

# The role of central clearing in systemic risk reduction

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## Introduction

Potential counterparty and liquidity risks in the derivatives market are still a focal point for the regulators and supervisors. In a bid to better manage these risks, the G20 countries agreed, back in 2009, on mandating the use of a central counterparty (CCP) for clearing standardised over-the-counter (OTC) derivatives trades. As a CCP is systemic by definition and as CCPs will get a monopoly on the clearing of these products, at least collectively, the central counterparty's ability to manage the ensuing risks is crucial. Worldwide, and in the EU in particular, the increasing concentration of risk with central counterparties called for tougher risk management requirements for CCPs, as well as for closer supervision.

Box 1 provides an overview of the relevance of the biggest EU CCPs, based on their 2014 clearing activity. For the European Union at least, Eurex Clearing in Frankfurt, LCH.Clearnet Ltd in London and LCH.Clearnet SA in Paris can be considered the most relevant ones, given their share in clearing activity for listed derivatives, OTC derivatives and repos. Currently, there is no CCPs established in Belgium, but EU CCPs do clear Belgian markets, have Belgian clearing members and use Belgian CSDs to settle.

### Box 1 – Clearing activity in selected EU CCP

While listed derivatives are standardly cleared by a central counterparty, their outstanding notional amounts – 6,300 billion euro per end 2014 in Europe – are dwarfed by their OTC counterparts. Nowadays, the main OTC derivative product categories cleared by CCPs are interest rate or credit default products. While this is less the case for exchange-listed derivatives, OTC derivatives markets can be considered as worldwide markets. The clearing activity of these OTC trades tends to be concentrated in the hands of a few CCP. Mid 2014, the worldwide outstanding notional amount in interest rate swap contracts (IRS) and forward rate agreements (FRAs) – that accounts for 75 pct. of the overall OTC derivatives market activity – came to 375,000 billion EUR (in EUR equivalents)<sup>(1)</sup>. According to the end 2014 data provided by the London based CCP LCH.Clearnet Ltd, its SwapClear service cleared 50 pct. of all OTC IRS, and even 95 pct. of the contracts cleared by a CCP. As for CDSs, the worldwide outstanding notional amount comprised 14,300 billion EUR mid 2014, with around 3,500 billion being centrally cleared<sup>(2)</sup>. By

(1) Source: BIS data.

(2) Source: BIS and FSB data



the end of 2014, the outstanding amount of CDS cleared by the London based CCP ICEClear Europe had reached 500 billion in EUR equivalent, compared to 800 billion EUR for its US based sister CCP, and 37 billion EUR for the Paris based CCP LCH.Clearnet SA.

**TABLE 1 LISTED AND OVER-THE-COUNTER DERIVATIVES CLEARING VOLUMES IN MAIN EU CCP**  
(notional amounts outstanding end 2014, in € billion)

	Listed options & futures		OTC derivatives	
	Interest rate	Equity	Interest Rate Swaps and Forward Rate Agreements	Credit Default Swaps
LCH.Clearnet SA (PAR) .....			n.a.	37
LCH.Clearnet Ltd (LDN) .....			147 500	n.
ICEClear Europe (LDN) .....			n.a.	500
Europe .....	5 800	479		

Source: Futures Industry Association volume studies 2014, BIS

As regards secured euro lending, mainly repo-trades, the European Union market turnover amounted to an estimated 120,000 billion euro over the year 2014. Overall, around 75 pct. of these trades were CCP-cleared<sup>(1)</sup>. The CCP-clearing of repo-trades is quite heavily concentrated as can be seen from the table 2 containing the 2014 repo-trades volumes (over all currencies) cleared by Eurex Clearing, and the fixed income volumes cleared by LCH.Clearnet Ltd (including the RepoClear service) and LCH.Clearnet SA. The total value of repo contracts (over all currencies) outstanding amounted to 5,500 billion euro in December 2014<sup>(2)</sup>.

**TABLE 2 REPO CLEARING VOLUMES IN MAIN EU CCP**  
(cleared volumes over 2014, in € billion)

CCP	Cleared volume <sup>(1)</sup>
Eurex Clearing (FFT) .....	102 000
LCH.Clearnet SA (PAR) .....	65 000
LCH.Clearnet Ltd (LDN) .....	81 000

Sources: Eurex Clearing Monthly clearing volumes, LCH.Clearnet Fixed Income volumes 2014.

(1) Trade (gross) volumes are double counted due to the CCP interposition.

(1) Source: ECB Euro Money Market Survey 2014 (second quarter data) of 17 October 2014.

(2) Source: December 2014 European repo-market survey of the International Capital Market Association. This survey can not readily be compared with the ECB Money Market survey, as they differ with regard to the reporting entities and the reported business.

In this article, we look at how the use of a central counterparty (CCP) compares to bilateral clearing arrangements, what the goals and advantages of CCP clearing are, and how CCP risks are managed, both by the CCP itself and by its users. The introduction of the mandatory use of a CCP for standardised derivatives contracts further concentrates the risk with CCPs and heightens the need for a stringent risk management. EU CCPs are now required to be able to withstand the simultaneous default of their two biggest clearing members under extreme but plausible market conditions, and to cope with the solvency and liquidity risks thereof. Even so, CCPs are not to be considered risk free institutions and their resilience remains a point of attention. For the first time, capital requirements have been set for exposures of financial institutions to EU CCP. Also, a legislative initiative is underway to set minimum standards for enabling the recovery, or if needed, the orderly resolution of a CCP in case the CCP itself would encounter difficulties. Lastly, we look at how the National Bank of Belgium is involved in the supervision of a number of EU CCPs via its participation in their supervisory colleges.

