Macro-prudential Commentaries

ESRB
European Systemic Risk Board
European System of Financial Supervision

Issue No: 6
November 2013

Central counterparties and systemic risk

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Following the commitments made by G20 leaders at the Pittsburgh summit to have standardised derivatives contracts centrally cleared, a corresponding European Union (EU) regulatory framework was enacted in 2012, which currently is being implemented. Consequently, central counterparties (CCPs) will increase in systemic importance and may be considered a central hub for systemic risk management, placing considerable responsibility on CCPs, their regulators and supervisors. This commentary provides an overview of the role of CCPs in the financial system and analyses the importance of CCPs' resilience for broader financial stability. Notwithstanding the benefits that result from the clearing requirement, the change in market organisation may lead to new vulnerabilities related to risk concentration, complex interdependencies or potential collateral scarcity. In addition, uncoordinated micro-prudential risk management practices could lead to systemic stress. This commentary also focuses on macro-prudential concerns, such as pro-cyclicality, wrong-way risks and interdependencies that may arise from a CCP's risk management practices and market structure. Notwithstanding the various policy initiatives undertaken and achievements to date, further efforts are being made and still more may be needed in order to achieve a safe and resilient clearing landscape. Essential work on recovery and resolution arrangements for CCPs is ongoing at the international and EU levels. Further, enhanced international policy coordination across various dimensions is critical to reaching the targets set by the G20 leaders. Finally, considering the significant structural changes, the European Market Infrastructure Regulation (EMIR) mandates a comprehensive review of the regulation. By August 2015 the European Commission will review the new EU regulatory framework, with important roles for both the European Securities and Markets Authority (ESMA) and the European Systemic Risk Board (ESRB) that will benefit from cooperation with members of the European System of Central Banks (ESCB).

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Keywords: European Systemic Risk Board, central clearing, CCP, systemic risk management, recovery and resolution

1 INTRODUCTION

At the G20 Pittsburgh summit in 2009, as part of an overall move to enhance the strength of the global financial system, leaders agreed on a set of reforms designed to increase stability, transparency and efficiency in derivatives markets, including by calling for standardised over-the-counter (OTC) derivatives to be cleared by CCPs. The FSB was established to coordinate at the international level the work of national competent authorities and international standard setting bodies and to develop and promote the implementation of effective regulatory, supervisory and other financial sector policies in the interest of financial stability. Since then, a wide set of reform measures have been enacted in the EU and are being implemented, including the Regulation on OTC derivatives, central counterparties and trade repositories, also known as the European Market Infrastructure Regulation (EMIR)[1]. Within the wider reform framework, this was a major step in establishing a sounder regulatory framework for European financial markets.

Two key aspects of the EMIR are the micro-prudential requirements for CCPs and the clearing requirement for OTC derivatives contracts, which will have a considerable impact on market structure and the distribution of risks. The EMIR will enhance CCPs' regulation and micro-prudential supervision, while strict rules for risk management have been imposed on CCPs with a view to ensuring that their risk management standards are appropriate. At the same time, it increases the systemic importance of CCPs, notably by further concentrating financial system risks in these regulated entities. However, the level of concentration also depends on the structure of the underlying markets, as derivatives markets – owing to their complexity – are more concentrated than the underlying cash products. Already systemically important, a CCP may be considered a central hub for systemic risk management, especially given this further concentration of risk, thus placing important responsibility on CCPs, their regulators and supervisors. The EMIR improves the resilience of the financial system by raising micro-prudential standards. Further, these measures are being complemented by ongoing policy initiatives, including on recovery and resolution frameworks. Nonetheless, such market reorganisation also leads to considerations of a systemic nature, including regarding the management of risk concentration, crisis propagation and coordination at the systemic level.

This commentary on CCPs and systemic risk provides a non-technical overview of the role of CCPs in the financial system and the vital importance of CCPs' resilience for broader financial stability. It focuses on potential systemic risks and highlights relevant considerations for policy, appreciating that potential trade-offs exist between micro- and macro-prudential policy. The remainder of this commentary is structured as follows. Section 2 provides an overview of the functioning of CCPs, the key risks they face, their

[1] Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories. Regulatory issues related to derivatives trading in the United States are specified in Title VII of the Dodd-Frank Act.

risk management tools and loss absorption capacity in the event that risks materialise. Section 3 discusses the systemic importance of CCPs, while Section 4 looks at systemic considerations arising from CCPs' risk management practices and market structure. Finally, Section 5 elaborates on policy perspectives.

