

At the End of the Waterfall – Resolvability of Central Counterparties

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Abstract

After the prudential requirements introduced by EMIR in 2012, the European Union took a further step when it adopted a regulation in 2021 on the framework for the recovery and resolution of central counterparties. The regulation is based on the bank recovery and resolution directive of 2014. This paper provides a critical overview of the new regulation by focusing on the question of whether the bank resolution tools are useful and effective in the case of central counterparty resolutions.

Keywords: central counterparties, CCP, clearinghouses, OTC derivatives, financial market stability, recovery, resolution, resolution authority, BRRD, EMIR, Dodd-Frank Act

JEL Classification: K23, G23, G33

I. Introduction

Before the great financial crisis of 2008, derivatives were primarily traded over the counter ('OTC derivatives')¹. OTC derivatives are tailor-made products, information about which is not readily available to regulators and interested third parties. "They create a complex web of interdependence which can make it difficult to identify the nature and level of risks involved. The financial crisis has demonstrated that such characteristics increase uncertainty in times of market stress and, accordingly, pose risks to financial stability."² Although risk mitigation tools were available to reduce various risks arising from OTC derivative con-

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¹ According to an estimate, before the introduction of clearing obligation approximately 35% of the notional outstanding amount of interest rate swaps and 12% of the notional outstanding amount of credit default swaps were centrally cleared (*Domanski/Gambacorta/Picillo* p. 59 Graph 3).

² Recital (4) of 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 ('EMIR').

tracts³, these did not mitigate the systemic risk arising from the lack of transparency and it was not possible to shift counterparty credit risk to a less risky counterparty.

Not surprisingly, the post-crisis reforms proposed by the G20 focused on two major problems: lack of transparency and counterparty risk. The solution to the first problem was the introduction of trade repositories that provide detailed information on derivatives to the supervisors. The answer to the second problem was the introduction of mandatory clearing.

Although mandatory clearing can, indeed, reduce counterparty risk, it can also create new problems by significantly concentrating risk that can easily spread if central counterparties ('CCPs') are interconnected. As a result, the default of a CCP can affect systemic stability.⁴

To address this problem – based on the Financial Stability Board's Key attributes for effective resolution regimes for financial institutions⁵ and Guidance of central counterparty resolution and resolution planning⁶ – the European Union has recently adopted a regulation on a framework for the recovery and resolution of central counterparties ('CCP-RRR').⁷ The regulation provides very similar tools to central counterparties and resolution authorities like the bank recovery and resolution directive ('BRRD').⁸ This paper will focus on the question of whether the BRRD resolution tools are useful and effective in CCP resolutions.⁹

This paper is structured as follows. Part II. provides a brief introduction to derivatives and the reforms introduced after the financial crisis. The section aims to help understand the risks inherent in derivatives and how mandatory clearing transforms such risk. Part III. shows some fundamental differences between banks and CCPs, which explain why the risk management tools intro-

³ Such tools include margin requirements, see e.g., from post-crisis regulation Commission Delegated Regulation (EU) 2016/2251 of 4 October 2016 supplementing Regulation (EU) No 648/2012 of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories with regard to regulatory technical standards for risk-mitigation techniques for OTC derivative contracts not cleared by a central counterparty.

⁴ See e.g. *Wendt* (2015).

⁵ FSB (2014).

⁶ FSB (2017).

⁷ Regulation (EU) 2021/23 of the European Parliament and of the Council of 16 December 2020 on a framework for the recovery and resolution of central counterparties.

⁸ Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms.

