Nonetheless, it is expected that in

⁴ If the receiving CCP has a default fund, Standard Access would appear to be in contradiction of article 84 of the Guideline. Standard Access implies that the requesting CCP is subject to all regular rules of the receiving CCP and will therefore have to contribute to the clearing fund of the CCP. The Guideline states that, in order to prevent 'contagion', CCPs cannot be forced to contribute to each others' Clearing Funds.

addition to the transaction feed coming from a trading platform (a vertical link), Customised Access or Interoperability will create a horizontal link so as to enable clearing of transactions between two clearing members that are members of the linked CCPs.

Figure 1: Interoperability models peer-to-peer and sub-CCP in addition to a transaction feed



RMF = Risk Management Framework

It may be underlined that the definitions of links as proposed by the Guideline are broad and do not specify the counterparty risk management frameworks that might accompany each type of links, except in the case of Standardized Access. The change of the risk profile of the CCPs did not appear to the JRA to be significantly different between the three different links defined by the Code. Therefore the risk analysis and the study of risk management frameworks were conducted independently of the type of links. In this respect, it is also worth mentioning that, as far as links between CCPs are concerned, all requests made under the Code of Conduct to date have been for interoperability⁵.

There are some inter-CCP links which pre-date the Code of Conduct. Annex 1 describes the current existing links between CCPs, based on the study of the ECB.

3. Risk analysis

Realisation of the Code of Conduct and the Guideline would change the current post trading landscape. If several links between CCPs are indeed established and a network of CCPs becomes a reality clearing members might rationalise their current clearing arrangements and concentrate their clearing within one or a few CCPs. Market shares of CCPs would change and competition between CCPs on tariffs could increase.

⁵ Based on information on links requests list as provided by EU Commission

Interoperability will introduce new risks for the CCPs concerned and these risks will have to be managed. Key for regulators is to identify these risks. Risks stemming from interoperability can be analysed on two levels: the risk arising from a link as such and the risk of CCPs being a part of a network of CCPs. Table 1 provides a summary of the different risks.

3.1. Risk of an individual link

A CCP is exposed to additional risks once it establishes a link with another CCP. Risks of such a link are identified by the CPSS-IOSCO Recommendations for CCPs ('recommendations'), especially RCCP 11⁶:

Table 1. Summary of risks from interoperability

| Risk | Risk event scenario | Effect on: | |
|------------------|--|-------------|--------|
| | | Probability | Impact |
| Individual link | Counterparty credit risk – failure of a counterparty | ↓ | ↑ |
| | Liquidity risk – need for additional resources | ↑ | ↑ |
| | Operational risk – all aspects; additional operational risk for a sub-CCP due to its dependency on the other CCP | ↑ | ↑ |
| | Legal risk – differing cross-border legal systems | ↑ | ↑ |
| | Settlement risk – differing buy-in procedures | ↑ | ↑ |
| Network of links | Network effect – interlinkages between CCPs allow risk to spread | ↑ | ↑ |
| | Incompatible cross-border regulation | ↑ | ? |
| | Single point of failure | ↓ | - |

▪ Counterparty credit risk (failure of linked CCP)

First a link exposes a CCP to a different profile of replacement cost risk. A link between CCPs creates credit risk for both CCPs. A CCP might fail, which leaves the other CCP with the need to replace, at current market prices, the net position of the failing CCP. If a CCP were to be treated like a clearing member, the measurement of the position at risk of a CCP towards a clearing member and to a linked CCP would be identical, since CCP risk measurement methodologies are normally independent of the status of the counterparty behind the position exposure. However, the **probability** that a linked CCP or a clearing member defaults on its obligations will differ, as it is assumed that CCPs are not risk taking entities in the same way as ordinary clearing members. A CCP typically is subject to regulatory requirements specific to a CCP, such as the CPSS/IOSCO Recommendations or alternative requirements, which positively influence risk mitigation. Also, by definition a CCP has a balanced position, since it interposes itself between a buyer and a seller. Therefore the existing methodology of mitigating this risk can be used for CCP links as well, but it will have to be adapted to take into account the specific status of a CCP, and the fact that its probability of

⁶ The recommendations are recognised by all regulators and play a significant role in the Guideline. Article 12 of the Guideline states that a CCP can only refer to the Guideline (and therefore request a link) if it is observant of the RCCPs 1-6, 8, 10 & 11. Also it needs to be at least broadly observant of all remaining recommendations and as well as observing the recommendations as an overall assessment.

default may possibly be considered lower than that of a standard clearing member. However, the **impact** of a failure of a linked CCP may be greater than the impact of failure of a clearing member if a substantial value of business is cleared via the link.