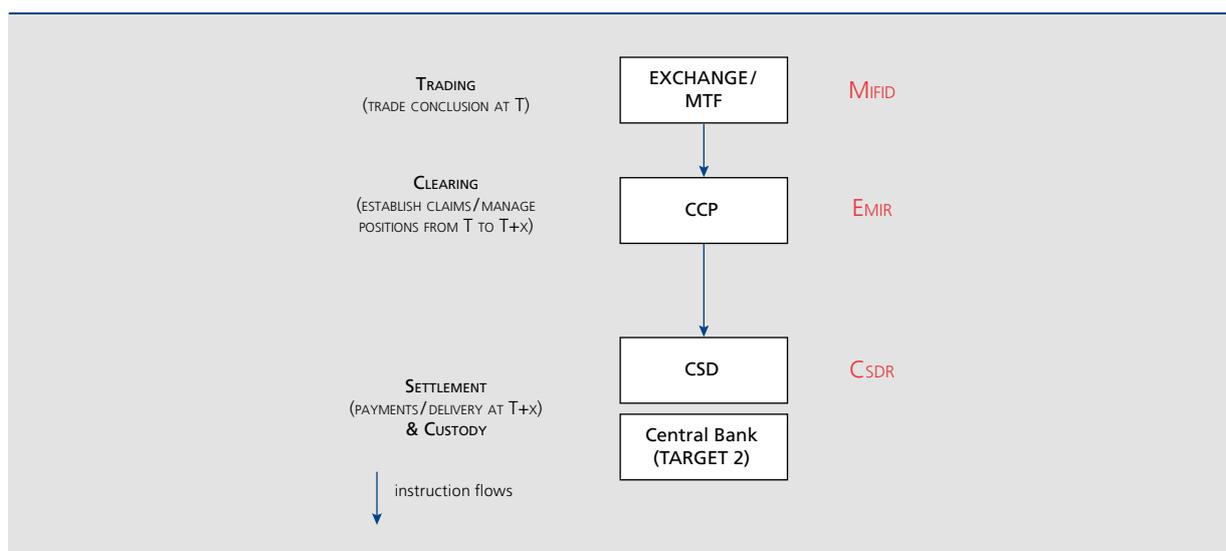
## 1. Central clearing in the “value chain”

The processing chain of a transaction in a financial instrument involves the successive “value chain” stages of trading, clearing and settlement. After the conclusion of a transaction, the parties will settle the trade. In between the time that trading and settlement occur, clearing takes place. This may involve the intervention of a central counterparty, though this is not strictly necessary.

A trade in a financial instrument is concluded between a buyer and a seller by agreeing the price and the contract terms. *Trading* can occur on-exchange, i.e. in a centralised market infrastructure designed to optimise the price-discovery process and to concentrate market liquidity, and where the trading usually takes place anonymously. Markets can also function bilaterally or over the counter (OTC), whereby the counterparties make the bid and accept the offer to conclude contracts directly among themselves. In both cases, buyer or seller members are usually banks or investment firms. They can act for their own account (for instance, as a market maker) or for their clients’ account (for investment funds, or for an individual end investor, for example).

The *clearing* of a trade generally means that the obligations of the buyer and the seller are established. The counterparty risk that the buyer and seller incur vis-à-vis each other from the outset up until the maturity of the contract can be

**CHART 1** CCP IN THE VERTICAL FMI VALUE CHAIN



For the European Union, regulatory requirements related to the functioning of the trading markets, including whether a requirement to trade on-exchange will apply, and on the market participants’ obligations are set out in the Directive on Markets in Financial Instruments (MiFID I & II) and the (draft) Regulation on Markets in Financial Instruments (MiFIR). Furthermore, the EU requirements that relate to the functioning of a central counterparty, including whether the use of a CCP is compulsory, and market participants’ obligations are set out in Regulation 648/2012 of 4 July 2012 (the so called “EMIR” Regulation). Finally, the EU requirements concerning the functioning of payment and settlement systems, including whether the use of a CSD is mandatory, and market participants’ obligations are set out in the ECB Regulation 795/2014 of 3 July 2014 on oversight of systemically important payment systems and in Regulation 909/2014 of 23 July 2014 on securities settlement (the so-called CSD Regulation).

standardised via the intervention of a CCP. That way, the CCP becomes the buyer counterparty for the seller and the seller counterparty for the buyer. Legally speaking, this CCP interposition occurs via novation<sup>(1)</sup>. Both original counterparties then have a claim on the CCP. Besides standardising the risk of the counterparties, CCP interposition allows counterparties to trade on an anonymous basis, as the credit risk profile of the original trade counterpart is no longer relevant to set the price. This is clearly relevant for contracts with a long duration; OTC IRS for example are concluded with a maturity of up to fifty years. But even for contracts with a shorter maturity, CCP intervention is relevant in stressed and volatile markets.

After conclusion of the trade, settlement has to take place. *Settlement* is the transfer of cash and/or of a financial instrument between the parties. In the case of a cash market trade, this implies that the seller has to deliver the securities to the buyer and the buyer has to pay the agreed price to the seller. This usually takes place on a rolling basis two or three days after the trade day. In the case of a derivative instrument, settlement usually occurs not via delivery of the underlying instrument but with a mere cash payment representing the loss incurred or profit made. When a CCP has intervened, settlement takes place between the buyer and the CCP, and between the seller and the CCP. Settlement can take place in dedicated financial market infrastructures of which the CCP is a participant itself. In that case, the securities are settled in a central securities depository (CSD), while the cash is transferred in a payment system such as Target2.<sup>(2)</sup>

Market participants can be either direct or indirect participants from a financial market infrastructure (FMI). At trading level, they can go through a trading member to conclude a trade while at settlement level they can use the services offered by a payment agent (that processes the cash payment of a trade) or a custodian (that also handles the securities leg). These intermediaries are themselves direct participants of the exchange or of the payment system – in the Euro-zone in most cases, TARGET2 – or the CSD/SSS. The direct participant of a CCP – usually a bank or an investment firm – is called a clearing member (CM). The clearing member may clear not only its own trades via the CCP, but also those of its clients. Clients can be banks or investment firms themselves, or buy-side firms such as investment funds. Even when a clearing member clears for a client, this member is still a counterparty and guarantor vis-à-vis the CCP, as the clearing member binds itself vis-à-vis the CCP on behalf of the buyer – or, alternatively, for the seller. The chart below presents this relationship. In practice, longer clearing chains may be in place, whereby a direct clearing member clears for an indirect clearing member that in turn clears on behalf of its client.

**CHART 2** HORIZONTAL CLEARING CHAIN



## 2. Bilateral clearing

To give an indication of the extent to which a central counterparty enhances the risk management of outstanding positions between counterparties, one can take the bilateral clearing situation – i.e. where clearing takes place with no CCP intervention – as a benchmark on which further risk management enhancement is based. Bilateral clearing involves both the establishment of claims between the counterparties and the management of the exposures.