2 OVERVIEW OF THE FUNCTIONING, KEY RISKS AND RISK MANAGEMENT TOOLS OF CCPS

CCPs play a key role in the financial system by managing and structuring a complex web of counterparty risk. They do this by interposing themselves between counterparties to contracts traded in one or more financial markets. A CCP thus becomes the buyer to every seller and the seller to every buyer. As a result, CCPs are located at the heart of a complex network of direct and indirect exposures to its clearing members and their clients. Notably, CCP membership is concentrated as members need to meet minimum criteria, such as in terms of financial soundness, operational capacity and product expertise. The typical member is a large financial institution that engages with CCPs for purposes of trading on their own account or on account of their customers. Furthermore, CCPs simplify a complex web of counterparty exposures and lower average counterparty risk through various risk management tools and multilateral netting[2] (see Figure 1). These practices mediate exposures and, as a result, central clearing may also mitigate systemic risk by reducing the risk that defaults propagate from counterparty to counterparty. CCPs are therefore an important pillar of the financial system. Regulatory reforms will drive market structure and significantly enhance the systemic importance of CCPs, in particular as the pending clearing requirement will increase the number of derivatives transactions that will be centrally cleared, such that concentration naturally gives rise to new risks.

Figure 1 Counterparty exposures in bilateral arrangements and through central clearing

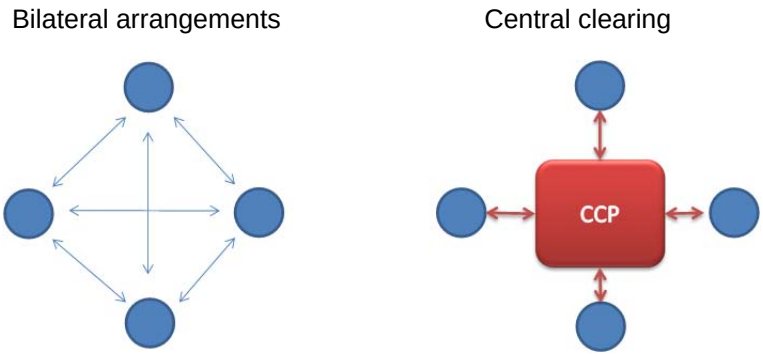


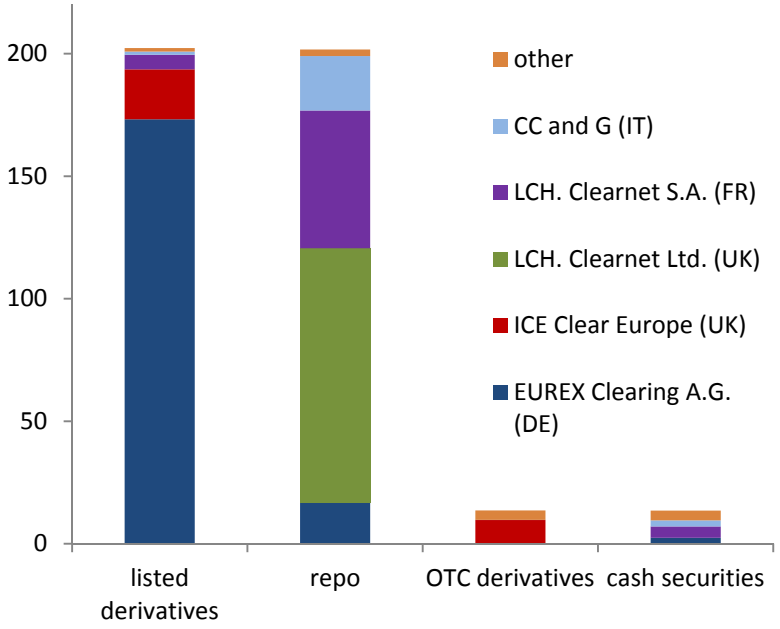
Figure 2 shows the value of transactions already being cleared by the central counterparties in Europe. It also reveals that the market for CCPs is highly concentrated and segmented, with a small number of dominant CCPs. Indeed, at the country level and within specific market segments, CCPs often operate in monopolistic structures. With the forthcoming implementation of the central clearing requirement for standardised OTC derivatives contracts, the volume of transactions cleared by a CCP may rise significantly

[2] See, for example, Duffie, D. and Zhu, H., "Does a Central Clearing Counterparty Reduce Counterparty Risk?", *Review of Asset Pricing Studies*, Vol. 1, 2011, pp. 74-95.

over the coming years. While fully recognising the benefits to financial stability of having risks that are transparent and concentrated in regulated entities, this could increase concerns about whether CCPs are nodes in the financial system that are too big to fail. In addressing such concerns, strict risk management as well as recovery, including loss allocation rules, and resolution frameworks have important roles to play.