Different options might be used to manage the replacement cost risk between CCPs:

a. CCPs require margin from each other and a contribution to each other's default fund.

To our knowledge this conservative option is not used today. In this option each CCP will cover the risk of default of the other CCP, both in normal and in extreme market circumstances, i.e. where initial margin is insufficient to cover losses. However, this option is not favoured by the Guideline because a CCP would be directly impacted by the default of a clearing member of the other CCP in situations where the default fund – including the linked CCP's contribution to the fund – is used. Moreover, the contributing CCP may then have to replenish its contributions by calling further contributions from its own members, on the assumption that it would be permitted to assign member default fund contributions to another CCP. Moreover, this solution would require each CCP to hold potentially large amounts of collateral with its linked CCP, which may be inefficient.

b. CCPs require margin from each other and instead of a contribution to each other's default fund, require from each other the provision of additional resources to cover losses in case of extreme market circumstances.

In this case, also, each CCP will hold margin to cover the risk of default of the other CCP, both in normal and in extreme market circumstances. However, this solution does not present the risk mentioned for option a. since the additional resources posted by each CCP will not be treated as a default fund contribution by the CCP holding the collateral and so can not be used to meet losses incurred as a result of a default of a clearing member. The difficulty however may be in calibrating adequately these additional resources. If they are too small, these resources could prove insufficient to cover the default risk of the linked CCP in stress conditions. If they are too large, the cost of each CCP holding potentially large amounts of collateral with the others in the network will be even higher than in case of option a.

c. CCPs require margin from each other, but no contribution to each other's default fund and no additional resources to cover losses in case of extreme market conditions

In this case, the replacement cost risk is covered in normal market conditions but not in extreme market conditions. This issue of the cost of each CCP holding potentially large amounts of collateral with the others remains, although to a lesser extent than in options a and b.

d. Not charge any margin to each other

If the CCPs do not margin each other, assuming that CCPs have a low probability of default in order to carry out their role, then the safe management of a default will rely upon the CCPs involved having robust legal arrangements to enable the transfer of resources between each other in case of a default of one of the CCPs to facilitate the surviving CCP to fulfil its obligations.

e. Expected loss calculation

CCPs calculate a possible loss based on stress-testing results, taking into account the post-default backing of the linked CCP (e.g. default funds, insurance, parental guarantee) and then calculate a recovery rate, which is the percentage of overall mark-to-market losses that will be left once the CCP's resources have been used up and which therefore has to be covered by collateral. Eurex and the Clearing Corporation use this model, see annex 1. This approach requires a great deal of transparency about members' positions for the host CCP to carry out the stress test.

It is understood that within the EACH working group two basic models for managing counterparty risk are being considered, which are models c and e. They may eventually adopt one or both models as a standard to manage the exposure between interlinked CCPs.

It seems that the basic assumption of existing counterparty risk management frameworks, i.e. that CCPs do not assess the probability of a member defaulting as a factor in calculating the margin requirement for a member, causes a mismatch in applying existing frameworks to the concept of linked CCPs. The assumed lower probability of a CCP default will not be reflected in a lower margin requirement, compared to the margin requirement for a clearing member. Treating a linked CCP as a regular member has the potential undesirable consequences of exposing the CCP to losses resulting from the default of a clearing member of the other CCP (as described in option a) or of requiring the CCP to lodge a large amount of collateral with the other CCP (as described in option b).

However, not requiring cover for a default in extreme market conditions (option c) or none at all d may not always be appropriate. Especially c appears as contradictory in itself because it would provide cover for a default of the other CCP under normal circumstances, but not under extreme circumstances, while it would be safe to assume that a default of a CCP would be likely to only occur under extreme market conditions. A solution might be in ensuring that in case of default of one of two linked CCPs, the surviving CCP has a claim over the assets of the defaulting CCP. However, CCPs would need to engage in very careful analysis before setting up such arrangements, in particular on the legal aspects, to ensure that they would be sufficiently robust.

