

# Concentration risks in financial market infrastructures – the specific case of CCPs

Sven Siedlecki

Although the European post-trade landscape remains fragmented<sup>(1)</sup>, from time to time there are mergers between post-trade financial market infrastructures (FMIs). There have been mergers between Central Securities Depositories (CSDs) (e.g. the Euroclear Group) and between central counterparties (CCPs) (e.g. the merger between EuroCCP (UK) and EMCF (NL) in 2013). While there may be benefits for shareholders and indeed for clearing members (CMs)<sup>(2)</sup> in the case of CCPs (see section 1 below), mergers between FMIs also involve risks for the wider financial system. Although some of these risks are applicable regardless of the type of FMIs that merge, the article will focus on CCPs (see section 2).

## 1. Drivers for mergers between CCPs

As with any merger between two companies, there are potential cost savings from economies of scale to be expected, which may benefit the shareholders of the company (if lower costs mean higher profits) and/or the clients (if lower costs mean lower prices).

In addition, a typical advantage of merging two CCPs lies in the extra netting and diversification effects of combining CMs' various (long and short<sup>(3)</sup>) positions. Via portfolio margining, a technique that calculates the CMs' margin requirements taking into account the correlations between their positions in various asset classes (see box 1), CMs can reduce their total margin requirements by combining their positions in different asset classes in one CCP. This means that CMs need to transfer fewer high-quality assets (the type of assets that CCPs typically require as margin) to the CCP to meet their margin requirements – something that is welcomed by the CMs – even more so after the obligation to clear standardised OTC derivatives in a CCP<sup>(4)</sup>, which will require margin from the CMs to cover the risks on positions taken in these OTC derivatives. The clearing obligation may be a driver for mergers between CCPs, not only because it increases CMs' margin requirements (as standardised OTC derivatives are to be cleared in a CCP) and thus the need for margin-reducing techniques such as portfolio margining, but the clearing obligation also means that more products need to be cleared in a CCP and thereby enlarges the pool of assets of which trades can be netted through the interposition of CCPs which in turn leads to a greater potential netting effect.

(1) An overview of the post-trade landscape in Europe can be found in *Developments in the post-trade services environment in Europe*, NBB Financial Stability Review, 2014, 162-163 (<https://www.nbb.be/doc/ts/publications/fsr/fsr2014.pdf>).

(2) Members of a CCP that clear trades on their own behalf and/or on behalf of their clients.

(3) CMs' "long" positions refer to outstanding purchase obligations (e.g. in respect of a derivatives contract), while "short" positions refer to outstanding sell obligations.

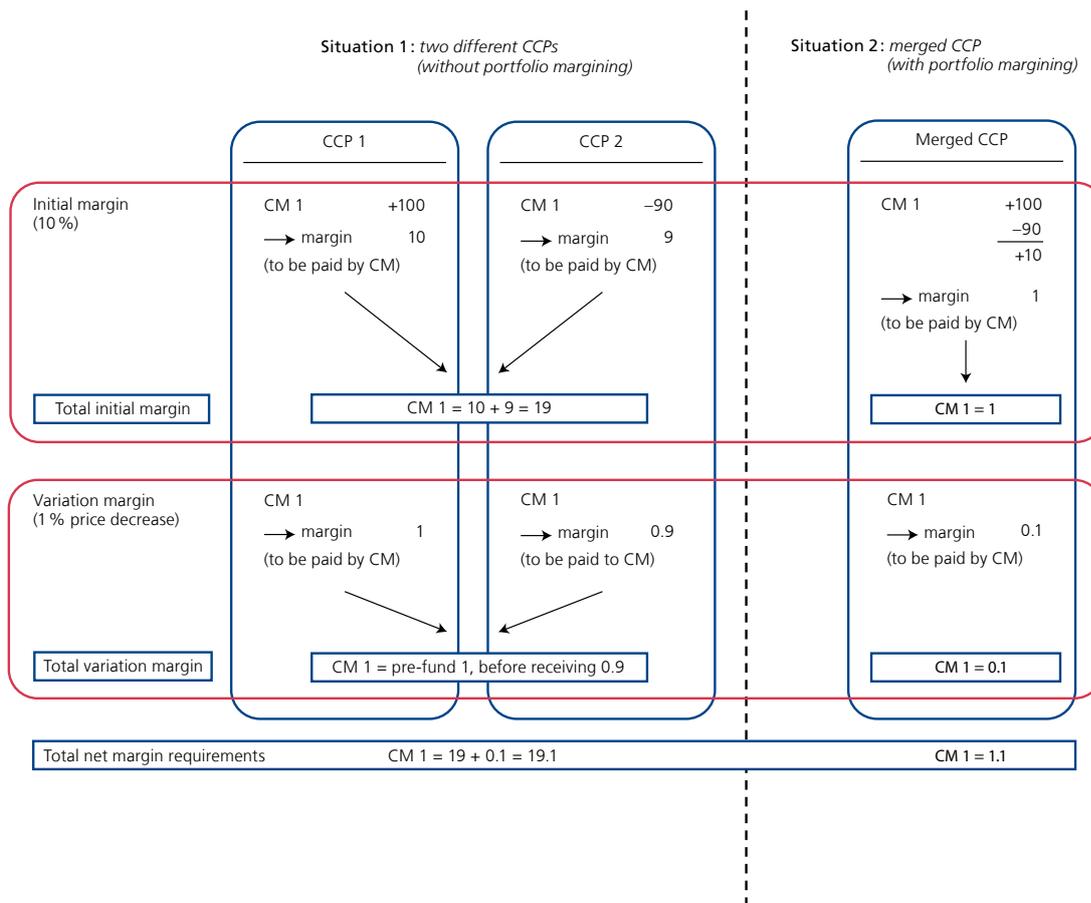
(4) E.g. under the European Markets Infrastructure Regulation (EMIR) in Europe and the Dodd-Frank Act in the US.