The *establishment of claims* is in part an operational activity. A straightforward component of this aspect of clearing concerns the prompt confirmation of the conclusion of a trade or of its novation. In the mid-2000s, for instance, backlogs in confirmation posed a problem in the then fast-growing credit default swaps (CDS) market. In the absence of any confirmation, the validity of the contract or its terms might be disputed. A further aspect of clearing is contract

(1) Novation is the act of replacing one or more participating member of a contract with another, and/or the exchange of new debts or obligations for older ones.  
 (2) Target2 is the interbank payment system for processing euro cross border transfers in the EU via central bank cash accounts.

or position netting. Contracts can be set off bilaterally between the original counterparties whereby they are replaced with new contracts representing the same positions. Counterparties can also look for a third party to intervene, usually a prime broker<sup>(1)</sup>. The prime broker becomes a counterparty to the trade after its conclusion, by intervening between its client and the counterparty with which the client concluded the trade. The client can only give up, i.e. transfer, trades with selected counterparties accepted by the prime broker. By delivering this clearing service, the prime broker acts as a kind of mini-central counterparty. The client centralises all its trades with one counterparty – its prime broker – so that he can subsequently net and set off its positions bilaterally with the prime broker, and benefit from the ensuing diminishing collateral requirements, for instance. Finally, the establishment of claims does benefit from a regular reconciliation of outstanding positions. Third parties offer these services, referred to as “portfolio reconciliation” services.

The second component in bilateral clearing is the *management of exposures*. Broadly speaking, this can be done either via collateralisation of exposures or via capital reservations. In the case of collateralisation, the residual exposures to be collateralised are calculated. This margin calculation can be done on a portfolio basis, whereby the assumptions used as regards correlation between products or even product classes, determine the outcome of the calculation. Margining has two components. The so-called variation margin represents unrealised profit or loss on the contract/portfolio, calculated by its mark-to-market value. While not (yet) realised, the loss or profit is incurred at the very moment of its calculation. The initial margin component represents the future exposure of the contract or portfolio to changes in market prices. This future exposure is calculated over the liquidation period, i.e. the time needed to hedge or close the position in the market. The length of that period depends on the product involved, and will generally be shorter for liquid financial instruments. The margin obligation is fulfilled via the transfer of collateral. Under the assumption that the collateral is, in the event of default, held in a bankruptcy-remote way, collateralisation constitutes a “defaulter pays” mechanism. The collateral is in fact provided upfront by the defaulter and is assumed to be sufficient to cover any losses incurred. Both the quality and the liquidity of the collateral provided are relevant; to cover exposure to these risks, securities collateral is routinely given “haircuts”. The second mechanism used to manage exposures is the use of capital requirements.<sup>(2)</sup> Capitalisation is a “survivor pays” mechanism, as the party that incurs the loss in this case is the surviving counterparty of the defaulter that uses its reserved capital to cover that loss. As opposed to collateral, capital reserved does not target any specific position of a predetermined counterparty, nor is it intended to cover all potential losses on positions over all counterparties that could be incurred during the set liquidation period.

### 3. Goals and advantages of CCP clearing

Generally speaking, a CCP reduces the overall risk via legal risk enhancements, increased transparency, operational risk reduction and, last but not least, an enhanced counterparty risk management. We look at each of these components.

#### 3.1 Legal risk enhancements

Central counterparty clearing enhances the legal safety of clearing in a number of ways. Firstly, the CCP’s rulebook that stipulates the contractual framework for the provision of clearing services constitutes an adhesion contract that equally and uniformly binds all its clearing members. Secondly, within the EU at least, a central counterparty is considered to be a system that has to be designated by its home Member State under the Settlement Finality Directive, implying that the netting and finality rules set out in the CCP’s contractual framework can be enforced against third parties too. The CCP is a protected “system” under European Community law, and its arrangements, specifically its default handling rules, have precedence over EU or national bankruptcy law. One of its elements consists of the CCP’s mandatory practice to segregate in its books the positions and the related collateral of the clearing member from those of the clients of that clearing member. This in turn allows the CCP to port the clearing member’s client exposures and related collateral to another clearing member in the event of that clearing member defaulting.

(1) Prime brokerage is the generic name for a bundled package of services offered by investment banks and securities firms, most frequently to hedge funds and other professional investors. Prime brokers offer financing or collateral services, via securities and cash-lending facilities, and provide clearing services for contracts in financial instruments.

(2) Minimum level capital requirements are imposed for financial institutions, for example via the banking regulation, but are not applied for all categories of market participants.

### 3.2 Increased transparency

The use of a CCP rulebook first of all implies that the contract terms under which the CCP provides its clearing services are public, and are thus not only known to the clearing members, but also to their clients and other market participants. In that respect, the CCP's working rules and its risk management framework are transparent.

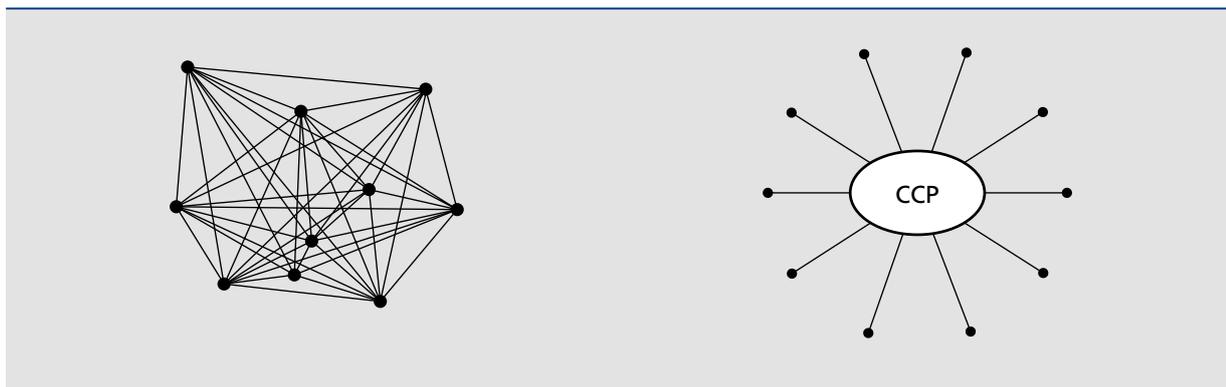
Besides, the use of a CCP enhances market liquidity at trade level. It can be argued that the obligation to use a CCP leads to either wider use of standardised contracts or to the "standardisation" of the terms of existing but not yet centrally cleared contracts, thus making these more apt to be also centrally cleared. The use of a CCP also allows pre-trade anonymity, as the counterparty risk is ultimately a risk on the CCP and thus standardised as regards the counterparty to the trade, whereby price discrimination in this respect is no longer needed, nor even possible. The ensuing enhanced market liquidity facilitates the price discovery process for these contracts, and subsequently, makes it easier to value a position in the contract appropriately.

Finally, a CCP will also be an instrument to enhance post-trade market transparency. To that end, it has to publicly disclose the aggregate volumes and open interest positions of the contracts it clears, together with the relevant price information.