Figure 2 Notional values of transactions cleared by central counterparties in the EU in 2012

(EUR trillions)



Sources: BIS and ECB. LCH. Clearet Ltd and ICE Clear Europe are only partially available.

Owing to their central role, the continued functioning of CCPs is critical for certain markets, thus necessitating appropriate management of operational and financial risks. This requires consideration of both macro- and micro-prudential aspects. Safe and efficient CCPs mitigate systemic risk. In principle, it could be more risky to have financial markets without CCPs, as default by a single counterparty could cause a cascade of defaults. From a micro-prudential perspective, the most relevant risks faced by a CCP are counterparty risk and liquidity risk. Counterparty credit risk refers to the risk that a counterparty will be unable to fully meet its obligations. Liquidity risk chiefly relates to the risk faced by a CCP when seeking to re-establish a balanced book following default by a member. Although this can include operational considerations, it is chiefly concerned with the liquidation of a defaulting counterparty's positions, which may be illiquid, especially during a crisis. In addition to counterparty and liquidity risks, CCPs also face a number of other specific risks, including legal, general business, custody, investment, money settlement and operational risks. It is possible, however, for CCPs to generate macro-prudential risks even where they are micro-prudentially sound. For instance, uncoordinated actions by CCPs, such as sudden changes in collateral requirements in times of crisis, could give rise to macro-prudential concerns. The inability of one or more members to meet these could have direct implications for the liquidity or solvency of a CCP, with the potential for severe "knock-on" effects on other members. As outlined in Section 4, the overall impact of such individual actions can have adverse pro-cyclical effects on the markets that CCPs serve and on the

broader economy. Finally, CCPs themselves are subject to systemic risk, for instance from systemically important members.

In order to ensure that the above risks are effectively mitigated, the EMIR requires CCPs to have a number of safeguards and risk management procedures in place.[3] These can be divided into three categories. First, a CCP requires participants to provide collateral in the form of margin to cover current and potential future exposures. While, in principle, a CCP's first lines of defence are its membership requirements, in fact, margins and related collateral haircuts are the first financial line of defence to manage counterparty risk. Second, a CCP requires members to post additional financial resources in default funds, which achieves some mutualisation of risk among members. Finally, CCPs are also required to monitor and measure risks on an ongoing basis, including by stress testing the adequacy of their resources against cases of extreme but plausible market conditions.

In the event of a participant default, a CCP will have to fulfil the defaulting member's obligations and, consequently, will need access to the financial resources posted by the member in question and possibly other members. The order in which these are called upon until the obligation is met or the resources are exhausted is set out in a "default waterfall". This loss-absorbing mechanism starts with the collateral that the defaulting member has posted to meet the margin requirements. Where the collateral that the CCP holds from the defaulter is not sufficient to cover the loss experienced in closing out the position, a CCP will proceed to the default fund contributions of the defaulter. Thereafter, a CCP would also have to contribute a portion of its own capital and then draw on the contributions to the default fund of the non-defaulting members. Finally, a CCP can use its remaining capital if the default fund is exhausted, although this option is not explicitly mentioned by the EMIR.

Pursuant to the EMIR, while CCPs in the EU are expected to withstand the default of at least the two clearing members to which they have the largest exposures, the financial resources of a CCP or those posted by its participants may not be sufficient to meet all the payment obligations that are due. The CPSS-IOSCO Principles for financial market infrastructures require CCPs to have in place transparent rules and appropriate contingency procedures to handle uncovered liquidity shortfalls or any individual or combined default of its participants. Beyond this, recovery and resolution frameworks become critical.

Box Micro-prudential aspects of the EMIR for CCPs
The EMIR's contribution to financial stability via the regulation of CCPs includes the setting of high requirements for CCPs' organisational, business conduct and prudential frameworks[4]. Compared with

[3] See the Box entitled "Micro-prudential aspects of the EMIR for CCPs".

[4] Regulation (EU) No 648/2012 and Commission Delegated Regulation (EU) No 152/2013 of 19 December 2012 supplementing Regulation (EU) No 648/2012 of the European Parliament and of the Council with regard to regulatory technical standards on capital requirements for central counterparties and Commission Delegated Regulation (EU) No 153/2013 of 19 December 2012 supplementing Regulation (EU) No 648/2012 of the European Parliament and of the Council with regard to regulatory technical standards on requirements for central counterparties.