In case the counterparty risk is covered by method a, b, c or e, particular attention should be paid to the arrangements supporting the mutual exchange of margins and possible contributions to the respective default funds. There is a risk that in the event one of the CCPs defaults, the margins held by the non-defaulting CCP will be cancelled out by margins it has lodged with the defaulting CCP as a consequence of prior transfer of title of the collateral. Use of third party, eg central bank guarantees is a possible response to such an issue, because the collateral can be then withdrawn by the non-defaulting CCP without it being accessed by the defaulting CCP.

Also, the foreseen changes in market share caused by links might have indirect consequences. They could be reflected in the clearing fund contributions and, as a consequence, possibly in the size of the fund. If the linked CCPs do not contribute to each others' clearing funds but do contribute to each other's counterparty exposures, a CCP may find it has to share the hypothetical default losses it has identified through stress testing its default funds across fewer parties. Accordingly it might be necessary to increase the contribution of the ordinary clearing members to be able to cover the same level of risk. It is not unthinkable that clearing members may seek to resist increases to their contributions to default funds, which if successfully may lead to the respective default funds decreasing. Especially if the size of the linked CCPs differ greatly, the smaller CCP might experience pressure to implement a large drop in value of its clearing fund and therefore in its ability to withstand an extreme situation. However, it is noted that the regulators of each CCP, and the risk management functions within the CCP itself, would strongly resist such pressure and so would prevent the CCP's default fund from becoming under-funded and presenting risks to the CCP and contagion risk to the network of interoperable CCPs.

The use of different margin methodologies may create additional cost to CCPs, since one of the two CCPs might call lower margin amounts from its clearing members than it has to contribute to the linked CCP (if they would exchange margins). One of the CCPs needs to deposit more collateral than it received from its member. For example, CCP1

charges its clearing member A 80. The counterparty B - member of CCP2 and therefore CCP1 functions as counterparty for this position to CCP2 - will be charged margin based on the margin methodology of CCP2. This might be 100. This leaves CCP1 with a gap of 20, because it only receives 80 from its clearing member A. This risk is considered to be fairly low because it is expected that the CCPs will have the ability to average the results of their different margin calculations where they judge it necessary to minimise such liquidity costs.

▪ **Liquidity risk**

A link exposes a CCP to additional liquidity risk, since a requesting CCP might need to deposit additional resources to cover the risk of default of the linked CCP. Moving liquidity cross-border might also increase liquidity risk.

▪ **Operational risk**

A link exposes a CCP to additional operational risk. Links may present operational risk due to the additional complexity of the technical and operational arrangements associated with the operation of the link, particularly during periods when one CCP modifies its systems. Sources of additional risk might be differences in time zones and operating days and hours. A sub-CCP might face additional operational risk, since it depends on the CCP that receives the trade feed directly from the exchange.

▪ **Legal risk**

A link exposes a CCP to additional legal risk. Links may present legal risk arising from differences between the laws and contractual rules governing the linked systems and their participants. One of these differences might be the moment of novation. In case of multiple and possibly indirect links, the question arises whether multiple (successive) novations are possible. Discrepancies might exist between two CCPs in the definition of the point of irrevocability. A link itself (i.e. the contractual relationship between two CCPs) also bears inherent legal risk. In cases where the CCPs decide to set up a framework where they have a claim over the assets of the other CCP, should this CCP default, the legal feasibility of the proposed device should be carefully analysed.

▪ **Settlement risk**

Although settlement risk predominately resides at the central settlement depository (CSD) level, a link may expose a CCP to additional settlement risk. For example, if the buy in procedures of the linked CCPs are not harmonised settlement risk might occur. CCP1 could execute a buy-in procedure against the linked CCP2 while CCP2 has not yet started a buy-in procedure with its clearing member that fails to deliver the required securities. CCP2 would then have to deliver securities which it has not yet received, causing CCP2 to be unbalanced. Moreover, depending on the procedure, it might have to pay a fine which it cannot automatically recover from its failing clearing member.