### 3.3 Operational risk reduction

Even in the absence of a clearing obligation, clearing members use a CCP because the overall risk monitoring and managing benefits are greater than in cases where a CCP does not intervene. A CCP has an information advantage to gain some insight into the outstanding risk as the CCP centrally follows up the risk positions. The tiered network structure with the CCP in the middle makes clearing operationally more efficient. The use of a CCP reduces the number of exposures and clearing relationships to manage. The chart below, representing the clearing relationships among ten clearing market participants with and without a CCP, makes clear to what extent things are made operationally less burdensome. For ten market participants, the clearing relationships that need to be managed decrease from 89 to 10.

**CHART 3** CLEARING RELATIONSHIPS WITHOUT AND WITH A CCP

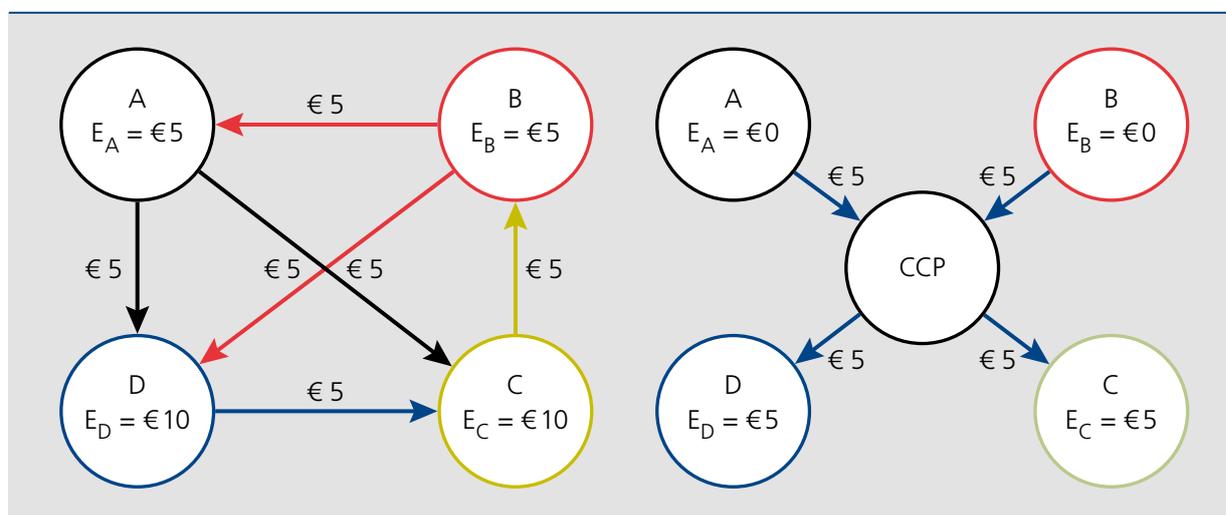


A clearing relationship involves multiple operational tasks. The CCP provides its clearing members with reports that detail the trade information and the outstanding positions that counterparts have to reconcile and the related margins that are to be covered via margin calls. A CCP can also more easily arrange that novation (i.e. CCP intervention) occurs in real time. Overall, an important element of the CCP operation is its ability to cope efficiently with "business continuity" standards. A CCP has to comply with a minimum two-hour recovery time objective and its recovery site has to have a distinct risk profile from the first site.

### 3.4 Enhanced counterparty risk management

Managing the counterparty risk on the outstanding trades is the main reason for the CCP's intervention and the domain where the advantages of CCP clearing are most pronounced. Under bilateral contractual netting, counterparties remain exposed to the financial soundness of their own counterparties, which can of course have differing credit risk profiles. Under a ring arrangement (also called "portfolio compression" arrangement), counterparties belonging to the ring agree that they will accept each other as substitutes for the original counterparties to the trade<sup>(1)</sup>. Even after substitution, the (substituted) individual counterparties, that still have different risk profiles, remain mutually responsible. In a CCP scheme, all clearing members now have a direct claim on the CCP only. Also a CCP makes it possible to efficiently net obligations multilaterally, via a bilateral set-off of the contracts between the intervening CCP and each clearing member. A CCP thus allows enhanced contractual netting, or alternatively, enhanced position netting. This netting usually leads to a reduction in the overall outstanding exposures, as the gross contract amounts or the gross positions are replaced by net contract amounts or positions.

**CHART 4** CONTRACT NETTING WITHOUT AND WITH A CCP



The arrows represent obligations from one party towards the other. An arrow from A to D means that A has the obligation to pay or deliver €5 to D. Therefore, D has an exposure of €5 on A (incoming arrow for D).

By acting as an intermediary, the CCP standardises the counterparty risk as it ultimately takes on the counterparty risk itself. Also, a CCP enhances the management of that counterparty risk. A CCP is a "single-purpose" entity, providing clearing services and nothing else, something which distinguishes it from, for instance, prime brokers that also have other activities, such as lending or own position-taking. In the absence of a clearing member default, a CCP has a "matched book": its net CCP position – consisting of the sum of the positions of the CCP over all its clearing members – is zero. This matched book is nonetheless lost in the event of a clearing member defaulting. The CCP requires the collateralisation of its exposures vis-à-vis its clearing members to cope with this eventuality. The calculated margins include both variation margin payments that cover incurred profits or losses, and initial margin payments, that cover potential future price changes. These margins are due by each clearing member as coverage for the trades it clears. A further loss coverage mechanism consists of the default fund. Here all clearing members contribute to the default fund to cover the obligations that another defaulting clearing member has vis-à-vis the CCP. Via this fund, the clearing members mutualise losses amongst each other. Finally, the CCP has clear and pre-established clearing member default-handling procedures.

(1) Under a ring arrangement, the counterparties belonging to the ring do accept each other as substitutes for the trade, i.e. they consider their respective counterparty credit risk profiles as interchangeable, abstraction being made of concentration concerns. Portfolio compression is a more developed kind of ring arrangement whereby the multilateral netting can occur across participants with a different credit standard whereby the substitution with a less creditworthy counterparty is compensated via an upfront payment. Both ring and compression arrangements go beyond mere multilateral netting, in that the contracts themselves can be substituted by a contract with distinct terms provided that it represents the same position. For example, a 10-year IRS and a 9-year opposite IRS may be cancelled out, provided compensation is paid (representing the actual value of the future one-year IRS) and provided the counterparties have indicated their acceptance to cancel out their swap positions.