the CPSS-IOSCO Principles for financial market infrastructures, some of the requirements for CCPs laid down in the EMIR are even more demanding[5]. Further, the models and parameters used by CCPs to manage their risks are subject to validation by the competent authority, external assessment and stress testing. Specifically, CCPs are required to maintain sufficient liquidity, and capital buffers and financial resources are to be used in the event of a clearing member default to ensure that they remain operational under stressed scenarios. By setting stringent requirements for collateral eligibility, the EMIR seeks to ensure that collateral held by a CCP can be liquidated in times of crisis. By specifying a default waterfall as described above, the likelihood of crisis propagation in the event of a default is reduced by establishing ex ante procedures for recourse to the CCP's available financial resources. In order to achieve this, the EMIR specifies the following micro-prudential requirements[6]:

- On a near real-time basis, liquidity and credit exposures are assessed vis-à-vis each clearing member and, where relevant, another CCP with which it has an interoperability agreement.
- Margin requirements are imposed, called and collected by CCPs on at least a daily basis, covering a minimum level of price volatility over at least the previous 12 months while taking other factors into account, such as pricing uncertainties and risk characteristics of the class of instruments[7]. Accordingly, initial margins are set and a variation margin is maintained to safeguard this reserve in view of mark-to-market fluctuations in the value of clearing members' positions. Losses occurring as a result of the time taken to liquidate positions are required to be taken into account[8]. Due regard is to be given to avoidance of pro-cyclicality.
- As described above, resources are maintained to offset the default of members under extreme but plausible circumstances and considering the most volatile periods as well as fire sales and rapid liquidity reductions. Ensuring sound incentives, both members and the CCP contribute to the default waterfall.
- CCPs shall establish a robust liquidity management framework to counter various risks, including those arising from its members and interdependencies. As discussed in Section 2 above, CCPs are required to take account of the liquidity demands from the default of the two members to which they have the largest exposure. Furthermore, CCPs shall ensure that clearing members do not provide more than 25% of credit lines.
- As explained above, for the event of a default, the default waterfall specifies the order in which resources are to be used to cover losses and ensure continuity.
- Collateral requirements are set such that only highly liquid assets with minimal credit and market risk are acceptable, while maintaining sufficient diversity.[9] Investment of assets should be well-diversified and are set such that only investment in cash and highly liquid financial

[5] For example with respect to confidence intervals, close-out periods for certain products, rules as regards margin and haircut practices designed to limit pro-cyclicality, "cover 2" requirements for credit and liquidity risk, stricter capital requirements.

[6] See Title IV in Chapter 3 on Prudential Requirements of the Regulation (EU) No 648/2012 and Commission Delegated Regulation (EU) No 153/2013.

[7] For OTC derivatives, this should cover at least 99.5% of price movements and, for other financial instruments, it should cover 99%.

[8] The minimum liquidation period is required to be at least five days for OTC derivatives and at least two days for other financial instruments.

[9] See Annex I of Commission Delegated Regulation (EU) 153/2013 for details on the assets considered as highly liquid collateral and Article 42 of Commission Delegated Regulation (EU) 153/2013 for concentration limits.

instruments with minimal market and credit risk is acceptable, while maintaining adequate diversity.[10]

- Models and parameters adopted for setting appropriate prudential requirements are to be frequently reviewed and subjected to stress and back testing. These include the models for calculation of margin requirements, default fund contributions, collateral requirements and other risk control mechanisms. Stress tests should be subject to independent validation, as well as validation by the CCP's competent authority and ESMA, who should also be informed of the results of the tests performed; CCPs will publicly disclose key information on risk management models and assumptions.

3 SYSTEMIC IMPORTANCE OF CCPS

Financial institutions, including market infrastructures such as CCPs, are typically considered systemically important when the provision of their services is indispensable for the smooth functioning of financial markets and disruptions lead to severe knock-on effects for financial market participants and the economy at large. This is usually the case if such entities are large, highly interconnected and provide services that are difficult to substitute without disrupting markets. Before the financial crisis, CCPs already cleared millions of transactions, firmly establishing their systemic importance. In the aftermath of the crisis, the need for a clearing requirement was epitomised by the near failure of American International Group, which had built up enormous bilateral derivative exposures.[11]

Since the G20 resolution to centrally clear standardised derivative contracts, considerable progress has been made in terms of drafting and implementing the relevant reform measures. Important elements of this process are ongoing, including the finalisation of the clearing obligation[12]. Consequently, significant risk will be brought under regulatory oversight by concentrating it in CCPs. In terms of the resulting change in the market, the BCBS-IOSCO Working Group on Margining Requirements estimates that the global volume of centrally cleared OTC derivatives could rise from a notional value of USD 142.7 trillion, or around 28% of OTC derivatives traded, to USD 268 trillion after migration to the clearing requirement, or 53% of OTC derivatives traded[13]. Furthermore, CCPs are highly interconnected. To begin with, they interpose themselves between their members, which are

[10] See Annex II of Commission Delegated Regulation (EU) 153/2013 for details on the assets considered as highly liquid, bearing minimal credit and market risk and Article 45 of Commission Delegated Regulation (EU) 153/2013 for concentration limits.