The EACH Working Group is developing a list of requirements that a requesting CCP should fulfil. The regulators will need to assess the completeness and the adequacy of these requirements and whether additional risk mitigating tools will be applied.

3.2. Systemic risk caused by a network of CCPs

A network of links between CCPs has implications for systemic risk and for the complexity of the market.

3.2.1. Interoperability increases systemic risk

In addition to the risks of individual links, a network of CCPs might give rise to additional systemic risk⁷. Systemic risk increases with the degree of inter-linkage between the various organisations, because the probability of contagion effects increases accordingly.

If a linked CCP defaults, which is an event with a very small probability, this might have a large impact on the CCP, its clearing members and other linked CCPs causing a shock to the financial system. Moreover, linking systems with one another creates a number of additional technical and legal risks for the whole financial system. An operational difficulty in a link between two CCPs can itself create contagion effects by resulting in failures to complete a settlement across the link.

The contagion effect can be contained if the risk management around the links between CCPs is prudent enough to ensure that linked CCPs can withstand the failure of another CCP's member, or in extreme cases the failure of another CCP. In the existing situation the arrangements should still be sufficient to mitigate the risks of links if certain conditions are met. First, CCPs themselves should identify, understand and manage these risks properly. However, a CCP which is indirectly linked with another CCP (for instance CCP1 and CCP4 in figure 3) would probably have a very low visibility on the risk profile of CCP4 and will have to rely on the "intermediate" CCPs (CCP2 in our example) for the risk control of this indirect link.

In addition, the contagion effect should be contained if CCPs are under the supervision of a competent authority and are fully submitted to a risk-based supervisory regime. The competent authorities should supervise and/or oversee the CCPs in a proper and compatible way, e.g. by assessing the CCP on a regular basis against the CPSS/IOSCO Recommendations for CCPs, or other appropriate regulatory requirements. Finally, CCPs should comply with the requirements of the competent authority and observe Recommendation 11 on links between CCPs or other equivalent regulatory requirements.

If these conditions are met, we can have a reasonable level of assurance that processes are in place which should lead to interlinked CCPs being sound systems which mitigate or cover their risks in an appropriate way and as such could be more likely to be able to withstand extreme market conditions.

A network of national CCPs would be exposed to different regulatory systems and standards, although regulatory colleges such as the JRA seek appropriate co-ordination and consistency of oversight. The JRA currently has limited information about how other regulators within the EU and beyond it assess CCPs. The CESR Post Trading Expert Group has made a first investigation into the different regulatory requirements per country with regard to the establishment of a link. This is a step to increase knowledge of each others' requirements.

⁷ See also 'Second Report on EU Clearing and Settlement Arrangements', 2003, Giovannini Group

Graphically this can be shown as follows:

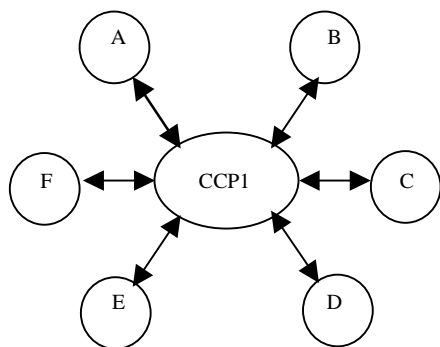


Figure 2: non-network model. The CCP is only exposed to risk from its members.

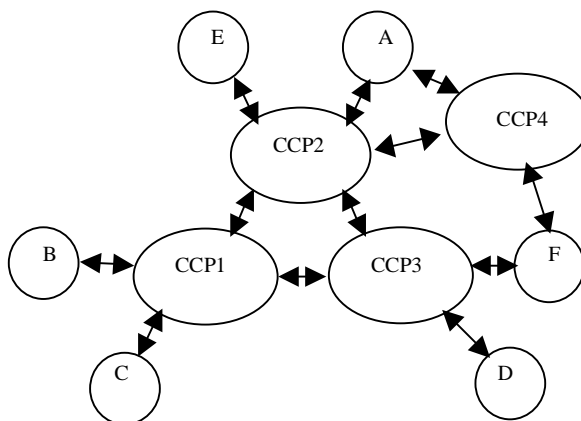


Figure 3: network model. The individual CCPs are exposed to risks from members and other CCPs. Also, because of the existence of the network the individual CCPs and their members are exposed to systemic risk.