## 4. CCP Risk management and EMIR

Back in 2009, the G20 leaders sought to strengthen the safety and transparency of the derivatives markets through a significant regulatory initiative. The crisis had shown that the opacity of the over-the-counter derivatives market in particular was one of the causes of the valuation problems encountered and of the miscalculations as regards market liquidity and counterparty risk. With the overall aim of reducing systemic risk, the G20 agreed that, wherever appropriate, standardised OTC derivative contracts should not only be traded on exchanges or electronic trading platforms, but should also be cleared through central counterparties. Besides, all derivative contracts should be reported to trade repositories. Finally, non-standardised derivative contracts that could not prudently be centrally cleared should be subject to both higher capital requirements and to bilateral margining requirements. As a result of the G20 decision, regulatory and legislative changes were introduced worldwide. In the US, under the Dodd-Frank legislative umbrella<sup>(1)</sup>, a clearing obligation was introduced, while in the European Union, the EMIR Regulation was adopted.

A CCP is by definition a systemically important FMI: a CCP standardises the risk but also concentrates it. The relevance of CCPs in this respect increased with the measures taken worldwide as a follow-up to the credit crisis. Mandatory central clearing for standardised contracts, together with collateralisation and higher capital requirements for non-centrally-cleared contracts are set to become the cornerstones of the new derivatives risk management. At EU level, EMIR sets a clearing obligation for standardised OTC derivatives and its implementation for standardised OTC interest rate derivatives, credit default swaps and – likely – FX non-deliverable forwards are expected to enter into force from late-2015 onwards.

As a correlation to the imposition of mandatory CCP clearing, EMIR sets strict CCP risk management requirements and requires the recognition and ongoing supervision of CCPs. The EMIR requirements are based on the CPSS-IOSCO<sup>(2)</sup> *Principles for Financial Market Infrastructures* (PFMI) that were published in April 2012 as an international reference point. Even though the market has not witnessed any massive problem with a CCP, the financial crisis prompted regulators to take a prudent stance by setting even stricter CCP requirements.

The box below provides a general overview of the EMIR risk management requirements for CCPs. We then take a closer look at a selection of the most relevant CCP risk management techniques and requirements.

### Box 2 – Main CCP risk management requirements under EMIR

- ▶ Organisational requirements (Art. 26-35 EMIR), incl.
  - Mandatory risk committee – with clearing member/clients participation with an advisory role
- ▶ Conduct rules (Art. 36-39), incl.
  - Participation requirements based on the operational and financial capacity of the clearing member.
  - Segregation of assets and positions and Portability to back-up clearing member via
    - Clearing member own account / Client omnibus account – segregation; or
    - Individual client account segregation (optional)
- ▶ Prudential requirements (Art. 40-50), incl.
  - Capital requirements (incl. for recovery/orderly winding down of CCP) (Art. 16)
  - Variation Margin (VM) & Initial Margin (IM)
  - Default Fund (DF) – clearing member mutualisation
  - Collateral requirements
  - Waterfall & Default handling procedures
  - Liquidity, investment, settlement asset requirements

(1) The legislation governing the clearing obligation can be found in Title VII of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 21 July 2010. This elaborate piece of federal legislation made changes in the American financial regulatory environment affecting almost every part of its financial services industry. Its aims include promoting the financial stability of the United States by improving accountability and transparency in the financial system, to end the «too big to fail» scenario, to protect the taxpayer by preventing bail-outs and to protect consumers from abusive financial services practices.

(2) This is, the Committee on Payments and Settlement Systems, now the Committee on Payments and Market Infrastructures (CPMI), and the International Organization of Securities Commissions.

## 4.1 CCP risk management – Selected topics

### 4.1.1 CCP risk management – Counterparty risk management

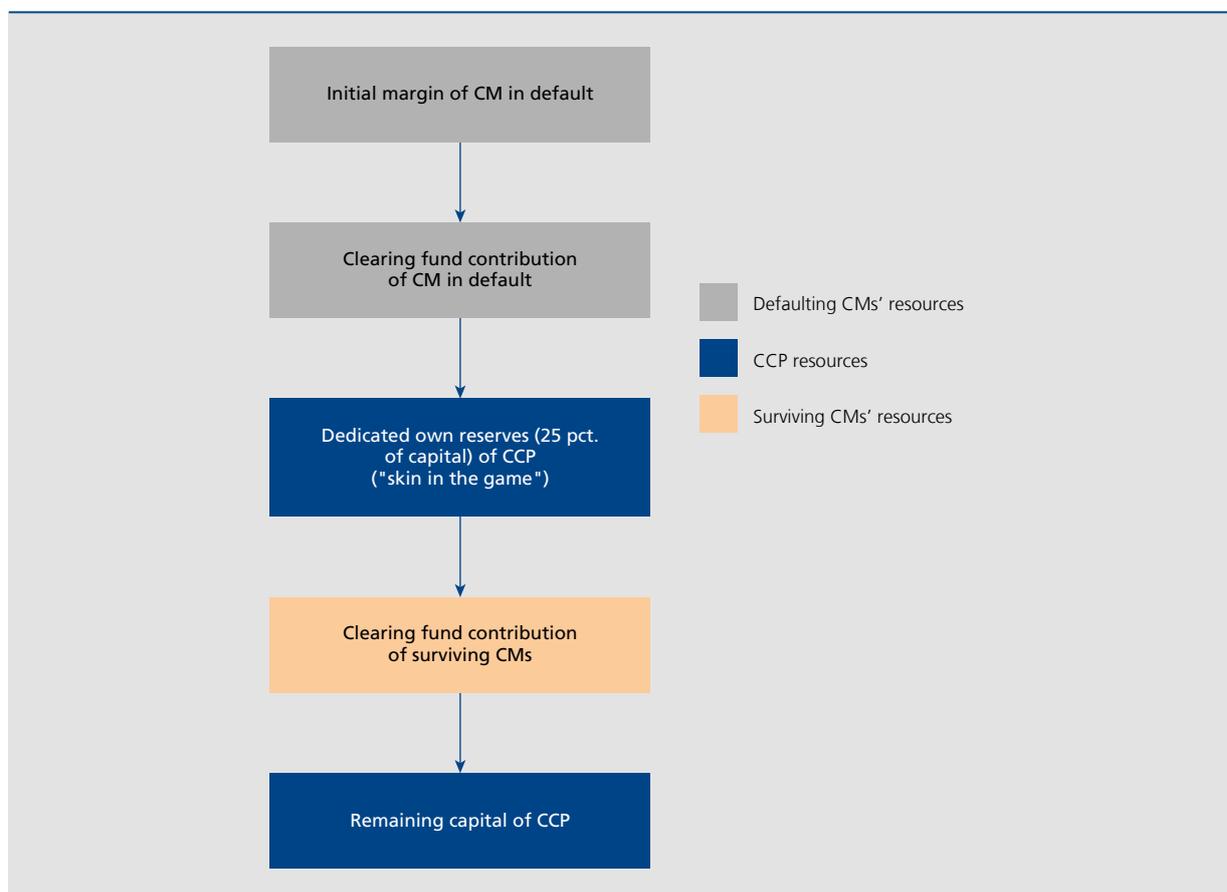
The basis of the CCP's counterparty risk management consists of the collection of variation and initial margins and default fund contributions.