[11] By the end of June 2008, AIG had taken on USD 446 billion in notional credit risk exposure as a seller of credit risk protection via CDS, which threatened to bankrupt the group. Other significant events related to OTCs at that time included the failures of Bear Stearns and Lehman Brothers ("Central counterparties for over-the-counter derivatives", Cechetti et al., BIS, 14 September 2009).

[12] ESMA is drafting the relevant regulatory technical standards specifying inter alia the classes of OTC derivatives that should be subject to the clearing obligation, for which ESMA will also consult the ESRB. A consultative report on the clearing obligation under EMIR was published on July 12 2013 and the consultation period closed on 12 September 2013. Finalisation of the relevant Regulatory Technical Standards will follow. See "The Clearing Obligation under EMIR", *Discussion Paper*, ESMA, No 2013/925, (accessible at: http://www.esma.europa.eu/system/files/2013-925_discussion_paper_-_the_clearing_obligation_under_emir_0.pdf).

[13] See Appendix II of Financial Stability Board, "OTC Derivatives Market Reforms: Fifth Progress Report on Implementation", 15 April 2013.

often systemically relevant institutions in their own right. As with other centrally cleared contracts, this rerouting of risk via CCPs results in risk mutualisation. CCPs can also be interconnected on account of mutual links, for instance via interoperability agreements. Finally, with CCPs managing such a vast number of transactions and interconnected exposures, it would be extremely difficult to replace their services, especially during times of crisis. This establishes them as systemically important nodes in the financial system.

Clearing OTC derivative trades via CCPs can reduce coordination problems and can also allow for enhanced netting, which not only balances counterparty risk, but can enhance market efficiency. While gross (notional) exposures in the financial system can be very large for many market participants, typically net exposures are considerably smaller. If a CCP member – who may buy and sell the same contract manifold – has its positions with the CCP netted, this has three main effects. First, the collateral it is required to post is reduced commensurably, as it only needs to cover its net exposure. Second, in a default situation, the value of derivative contracts that are in the money is effectively transferred from the defaulting member's other creditors to the CCP. While this does not reduce the overall level of risk in the financial system, it does reduce coordination problems by reducing the cost of closing out positions. Finally, it can enhance the ability of a CCP to limit the build-up of risk among its members.

Notwithstanding the important benefits resulting from the clearing requirement arising from CCPs having strong risk management in place and being closely supervised, such a change in market organisation may also imply risks for the financial system, as a result of the following factors:

(i) Risk concentration within CCPs will grow, both nationally and at the international level. Therefore, it is important that CCPs view themselves and are viewed as systemic risk managers. The EMIR sets sound prudential requirements for CCPs and also requires CCPs to take into account their systemic significance for the market as a whole, for example in terms of the systemic repercussions of margining and collateral practices. It will prove critical, however, that CCPs embrace these requirements and that supervisors apply these stringently. With national competent authorities remaining the primary regulators, ensuring consistent application of the regulation, for instance via the new EU supervisory colleges for CCPs, will be very important from an internal market and level playing field perspective.

(ii) Risk concentration within clearing members will build up. One important driver in this respect is the clearing obligation for standardised OTC derivatives. It is to be expected that a substantial number of market participants will access CCPs indirectly. The result will be a complex structure consisting of counterparty relationships around a CCP with direct and indirect participants and their respective clients ("tiering"). Therefore, CCPs should have a strong incentive and ability to monitor the build-up and concentration of risks among their members while also striving to avoid wrong-way risk.[14]

(iii) Crisis propagation may be driven by interdependencies of changing complexity. These can exist between CCPs and other financial institutions, including other financial market infrastructures. For instance, among CCPs these interdependencies exist for those entities that have interoperability arrangements. Furthermore, the typical member is a large financial institution. Indeed, there exists

[14] See Section 4 for more details on wrong-way risk.

significant overlap across CCP memberships, notably for global systemically important financial institutions. While the markets served by CCPs are often segmented, complex interdependencies can emerge via potentially longer-term OTC derivative exposures or systemic events affecting CCP members or collateral values. For instance, with a significant overlap between CCP memberships, a significant cross section of CCPs and their members would probably be affected by a significant event. Likewise, cross-border issues are important.