## Box 1 – Portfolio margining

When a clearing member (CM) takes on a position in a product that is cleared in a CCP, the CCP steps in between the two counterparties (i.e. the CCP becomes the buyer of every seller, and the seller of every buyer). A CCP requires a pre-set amount of collateral – called initial margin – to be posted by each CM in a transaction to cover the CCP's potential future exposure on the CM's position over the liquidation period (i.e. period needed to hedge or close a position in normal markets). In case of a default, the defaulting CM's initial margin can be used or liquidated to cover any losses or obligations that are incurred. EMIR requires that the length of the liquidation period is set in accordance with the contract type (standard minimum length of one or five days respectively for on-exchange and OTC contracts). The size of the initial margin depends on the volatility of the contract (i.e. observed price movements over the last 10 years). The initial margin should cover 99 % (99.5 % for OTC derivatives) of the price movements over the liquidation period (in the stylised example below, 10 % initial margin is required by each CCP).

The CCP calculates daily (or more frequently) the gains and losses on each CM's portfolio (mark-to-market value) and transfers cash from the CM that loses to the CM that gains, i.e. the payment of the variation margin. This

### STYLISTED EXAMPLE OF PORTFOLIO MARGINING



Source: NBB.



limits the build-up of exposures arising from changes in market prices over the life of the contract. Such exchange of variation margin occurs every day, but when the CM defaults and does not make any variation margin contribution, the CCP needs to be covered against adverse price fluctuations for the period during which the CM's positions are closed out.

Situation 1 on the left-hand side of the graph is a situation with two CCPs where the margin requirements for the CM are calculated independently. CM 1 has positions in products that are economically identical (perfect correlation of 1, in order to avoid complexities of correlations between different products that may break down in crisis situations and to focus on the effects of a merger between CCPs in the stylised example). In CCP 1, the CM has an outstanding purchase obligation ("long position") of 100 and in CCP 2 it has an outstanding sell obligation ("short position") of 90. As each CCP calculates its own risk and margin requirements independently, the CM needs to post 10 (10% to cover the long 100) and 9 (10% to cover the short 90), or a total of 19 as initial margin to the two CCPs. Furthermore, if the price falls by 1%, the CM will need to pay a variation margin of 1 (1% of +100) to CCP 1 and receives 0.9 (1% of -90) from CCP 2. As the deadline to pay the variation margin (pay-in) is typically before the CCP pays out the variation margin to the CM (pay-out), the CM will need to pre-fund 1 to be paid to CCP 1 until it receives 0.9 from CCP 2.

Situation 2 shows the impact of portfolio margining when the two CCPs merge. CM 1's portfolio now consists of 100 long and 90 short in products that are perfectly correlated, reducing the net risk to the merged CCP to 10, which only requires an initial margin of 1 (10% to cover the net position 10). In addition, CM 1 only has to pay variation margin for the net position of +10, meaning it will only have to pay 0.1 (1% of +10) by the pay-in deadline.

As shown in the graph below, by merging CCPs, CMs can benefit from portfolio margining and reduced total margin requirements (1.1 versus 19.1 for respectively with and without portfolio margining). In a real-world situation, the margin reduction may not be that spectacular (as in practice, CMs will not concentrate, for perfectly correlated products, their long positions in one CCP and their short ones in another CCP), but CMs can still benefit from reduced margin requirements as a diversified portfolio is less volatile than individual products.