The collection of *variation margin* typically occurs daily. Contracts are marked-to-market and the net profits or losses are transferred between the CCP and its respective clearing members. Variation margin flows can go both ways, from the clearing member to the CCP, or vice versa, and the net flow is calculated over all outstanding positions. It limits the build-up of exposures over the contract's life. Position measurement and the ensuing margin calculation should occur continuously. In the event of substantial position or price changes, the CCP has the ability to call margins intraday.

*Initial margin* is collected "one-way" by the CCP from the clearing member. The collected amount is intended to cover the potential future exposures on a contract, or on a portfolio of contracts, over the "liquidation period" – i.e. the period needed to hedge or close that contract or portfolio – in "normal markets". EMIR sets out to what extent netting is allowed in a portfolio. It further requires that the length of the liquidation period is set in accordance with the contract type, and imposes a minimum length of two or five days respectively for on-exchange and OTC contracts. Margin additions are further imposed to discourage the clearing member from holding excessively concentrated positions. Further, to smoothen out the pro-cyclicality when calling margins, its calculation is to be sufficiently conservative and sudden calls or cliff effects are to be avoided.

It would not be prudent to expect that defaults will occur in "normal markets" only. To cover the CCP's exposure to so-called "extreme but plausible" markets, clearing members contribute to the CCP's *default fund*. This fund is paid up

CHART 5 CCP DEFAULT WATERFALL



upfront. It constitutes a “survivor pays” mechanism whereby clearing members mutualise losses amongst each other so as to cover the CCP’s exposure to the defaulter. To size the default fund, the “cover 2 principle” applies. This means that the fund size<sup>(1)</sup> should be sufficient to cover the losses of the two biggest clearing member positions that are not covered by initial margins. Both historical “extreme but plausible” markets over the last thirty years and scenarios of such markets have to be taken into account. Each clearing member contributes to the default fund on a pro rata basis from its outstanding position. A multi-product CCP may have more than one default fund, for example one for listed products and one for OTC derivatives, as usually clearing members clearing only cash market products are not prepared to mutualise losses due to OTC derivatives clearing.

The chart 5 represents the resources the CCP disposes of to cover its obligations in case of a clearing member default. It is called the CCP default waterfall, as the layers of coverage are successively used when the preceding cover is exhausted. Before using the default fund contributions of surviving members the CCP has to contribute a quarter of its own minimum equity resources. This so-called “skin in the game” mechanism discourages the CCP from relying too easily on surviving clearing members to contribute, in using a minimum approach when setting the margin requirements. In the occurrence that the default fund might not provide sufficient cover, the CCP’s remaining capital is at stake.

#### 4.1.2 CCP risk management – Handling of a clearing member default

While the CCP needs sufficient resources to cover a member default, it also has to specify *ex ante* the procedures for handling such a default in an orderly way. The goal of the CCP is to return to a matched book, the situation prior to the clearing member default. In this way, the CCP will also minimise market distortions. To handle the default, the segregation regime is relevant. Normally, in its books, a CCP has to separate the positions and the related collateral of the clearing member from the positions and the related collateral of the joint clients of that clearing member. This is called “client omnibus segregation”. The CCP also allows each client of a clearing member to hold its positions and collateral with the CCP on an individual basis, the so-called “individual client segregation”. In the event of a clearing member default, the CCP will handle the own positions of the clearing member and the clients’ positions differently. It will hedge the defaulting clearing member’s own positions, which will subsequently be split up and auctioned off to the surviving clearing members, so as to get a matched book again. In doing so, depending on price movements, the CCP may have to pay the clearing member to take over the position, thereby using the collected margins of the defaulter or eventually the default fund contributions. Usually, the CCP rulebook ensures that clearing members are encouraged to take part in the auction. To the extent that (employees of) a clearing member will participate to handle the default on behalf of the CCP, as is generally the case for big portfolios in OTC derivative positions, the responsibility of the CCP and the default committee clearing members should be evident. If the position cannot be auctioned, it will have to be closed out anyway. On the contrary, client positions and the related collateral will standardly be ported to a surviving clearing member, assuming no client is simultaneously in default. This will always occur in case of individual segregation. In the case of omnibus segregation, all clients have to agree to be ported. Also, the (surviving) clearing member always has to agree to take over the positions. To ensure a timely transfer, this engagement can be taken upfront before any default. Client position liquidation will nonetheless occur if porting is not feasible.

#### 4.1.3 CCP risk management – Liquidity risk management

Due to netting effects, the use of a CCP also reduces the overall liquidity needs, as the payment obligations between the CCP and its clearing member that are due at maturity or over the life cycle of the contract are also netted. Again, as a CCP concentrates risk and is systemically relevant, it is paramount that it adequately measures its liquidity requirements and has adequate liquidity back-up lines in case of need. EMIR requires CCPs to measure their liquidity needs and have a liquidity plan. *Measurement* should take into account intraday payments, both in “day-to-day” and in stress situations. Day-to-day cash transfers consist of contract settlements or life-cycle payments and margin payments, including the replacement of cash collateral with securities collateral by the clearing member. Liquidity measurement has to take into account stress situations. Here too, the cover 2 principle applies: the CCP must be able to cover its liquidity needs at all times under the assumption that the two parties having the biggest liquidity impact for the CCP simultaneously default. The liquidity plan has to be in place for each currency in which the CCP has substantial clearing

(1) It is not entirely correct to present this as an unbridged EMIR requirement, as besides the default fund, other comparable and pre-funded resources available to the CCP can also be taken into account for the “cover 2”.

activity. Access to adequate liquidity for these currencies should be in the same currency as the contracts cleared. Among the possibilities listed by EMIR here are central bank cash deposits, deposits with private sector banks that are collateralised, committed credit lines or very liquid financial instruments that are readily available to the CCP for conversion in cash on a timely intraday basis and this even in stressed markets. EMIR does not require access to central bank liquidity in the currency the CCP clears. In the euro area, the Eurosystem provides TARGET2 liquidity in euro on a collateralised basis to CCPs established in the euro area. The Bank of England provides liquidity in pounds sterling for the CCPs that clear UK markets.<sup>(1)</sup>

#### 4.1.4 CCP links

A CCP link is an arrangement whereby two or more CCPs become mutual counterparties. Eventually, several CCPs could constitute a chain in this way. It allows a market participant clearing contracts via one CCP to clear a contract with a market participant that clears via another CCP. Compared to unlinked CCPs, this brings better market liquidity, as the market in a given instrument is not split between the sub-set of participants that clear solely via one or the other CCP. As a consequence, there are more netting options for exposures held by market participants and their related collateral needs diminish. EMIR envisages that a CCP has a right to link with a CCP clearing the same product, in so far as it regards “cash market” clearing and provided there are no risk ground impediments. EMIR provides for ESMA to report back on the appropriateness of an extension of this arrangement to derivatives clearing.