(iv) While prudent collateral requirements reduce counterparty risk and hence the likelihood of discontinuity in markets, they also affect the amount of collateral available in the system. ESMA estimates that the continued high levels of issuance of high quality collateral should compensate for the increased need at the system level.[15] Nonetheless, collateral may become scarce in some markets or for individual market players, especially during a period of transition. In this context, an important trade-off is between reducing counterparty risk and ensuring liquidity. In order to mitigate these risks, the EMIR requires CCPs to adopt conservative margin and haircut practices.

Though CCPs are not classically leveraged or deposit-taking institutions, a disruption of their activities could prove highly destabilising. As a consequence, CCPs are subject to stringent micro-prudential requirements that reasonably minimise the probability of any disruption. While the number of CCP failures in recent years has been limited, near failures have occurred in the past, including ones requiring public intervention.[16] Consequently, even with high prudential standards that significantly reduce the likelihood of a CCP's failure, such an event cannot categorically be ruled out. In this sense, the greater systemic risk routed through CCPs could also imply that the spectrum of possible failures could include more severe tail risks. Deciding on how these should reasonably be dealt with in advance, for instance, via common EU recovery and resolution arrangements for CCPs, could minimise consequences.

4 ADDITIONAL SYSTEMIC CONSIDERATIONS FROM CCPS' RISK MANAGEMENT PRACTICES AND MARKET STRUCTURE

As indicated above, delicate trade-offs between macro- and micro-prudential considerations can exist. For instance, market participants' risk management practices are typically governed by micro-prudential concerns. If left uncoordinated at times of systemic stress, however, these practices can exacerbate the situation. Furthermore, adjustments in the behaviour of market participants, for instance reduced hedging owing to cost considerations or innovative financial practices, such as collateral optimisation and transformation, may also have systemic implications. In this section we discuss some of the more macro-prudential concerns, such as concerns over pro-cyclicality, wrong-way risks, and interdependencies that arise from a CCP's risk management practices and market structure. Given that systemic issues typically require system-wide monitoring and response tools,

[15] See "Collateral concerns in financial markets: a European perspective", in *ESMA Report on Trends, Risks, and Vulnerabilities*, No 1, 2013, available at (http://www.esma.europa.eu/system/files/2013-212_trends_risks_vulnerabilities.pdf).

[16] Incidences of CCPs nearly failing in recent decades include: Caisse de Liquidation in Paris in 1974 after sugar futures fell sharply; Commodities Clearing House in Kuala Lumpur in 1983 after a crash in palm-oil futures; and Hong Kong Futures Exchange in 1987 in the wake of the global stock market crash.

consistency, convergence and coordination are important. As well as ensuring that regulatory arbitrage is avoided, this helps to ensure the integrity of the internal market and a level playing field.

i. Pro-cyclicality

The recent crisis has shown that certain CCP practices can be pro-cyclical or conducive to cliff effects. More specifically, CCPs tend to increase margin requirements and haircuts during times of higher market volatility, exactly when general funding conditions deteriorate. Such practices can be prudent from an individual institution's risk management perspective. They may, however, have a detrimental impact on the system. In particular, market participants could thus be forced to repo, swap or sell assets to meet margin calls, which, in turn, could lead to fire sales, asset price declines and, subsequently, further margin calls, thus fuelling negative feedback loops. Adding to such concerns, trigger clauses related to ratings of counterparties and collateral can make such adverse feedback loops near-automatic. The issue of pro-cyclicality in margining and haircutting practices was discussed in detail in a Committee on the Global Financial System report.[17] With the upcoming central clearing requirement, the impact of such pro-cyclical links between CCP margin requirements and funding conditions may become stronger. For instance, clearing members may also have an incentive to offer liquidity or collateral arrangements to their customers. These clearing members would then need to provide liquid funds for their customers at a time when they themselves may be under pressure, thus amplifying stress during market downturns.[18]

The issue of the potential pro-cyclicality of CCP's financial risk management and its trade-off with micro-prudential policy is explicitly recognised in the EMIR. The regulations make provisions for CCPs to specifically include considerations regarding pro-cyclicality in their individual risk management practices, in particular when calculating margin requirements and haircuts on collateral. While this consideration for macro-prudential factors needs to be explicit, it should not endanger micro-prudential aims. In order to minimise the impact on micro-prudential practices and in line with recommendations of the 2010 report on the role of margin requirements by the Committee on the Global Financial System as well as the 2012 CPSS-IOSCO Principles for financial market infrastructures regarding margining and collateral policies, the EMIR focuses on the need to maintain margin requirements and haircut policies that avoid strong fluctuations by calling for initial margin requirements and haircuts to be set conservatively. That said, the practical implementation of this requirement now needs to be monitored, and a review of the current regime might consider whether more is needed. In fact, the EMIR mandates[19] a review of the efficiency of margining requirements to limit pro-cyclicality and the need to define additional intervention capacity in this area. Furthermore, given that the impact of CCPs on system-wide liquidity may increase and could prove critical in times of turmoil, coordinated counter-cyclical measures could be considered.