## 2. Risks from concentration of CCPs

As described in section 1, the pooling of asset classes in a single CCP and the related benefits of the increased netting effect are incentives for mergers between CCPs and may lead to natural oligopolies or monopolies.

While a concentration of CCPs (via a legal merger or intra-group arrangements) may bring benefits to its shareholders – and even to its CMs – such concentration also increases financial stability risks.

### CONTAGION RISK BY CO-MINGLING OF EXPOSURES ON DIFFERENT MARKETS

By merging CCPs that clear different financial products, CMs can benefit from portfolio margining and lower total margin requirements. On the other hand, such concentration may cause contagion as the merged CCP could serve as a channel through which stress in one market contaminates other markets.

### OPERATIONAL AND FINANCIAL CONCENTRATION RISKS

An operational problem (e.g. a cyber attack – see article Cyber security in financial market infrastructures) at a merged CCP, or CCPs that belong to the same corporate group and that share a common IT infrastructure, will have a wider impact. Similarly, a concentrated CCP that defaults can spread risks to various parts of the financial system. In addition, effective recovery and resolution of a large CCP that is active in different markets (in terms of geography or asset classes) may be more complicated, including finding an alternative CCP in such a concentrated market. Although losses caused

by the default of a CM are mutualised among CMs (via the CCP's default fund<sup>(1)</sup>, the haircutting of CMs' variation margins gains or writing down initial margin provided by non-defaulting CMs), the capital of the CCP itself is also at risk and some CCPs include additional financial support (such as a parental guarantee) in their rule book<sup>(2)</sup>. The actual ability of the CCP's parent company to provide this support could be hampered if this parent company holds multiple/large CCPs.

## SYSTEMIC RISK BY INCREASED LEVERAGE IN THE FINANCIAL SYSTEM

Even if CCPs that clear the same market merge, this could lead to an increase in systemic risk. By pooling long and short positions in one CCP, the CMs can benefit from a netting effect and thus lower margin requirements. This reduction of margin requirements frees up high-quality assets for the CMs, which could then be used as margin to cover additional transactions, enabling them to take on more risk. While the merged CCP is still sufficiently covered in terms of market risk even though it requires less margin for a portfolio of netted long and short positions, the whole financial system may become more risky as traders have more leverage capacity – and can thus take more risks – with the same amount of high quality assets. In addition, the CCP itself may become more risky in terms of operational and liquidity risk, as closing out a position of 100 (long) and 90 (short) in different but nettable products, as in the example of box 1, may not be the same as dealing with an original position of just 10.

### 3. Potential systemic implications

Unlike the European Commission's analyses of mergers and acquisitions from a competition point of view, there is currently no authority in the EU responsible for ex ante authorising a merger of CCPs on the basis of systemic risk implications. Legislation like EMIR is aimed at ensuring that at individual CCP level, risks are adequately dealt with. However, current regulation does not adequately deal with general systemic risks to the financial system as a whole resulting from concentration among CCPs.

In the meantime, regulation could be enhanced in order to adequately take concentration risks into consideration. The default funds of CCPs that clear different markets are often split into different compartments to avoid problems on one market spilling over to CMs on other markets. In this way, the contagion effect of a multi-product CCP can be contained to some extent. When a CCP belongs to a group that encompasses other CCPs as well, a consolidated view is needed to assess the parent company's capacity to provide financial support if need be. Cross-border (groups of) CCPs call for close international cooperation between competent authorities, including in the area of recovery and resolution.

The potential increase in leverage in the financial system can be addressed by regulating the individual institutions where an increase in risk-taking would be undesirable. In addition, the conditions under which portfolio margining is allowed should be designed to avoid competition between CCPs on the basis of lower margin requirements. The European Securities and Markets Authority (ESMA) has already performed a peer review<sup>(3)</sup> of portfolio margining issues (e.g. there needs to be an economic rationale for offsetting positions, and there needs to be a significant and reliable correlation).

(1) CMs' contributions towards a CCP's mutualised loss sharing arrangement.

(2) Swerts, Q., Van Cauwenberge, S., *CCP resilience and recovery – Impact for the CCP users*, NBB Financial Stability Report 2016, 187-202 ([https://www.nbb.be/doc/ts/publications/fsr/fsr\\_2016.pdf](https://www.nbb.be/doc/ts/publications/fsr/fsr_2016.pdf)).

(3) ESMA (2016), *Peer Review under EMIR Art. 21 – Supervisory activities on CCPs' Margin and Collateral requirements* (<https://www.esma.europa.eu/press-news/esma-news/esma-identifies-areas-improvement-in-eu-ccp-supervision>).