Furthermore, it is unclear to what extent the regulators in the EU do actually use the CPSS/IOSCO Recommendations. The results of the CPSS/IOSCO assessment are publicly available for only a few CCPs in the EU. These assessment reports differ in the level of detail, reflecting different regulatory approaches. Not all regulators apply and interpret the CPSS/IOSCO Recommendations in exactly the same manner. An important requirement of the Guideline is that CCPs are not allowed to compete on risk management grounds, i.e. compete by offering lower margin requirements than in its ‘home market’. It is difficult to totally abandon the possibility of competition on risk when regulators assess the risk management frameworks in a different way.

Also, it is not clear at present how regulatory and oversight authorities will co-operate or will react in case of significant losses arising from extreme situations. Interoperability will further increase the interdependency of the various markets and might make it unclear which authority will have to react in which way to a crisis. On the other hand, if co-operation arrangements are established between regulatory and oversight authorities this may help ensure there is a global view of a network of CCPs and its associated risks.

3.2.1. Interoperability decreases risk of a single point of failure

One could argue that interoperability may also decrease risk. In case one linked CCP will default because of the default of one of its members, the cleared transactions from the surviving clearing members might be diverted and guaranteed by the surviving CCP(s). The exchange on which the trades are executed can continue its activity and moreover, the other clearing members are less impacted by the default of the CCP. As such the other CCPs function as back up. Such a scenario is based on a number of assumptions such as the possibility to transfer clearing member positions from one CCP to another CCP within tight timeframes.

A second way in which interoperability might decrease risk is by the transfer of volumes from correspondent networks from general clearing members to CCPs. CCPs are in general subject to more stringent regulatory regimes with regard to securities clearing and settlement arrangements. As such the clearing and settlement system as a whole might become safer.

3.2.2. Complexity increases

It is clear that complexity increases with two or more CCPs clearing a market. All CCPs have to link with each other and all CCPs have to measure the exposure to the other CCPs. This complexity may be avoided if the 'Scandinavian model' is adopted in which the incumbent CCP provides for a hub between the other CCPs in the same market (see annex 1). It seems unlikely that the incumbent CCP will provide such a facility to competing CCPs. It also raises the question which CCP is in fact the incumbent CCP.

4. Conclusions

From a risk perspective CCPs will potentially be exposed to additional risks due to links. Any individual link gives rise to additional counterparty, operational, legal, liquidity and settlement risks. In addition, due to a network of links the CCP is exposed to contagion risk and systemic risks may increase. However, there may be a reduction in the risks of CCPs being a single point of failure.

The JRA is of the opinion that *in principle* in the current situation the existing regulatory arrangements should be sufficient to address the risks of links where the following conditions are met:

1. CCPs identify, understand and manage any new or increased risks arising from interoperation. In this context, the JRA welcomes initiatives from the industry to develop risk management principles for interoperability;
2. CCPs are under the supervision of a competent authority and are appropriately submitted to a risk-based supervisory regime;
3. The competent authorities are supervising and/or overseeing the CCPs in a proper, co-ordinated and compatible way, such as by assessing the CCPs on a regular basis against the CPSS/IOSCO Recommendations for CCPs or their adherence to other appropriate regulatory requirements;
4. CCPs comply with the requirements of the competent authority, their assessment results are overall satisfactory and they are assessed to be taking effective action to mitigate risks;

If these conditions are met, we can have a reasonable level of assurance that processes are in place which should lead to interlinked CCPs being sound systems which mitigate or cover their risks in an appropriate way and as such could be more likely to be able to withstand extreme market conditions.