A CCP link also brings risks, as it gives rise to inter-CCP exposures. Problems with one CCP may lead to contagion and problems for the other CCP. This occurs directly via the link arrangement, as opposed to indirect contagion if the two CCP have common clearing members, for instance. Given the systemically relevant nature of a CCP, EMIR establishes risk mitigation for coping with this reciprocal exposure between CCPs<sup>(2)</sup>. CCPs are required to mutually exchange initial margin, and this has to be held in a bankruptcy-remote way, both for the provider and the taker of the collateral and without any right to re-use the collateral. A link arrangement is also subject to a prior regulatory approval.

## 4.2 CCP recovery

In October 2014, the CPMI and IOSCO issued their final report on “Recovery of Financial Market Infrastructure”, containing supplementary guidance on the April 2012 CPMI-IOSCO PFMI regarding recovery planning, including for CCPs. In the same month, the Financial Stability Board (FSB) issued a report on this topic<sup>(3)</sup>. In the European Union, the Commission is working on draft legislation in this respect. As it stands, EMIR requires a CCP to reserve capital so as to ensure an orderly restructuring or winding down of the CCP, but – unlike the CPMI-IOSCO Principles for FMI – it does not require the CCP to have a full recovery plan.

Such a recovery plan should enable the CCP to continue its critical operations should the survival of the CCP itself be threatened, while minimising the overall market distortions. In practice, the CCP will be at risk if it is no longer able to fulfill its contract payment obligations or to pay the variation margin it is due. To recover, the CCP has to have the tools to allocate uncovered losses, to cover liquidity shortfalls, and to re-establish a matched book or alternatively to tear up contracts if this is no longer feasible, all on a pre-agreed and enforceable basis. Recovery is the responsibility of the CCP, and should be distinguished from the “further stage” statutory resolution regime for a CCP, whereby resolution would take place outside the general insolvency rules and with the involvement of the authorities.

The recovery scheme should give all stakeholders an incentive to manage the risk they bring into the system. The starting point of a recovery plan is that an orderly, i.e. predictable and transparent, loss allocation is preferable from a financial stability perspective, as the loss will have to be borne by someone anyway.

(1) The modalities for the Eurosystem routine cash credit extension to CCPs are set out in the ECB Guideline of 5 December 2012 on TARGET2, as amended. For the UK, see the Bank of England News Release of 5 November 2014 – Widening access to the Sterling Monetary Framework: broker-dealers and central counterparties. In this context, it can be mentioned that the ECB and the BoE also announced end March 2015 to extend the scope of their standing swap line in order, should it be necessary and without pre-committing to the provision of liquidity, to facilitate the provision of multi-currency liquidity support by both central banks to CCPs established in the UK and euro area respectively. CCP liquidity risk management remains first and foremost the responsibility of the CCPs themselves.

(2) Although only for cash market clearing, ESMA, however, has issued guidelines for CCP links that also apply to derivative products. See ESMA/2013/322 Guidelines and Recommendations of 10 June 2013 for establishing consistent, efficient and effective assessments of interoperability arrangements.

(3) CPMI-IOSCO guidance of October 2014 on “Recovery of Financial Market Infrastructure”. FSB report of 15 October 2014 on Key Attributes of Effective Resolution Regimes for Financial Institutions, Annex 1 – Resolution of FMI and FMI participants.

The CCP and its stakeholders have to agree who will bear the loss, existing shareholders, clearing members or other creditors. For instance, general business losses could logically be borne by the shareholders. Losses due to a clearing member default – that can be deemed to be the most relevant for a CCP – could be borne by both the CCP owners – a “skin in the game” approach – and by surviving clearing members.

As regards the management of losses due to a clearing member default, a clear line has to be drawn for the resources that constitute the default waterfall, as recovery refers to the allocation of losses that go beyond the use of these pre-funded resources. If the CCP’s default fund has been used, the surviving clearing members are normally required to replenish the fund, as otherwise the CCP could no longer cover its future stress risk exposure. Further tools can be considered to allocate uncovered losses due to a participant default, each with their advantages and drawbacks. Additional capped cash calls, so-called “assignments”, are used by several CCPs. Under the default waterfall regime, margins of surviving clearing members are not used in the event of a clearing member default. Under recovery, the CCP could nonetheless limit its liabilities to cover the loss via margin haircutting. Initial margin haircutting implies contributions by the clearing member based on its exposures. Variation margin haircutting implies reducing the margins the CCP has to pay out to those clearing members that “gained” on their exposures.

## 5. Use of a CCP & risks outside the CCP perimeter

Clearing risks are not exclusively managed by a central counterparty, even when one is used for the involved contract. As appears from the above, the use of a CCP still implies a risk for the clearing member or its client.

Clearing members and their clients have to manage their counterparty risk vis-à-vis the CCP<sup>(1)</sup>. Using a CCP certainly enhances their counterparty risk exposure but it does not remove it altogether. This is recognised in EMIR and under the CRD IV framework – implementing Basel III –, whereby exposures of financial institutions to CCP attract own funds requirements for the first time.

For contracts cleared via a CCP, the clearing member has to reserve capital both for the trade exposures, including collateral exposures, and for the clearing member’s contribution to the default fund. Trade exposure own funds requirements are set at a lower level than for bilateral clearing, thereby also incentivising central clearing. Where a clearing member clears client trades and passes the risk of a CCP default on to its client, as is standard practice, this is also taken into account. For its default fund contribution, the clearing member has a *de facto* risk on all other clearing members of the CCP, and given this equity-like exposure, the capital requirement is set at a much higher level to take this into account. The capital requirements will also increase if a CCP is no longer considered to be a qualifying CCP, i.e. in case the CCP does no longer comply with the requirements to be authorised under EMIR. In this case, trade exposures will be set at the level required for bilateral exposures.