[17] "The role of margin requirements and haircuts in procyclicality", *CGFS Papers*, No 36, Bank for International Settlements, March 2010 (available at: http://www.bis.org/publ/cgfs36.pdf).

[18] See, for example, *Global Financial Stability Review*, International Monetary Fund, April 2012, Chapter 3.

[19] Article 85(1) of Regulation (EU) No 648/2012 requires the European Commission, in cooperation with the ESRB and ESMA, to review CCPs' margining requirements from an efficiency and pro-cyclicality point of view.

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ii. Wrong-way risk

Another concern regarding CCPs' risk management practices is that CCPs may be exposed to "wrong-way" risks. A wrong-way risk is a risk that a credit exposure to a counterparty is likely to increase exactly when the creditworthiness of that counterparty deteriorates. For instance, an enterprise may pledge financial instruments as collateral which is issued by an entity that explicitly or implicitly guarantees the obligations of the enterprise. In the event that the credit quality of the guaranteeing entity deteriorated, this would also affect the credit quality of the enterprise, rendering both collateral and exposure more risky. The systemic implications of CCPs or clearing members accepting collateral that was issued by other clearing members relate to the risk that an idiosyncratic default by a clearing member may have a correlated impact on the collateral that was issued by and posted by other clearing members.

The EMIR explicitly recognises the importance of wrong-way risk and makes provision for it, notably with respect to margin requirements, haircuts and collateral eligibility. In particular, collateral is not to be considered eligible if it is subject to significant wrong-way risk. Likewise, haircuts and margin requirements are to explicitly take wrong-way risk into account. Finally, wrong-way risk is to be taken into account in stress testing.

iii. Interdependencies

The network of national and cross-border systems that comprise the global financial market infrastructures has evolved significantly in recent years. CCPs are becoming increasingly connected directly and indirectly to their members, other financial market infrastructures (FMIs) and service and utility providers through a wide range of complex relationships. When cooperating with each other, CCPs usually establish links between each other, for example interoperability arrangements[20], but also in some cases by choosing other forms of cooperation, alliances or mergers. As a result, the smooth functioning of an individual system often depends on the smooth functioning of other related systems, and the associated potential contagion risks between CCPs need to be carefully assessed and managed. To address this concern, the EMIR sets sound oversight requirements for interoperability arrangements and specifically requires CCPs that enter into an interoperability arrangement to identify and manage the risks arising from that arrangement. It also requires interoperability arrangements to be approved and assessed by the CCP's competent authorities[21]. Finally, alternative CCP access configurations may have different implications for the financial system's efficiency and stability. Irrespective of the various trade-offs associated with different access conditions, the development and

[20] Interoperability arrangements enable firms that are members of different CCPs to trade with each other by allowing each firm to clear a trade through the CCP of which it is a member with the two CCPs engaging in a matching transaction.

[21] Article 85(4) of Regulation (EU) No 648/2012 provides that the European Commission shall, in cooperation with the Member States and ESMA, and after requesting the assessment of the ESRB, draw up an annual report assessing any possible systemic risk and cost implications of interoperability arrangements. This report shall focus at least on the number and complexity of such arrangements, and on the adequacy of risk-management systems and models. The ESRB shall provide the Commission with its assessment of any possible systemic risk implications of interoperability arrangements.

adoption of consistent international standards is essential to avoid regulatory arbitrage and promote effective cross-border monitoring of CCPs and their members[22].

5 POLICY PERSPECTIVES

Under central clearing, counterparty risks associated with financial contracts, in particular OTC derivatives, are subjected to regulated and supervised entities' risk management practices. This Commentary has considered the systemic importance of CCPs and raised various important issues, including pro-cyclicality and interdependence. The commitments taken by the G20 at the Pittsburgh summit have been enacted in a regulatory framework that is currently being finalised. Notwithstanding the ongoing implementation of the EMIR and of complementary work streams, financial market regulation is an evolving process. Although various regulatory initiatives have been launched and achievements made at the international level and in each jurisdiction, further efforts are still needed. Recovery and resolution as well as international policy coordination are key for reaching the targets set by the G20.