However, more information and dialogue between overseers and regulators is required to ensure all these conditions are met within the EU. Specifically, as outlined in the paper, there is uncertainty about the compatibility of varying approaches used by the different CCPs and regulators. The JRA currently has limited information about how other regulators within the EU and beyond it approach these risks. Given the differences between the regulatory frameworks, the regulatory provisions for CCPs might be different. This might present risks to links, especially in case of extreme situations. Co-operation agreements between regulators would help ensure there is a global view of a network of CCPs and its associated risk. Moreover, MiFID requires the regulators to increasingly rely on each other in the post-trading area because MiFID explicitly stipulates that regulators should avoid duplicate controls in cases where providers are subject to other ('home') regulators.

In addition, a network of links might cause a potential threat to the financial system. Not without reason regulatory requirements, including but not limited to the CPSS/IOSCO Recommendations, require that the financial resources of a CCP should be able to withstand the default of the clearing member with the largest exposure. A linked CCP might however cause a larger risk to the CCP than such a member. If the linked CCP defaults this might have a large impact on the CCP, its clearing members and other linked CCPs causing a shock to the financial system. Therefore, CCPs and their regulators should ensure, taking into account the specific risk profile of the CCPs and possibly lower probability of default, that they have taken all possible steps to assess and mitigate these risks, and that in doing so they should consider all the linkages between a network of CCPs, as well as the bilateral links under their immediate jurisdiction.

A network of links might however also decrease risk. In case one linked CCP will default because of the default of one of its members, the cleared transactions from the surviving clearing members might be diverted and guaranteed by the surviving CCP(s).

Annex 1 Existing links in the EU⁸

1 SA and CCG

In August 2004 a link was established between SA and CCG to cover the clearing of transactions in Italian government bonds traded on MTS SpA, EuroMTS Ltd and BrokerTec. It enables the members of SA and CC&G to benefit from common CCP services without being obliged to participate in the other CCP.

The CCPs have each created a new clearing membership category to take into account the specific nature of a CCP, compared with a regular clearing member. For cross-border operations between their respective clearing members the CCPs interpose themselves between the original counterparties as for any domestic trade. They have agreed on a common risk management strategy on a product-by-product basis. The same margining system is applied to all clearing members and to inter-CCP positions. In order to provide for risks not covered by initial and variation margins additional guarantees are requested. The CCPs do not contribute to each other's default fund.

2 Ltd and SIS X-clear

The link has been established for the clearing of virt-x equity trades. SIS x-clear has been an FSA recognised overseas clearing house (ROCH) since August 2004. Each CCP acts as a special participant in the other. Both CCPs' clearing members deal only with their own CCP as counterparty. For trades between members who clear through different CCPs, each CCP is the contractual and settlement counterparty with, on the one hand, its member and on the other, the other CCP. Each CCP posts collateral with the other for trades undertaken by its members with members of the other CCP but, unlike other 'normal' members of the CCP, does not contribute to the default fund. It should be noted that this is in the process of being changed from the way the link was first set up, under which x-clear was more like a General Clearing Member (ie ordinary participant) of LCH Ltd, in that it contributed to LCH Ltd's default fund and posted collateral with LCH, while there was no reciprocal requirement for LCH Ltd to contribute to x-clear's default fund or to post collateral.

FSA supervises the link as part of its overall regulation of LCH Ltd as a Recognised Clearing House and x-clear as a Recognised Overseas Clearing House (see below). LCH Ltd's embedded payment system is overseen by the Bank of England. As part of its assessment of LCH Ltd against the CPSS-IOSCO recommendations for CCPs, FSA assesses Recommendation 11 to be Observed. The FSA and Bank of England have an MoU with the Swiss Federal Banking Commission (SFBC) and the Swiss National Bank (SNB) and FSA hold regular meetings with the Swiss authorities.

3 Eurex Clearing AG and ClearingCorporation

CCorp has the status of a Special Clearing member in Eurex Clearing. Eurex Clearing does however not have a status within CCorp. The link was established in November 2004. From a legal point of view, trades executed by CCorp participants on the Eurex exchange are cleared by CCorp. From an operational point of view, the technical processing (excluding initial margin calculations and collateral management) is performed by Eurex Clearing, which acts as a system facilitator for CCorp and provides the infrastructure for clearing, settlement and position maintenance. CCorp is responsible for risk management processes, i.e. margin processing, collateral management, default procedures and the fulfilment of all guarantee obligations.