In addition, the client of a clearing member has to calculate its own funds requirements for its trade exposure on the clearing member. Counterparties to trades can actually use a CCP as a clearing member or as a client of a clearing member or even as a client of a client of a clearing member. In cases of individual client segregation, where the client’s positions and related collateral are held directly in the CCP’s books, the client benefits from lower capital requirements.

Non-standardised OTC derivatives cannot safely be cleared by a CCP, given their lack of market liquidity. The clearing risks for these bespoke products have to be managed bilaterally. EMIR – implementing a BCBS-IOSCO<sup>(2)</sup> recommendation – envisages among other things that systemically relevant counterparties shall have risk management procedures in place to exchange, above a set threshold, initial margin on these contracts, and in a timely, accurate and appropriately segregated, i.e. bankruptcy-remote, way<sup>(3)</sup>. The ultimate goal of this requirement is to reduce systemic risk, as collateral requirements should lead to a deleveraging of positions taken. Purposes further include the incentivisation of central clearing and – via an apt calibration – reducing the pro-cyclicality effects of the margin calls. To soften the liquidity impact of this margining requirement, a minimum initial margin threshold of €50 million has been set, and the implementation

(1) The exposure that a CCP clearing member has on its clients is also still relevant.

(2) This is, the Basel Committee on Banking Supervision and the International Organisation of Securities Commissions.

(3) ESMA, EBA and EIOPA consulted the market on the technical standards needed to implement this requirement. The application of the margin requirement is expected from September 2016 onwards.

will be phased in over four years, starting with the biggest derivatives market participants. Finally, given the global nature of these markets, worldwide coordination is necessary here too, so as to avoid regulatory arbitrage and ensure a level playing field.

## 6. EU CCPs – Relevance for Belgium & supervisory/oversight role of NBB

EMIR requires any EU central counterparty to be authorised by its designated national competent authority on the basis of the EMIR requirements for CCPs<sup>(1)</sup>, as stipulated in EMIR and in its implementing Regulations. Once authorised, the CCP will be able to provide services throughout the European Union. This initial authorisation procedure, any additional authorisation to provide new services, and the subsequent supervision of the CCP, including the review of risk models and tests, are carried out with the involvement of authorities that have a clear interest in the sound functioning of the CCP. To that end, for each EU CCP, a supervisory college is set up and chaired and managed by the CCP's national competent authority. That college has an advisory right to the national competent authority and an escalation right to ESMA as regards the above-mentioned authorisation and supervision aspects. The college is also the place where relevant information is exchanged between the participants, including in emergency situations.

The college participation depends on the CCP's potential impact. Any problem with a CCP will not only have an impact on its clearing members and their clients but also on linked financial market infrastructures – i.e. the markets it clears, the CSD where it settles and any linked CCP. Furthermore, it may affect the currency that the CCP clears. Therefore, the EMIR Regulation requires each CCP to have a college and the supervisor, overseer or central bank of the above-mentioned entities or currency to be part of the college. Such participation is mandatory.

Currently, the Bank is involved in eight CCP supervisory colleges, as listed in the table below. Its participation is based either on its capacity as supervisor of a CSD that the CCP settles in, or as supervisor of clearing members of the CCP that contribute in a substantial way to the default fund on a country-by-country basis. Even when each CCP is by

**TABLE 1** EU CCP SUPERVISORY COLLEGES WITH NBB PARTICIPATION

CCP	Main clearing services relevant for Belgium	Number of direct Belgian clearing members	EMIR criterium for NBB participation in the CCP's supervisory college	
			Contribution of Belgian clearing members to the CCP default fund	CCP settles in a Belgian CSD
LCH Clearnet SA (FR) . . . . .	Euronext cash and derivatives trades	9		X (EB, EBE, NBBSSS) <sup>(2)</sup>
LCH Clearnet Ltd (UK) . . . . .	Interest Rate Swaps/Repos	3		X (EB, NBBSSS)
EurexClearing (DE) . . . . .	Listed interest derivatives / Repos	2 <sup>(1)</sup>		X (EB)
Euro CCP (NL) . . . . .	Main European stocks	none		X (EB)
Iceclear Europe (UK) . . . . .	Credit default swaps	none		X (EB)
CC&G (IT) . . . . .	National CCP of Italy	none		X (EB)
Keler (HU) . . . . .	National CCP of Hungary	1	X	
KDPW_CCP (PL) . . . . .	National CCP of Poland	1	X	

(1) Five Belgian banks participate indirectly.

(2) EB: Euroclear Bank CSD, EBE: Euroclear Belgian CSD, NBBSSS: securities settlement system of the NBB.

(1) Third country CCPs operating in the Union have to be recognised by ESMA.

definition systemically important, three of these CCPs – Eurex Clearing, LCH.Clearnet SA, LCH.Clearnet Ltd – can be said to be very important from a financial stability perspective. These same CCPs are also the most relevant ones as regards their “Belgian” impact, via the presence of Belgian clearing members and given the type of products or markets they clear.

## Conclusion

CCPs are concentrators of risk and are systemically relevant by their very nature. Their role will be further increased with the implementation of the clearing obligation for standardised OTC derivatives in the European Union.

In comparison with direct clearing arrangements between market participants, CCP clearing makes it possible to standardise and enhance the risk management of exposures between market participants. CCPs reduce legal risk, increase transparency and, most importantly, improve the counterparty risk management through wider netting possibilities and better collateralisation arrangements.

It is paramount for CCPs to be adequately regulated and supervised. In the EU, the EMIR Regulation – implementing the CPMI-IOSCO standards – sets out the main framework of standards that a CCP has to respect so as to remain liquid and solvent even in stress situations. While CCPs currently have to be able to withstand the simultaneous default of their two biggest clearing members under stressed market conditions, CCP resilience remains a point of attention and the EU regulator – thus implementing the international guidance from the FSB and the CPMI and IOSCO – is now preparing legislation for the unlikely event that this requirement might not be enough so that even under more severe conditions CCPs can recover, or eventually be resolved, in an orderly way, while minimising systemic disruption.

A problem with a CCP will be felt also outside its home jurisdiction. While there is currently no CCP established in Belgium, there are EU CCPs that clear Belgian markets, have Belgian clearing members and settle through a Belgian CSD. The sound functioning of EU CCPs is thus also relevant for the Belgian financial markets. The Bank thus has a clear interest as a supervisor and as an overseer to be involved in the supervisory college arrangements that EMIR has set up for EU CCPs.

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