Recovery and resolution

Recovery and resolution frameworks for non-banks are an important consideration for institutions that are too big to fail or too interconnected to fail, including for CCPs. Section 2 above described the loss absorption capacity of CCPs. The EMIR requires a CCP to be able to withstand the default of its two largest clearing members, including in extreme but plausible conditions. However, systemic events are mostly tail events that may go beyond extreme but plausible scenarios. For instance, if two clearing members, which are likely to be systemically relevant banks, fail simultaneously, it is probable that factors other than an idiosyncratic shock are driving the defaults that may be having an impact on more than two members owing to the second-round effects that such failure would undoubtedly imply. In view of these considerations, consideration should be given to what would happen once the loss absorption capacity of CCPs has been exhausted. While acknowledging the progress[23] being made internationally and the work in train at the European level, we note that currently a resolution regime for CCPs is still lacking at European level. Until such a regime is in place, the financial system will remain exposed to significant tail risks. Clarifying rules for the allocation of central counterparty losses before the failure of a CCP occurs would avoid an outcome that could be highly disruptive to the wider financial system. For this reason, it is recommended that the central rulebooks of CCPs, which stipulate the obligations of members to CCPs and of CCPs to its members, also set out the rules for allocating losses once the "waterfall" - described in Section 2 - has been exhausted. In fact, in order to

[22] See, for example, "The macrofinancial implications of alternative configurations for access to central counterparties in OTC derivatives markets", *CGFS Papers*, No 46, Bank for International Settlements, November 2011, (available at: http://www.bis.org/publ/cgfs46.htm).

[23] In August, CPSS-IOSCO published a consultative report entitled "Recovery of financial market infrastructures" and the FSB published a consultation on the application of the key attributes of effective resolution regimes for non-banks. Also, in October 2012 the European Commission published a consultative report on recovery and resolution frameworks for non-banks.

comply with the CPSS-IOSCO PFMIs that demand that CCPs should prepare appropriate plans for its recovery, several international institutions are working on desirable features of such loss-allocation rules, and some progress has been made. In order to ensure expedient completion of the reform process towards a safer financial system infrastructure, the work underway on recovery and resolution frameworks for non-banks at the international and European levels should be completed as soon as possible.

International policy coordination

Addressing systemic risk requires coordination across the system in view of the increased cross-border financial stability implications of CCPs and their high degree of interconnectedness. As the global coordinating body, the FSB responded in January 2012 to the request from some jurisdictions for guidance to help them make informed decisions about the form of CCPs to use in order to meet the G20 commitment on central clearing by identifying four safeguards for a resilient and efficient global framework for central clearing and by monitoring the steps taken by international work streams to address them. The four safeguards are: (i) fair and open access by market participants to CCPs, based on transparent and objective criteria; (ii) cooperative oversight arrangements between all relevant authorities, both domestically and internationally, that result in robust and consistently applied regulation and oversight of global CCPs; (iii) resolution and recovery regimes which ensure that the core functions of CCPs are maintained during times of crisis and consider the interests of all jurisdictions where the CCP is systemically relevant; and (iv) appropriate liquidity arrangements for CCPs in the currencies they clear. The first two safeguards are largely addressed by the CPSS-IOSCO Principles for financial market infrastructures (PFMIs) and substantial progress has been made with respect to the third and fourth safeguards. Notwithstanding substantial progress to make the financial system more resilient and to support the G20 strategy, regulators and the financial industry worldwide need to continue working hand in hand to ensure international convergence in the ongoing implementation process to adopt the new standards. It is therefore vital that the rulemaking and standard-setting initiatives both in the European Union and other regions should move forward swiftly and be finalised as soon as possible. Risks stemming from remaining inconsistencies need to be addressed. In particular, regulators are working with a view to minimising risks resulting from potential inconsistencies between the various authorities' rules governing CCPs. It is likely that regulatory gaps and inconsistencies would give rise to cost inefficiencies, reduce regulatory compliance or even facilitate regulatory arbitrage. These issues also raise the importance of supervisory coordination and convergence.

As financial market innovation and structure is constantly evolving, especially in a globalised and interconnected world, so is financial market regulation a constantly evolving and iterative process. The implementation of the reform process consists of a multiplicity of individual and complex reforms undertaken by various regulators and agencies in various regions and nations. Therefore, a comprehensive and continuous assessment of the entire reform process is required. It is of paramount importance to continue reviewing regulation in terms of its impact on financial stability and market efficiency, especially when significant structural changes are taking place. By 17 August 2015 the European Commission shall review the requirements imposed on CCPs under the EMIR. Both ESMA and the ESRB will have important roles to play in this review process, and will benefit from cooperation with ESCB members. Such a review should also take into account the various macro-prudential

concerns that have been described in this commentary, such as concerns over pro-cyclicality, wrong-way risks and interdependencies.