The difference between CCorp and a normal GCM is that the processing of CCorp and its participants is fully

⁸ Based on Kalogeropoulos, Russo and Schönerberger 'Link Arrangements of CCPs in the EU: results of an ESCB Survey', The Role of Central Counterparties, July 2007

integrated within Eurex Clearing. Legally, ECAG becomes the counterparty of a trade executed by CCorp on Eurex trading. CCorp becomes a counterparty of its participant via novation.

4 Ltd, OMX and VPS

The EDX market offers a combined order book with Sweden's OMX and Norway's Oslo Børs. EDX trades are cleared via LCH while OMX contracts are cleared through OMX's integrated clearing house and Oslo Børs trades are cleared through the VPS clearing house. OMX acts as a hub for the three clearing houses and therefore LCH and VPS have no direct technical or counterparty relationship.

LCH and OMX therefore have balancing positions with each other in cases where, for example, an OMX member trades with an EDX member. Initial margin is calculated every hour and exchanged every day. LCH and OMX mutually collateralise their positions via bank guarantees. To avoid frequent transfers between the CCPs, and in recognition of their special status, LCH and OMX operate a 20% credit tolerance against each other, ie further margin is not required until it exceeds 120% of the initial level. EDX makes available for trading both physically settled and cash settled products. Deliverable positions in physically deliverable contracts in which one of the counterparties is an OMX (or a VPS) member and the other is an LCH member will result in the transfer of the underlying stock between LCH and OMX as the physical leg of the settlement process.

OMX and LCH carry out annual due diligence on each other and are obliged to notify any material adverse changes to each other. Each clearing house operates its own approach to risk management which it applies to its members. OMX will utilise insurance, re-insurance and clearing house resources to meet default losses, rather than operating a member default fund. As a CCP, OM does not contribute to LCH's member default fund. There is an MoU between the FSA and the Swedish Financial Supervisory Authority (FI) which covers the activities of EDX.

5 Cross margining agreement between Ltd and CME

In March 2000, LCH and the Chicago Mercantile Exchange (CME) implemented a cross-margining agreement. This arrangement does not involve a membership link between CCPs and the two CCPs are not clearing for the same exchange. The arrangement is intended to replicate the margin offsets that would have been available to clearing members of LCH and CME (for their own account only) if certain instruments on the respective exchanges (Short Term Interest Rate contracts on CME and LIFFE) were traded on the same exchange, and hence reduce collateral requirements for clearing members.

The agreement is intended to leave LCH and the CME Clearing House Division no worse off in terms of financial resources available in a default situation than for internal offsets. If the defaulting member's proprietary account is in profit at one clearing house, in terms of margin provided versus the losses realised by the CCP in liquidating the defaulting member's position, then this amount would be available to offset any losses incurred by the other clearing house as a result of the liquidation of the defaulting member's position. This is a contractual arrangement between the CCPs and the members concerned and is governed by New York State law.

The margin offsets granted are subject to routine review each quarter, but either clearing house can initiate a review at any time. In the event of a member default, the CCP holding the profit-making side of the defaulting member's offsetting position will pass some or all of that profit over to the CCP holding the loss-making side of the off-set position, in order to make good any losses arising when the position is liquidated. There is a fund to cover rare situations in which both CCPs are in a loss-making position.

The CME is a self-regulatory organisation, subject to oversight by the CFTC. The FSA has a general MoU in place with the CFTC to permit regulatory cooperation if necessary.

Annex 2 Members of the JRA Working Group on Interoperability

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|---|-------------------------------|
| De Nederlandsche Bank - Chair | Froukelien Wendt |
| Autoriteit Financiële Markten, the Netherlands | Sander van Leijenhorst |
| Autorité des marchés Financiers, France | Delphine Vandenbulcke |
| Banque de France | Nathalie Rouillé |
| Bank of England | Alison Emblow, Claire Halsall |
| Commission Bancaire Financière et des Assurances, Belgium | Serge Rompteu |
| Comissão do Mercado de Valores Mobiliários, Portugal | Susana Marques |
| Financial Services Authority, United Kingdom | Ben Mitchell, Sarah Bray |
| National Bank of Belgium | Steven Van Cauwenberge |