⁹ Structural questions relating to the supervision of CCPs fall outside of the scope of this paper. See e.g. *Canini* (2021) and *ESMA* (2021).

duced by the EU Market Infrastructure Regulation (EMIR)¹⁰ are not the same as the tools used in the case of banks. This part also provides an overview of the CCP default waterfall rules. Part IV. looks at what happens “at the end of the waterfall”. This section will first address why traditional insolvency rules do not seem well-suited in a CCP default. Then it will provide an overview of the new European CCP-RRR, showing why certain resolution tools introduced by the CCP-RRR are less appropriate than their counterparts in the BRRD. Part V. looks at data relating to the COVID-19 pandemic to see whether the CCPs remained resilient irrespective of the increase in volatility that inevitably happens in similar market situations. Part VI. summarises this paper’s findings showing that although mandatory clearing was necessary to reduce OTC derivatives’ counterparty risk, the CCPs became systematically important due to their size and interconnectedness. Therefore, to avoid bailouts, it is essential to introduce rules to help prevent CCP defaults and enable effective recovery and resolution. The paper argues that further rules are necessary to ensure ex ante legal certainty.

II. The Brief Overview of the History and the Operation of Central Counterparties

1. From OTC Derivatives to Mandatory Clearing

Although clearing houses are not new phenomenon¹¹, until the last decades, derivatives were not centrally cleared, rather they operated as bilateral contractual mechanisms. The term over-the-counter derivatives refer to the fact that these instruments were not traded on exchanges, which made the creation of bespoke deals possible.¹² To make these products more liquid, standardized master agreements – such as the ISDA Master Agreement, published by the International Swaps and Derivatives Association – were introduced in the last three decades.¹³

¹⁰ For a background see the Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee, the Committee of the Regions and the European Central Bank Ensuring efficient, safe and sound derivatives markets: Future policy actions.

¹¹ Steigerwald argues that clearing houses already existed in 18th Japan on the Dojima rice market of Osaka (*Steigerwald* (2015) 195). Swan finds that temples in Mesopotamia acted as clearing houses nearly 4000 years ago (*Swan* (2000)).

¹² *Armour et al.* (2016) 467.

¹³ *Armour et al.* (2016) 469. For the legislative support for netting and other features of financial contracts see *Braithwaite/Murphy* (2016). By way of example, the first version of the Global Master Repurchase Agreement was published in 1992 (<https://www>.

OTC derivatives contracts – irrespective whether bespoke deals or standardised products – were largely unregulated before the financial crisis.¹⁴ Lack of regulation and lack of transparency lead to the result that – as the Causes of the Financial and Economic Crisis Committee found – “OTC derivatives rapidly spiraled out of control and out of sight.”¹⁵ As Braithwaite and Murphy convincingly argue, before the financial crisis, OTC derivatives created “a web of interconnections between financial institutions worldwide”, and neither the regulators, nor investors and interested third parties had proper information about the exposures.¹⁶ The Turner Report in the UK concluded that size and complexity of the OTC derivatives market “creates the danger that failure of one party could produce market disruption.”¹⁷

Understanding the risks arising from OTC derivatives, the legislators took steps to “address the incomplete and opaque risk transfer between systematically important financial institutions that characterized OTC derivative markets”.¹⁸ The G20, in their 2009 London Summit, made commitments concerning the central clearing of OTC derivatives contracts.¹⁹ The 2009 Pittsburgh Summit undertook to introduce the following measures: “All standardized OTC derivative contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties by end-2012 at the latest. OTC derivative contracts should be reported to trade repositories. Non-centrally cleared contracts should be subject to higher capital requirements.”²⁰

In line with this, in the US, Title VII of the Dodd-Frank Act²¹, whereas in the European Union, the EMIR introduced two significant changes. First, certain derivatives transactions between certain parties need to be cleared and settled through central counterparties. Although the exact scope where mandatory clearing applies is regulated in a detailed manner by the EMIR and the various regulatory technical standards, as a rule of thumb mandatory clearing applies to EU and in certain cases, non-EU counterparties in OTC derivative contracts.

icmagroup.org/Regulatory-Policy-and-Market-Practice/repo-and-collateral-markets/legal-documentation/global-master-repurchase-agreement-gmra/).

¹⁴ See e. g., the US Commodity Futures Modernization Act of 2000, which even deregulated the then existing rules.

¹⁵ The Financial Crisis Inquiry Commission (2011) xxiv.

¹⁶ Braithwaite/Murphy (2017a) 481.

¹⁷ Financial Services Authority (2009) 82.

¹⁸ Armour et al. (2016) 418.

¹⁹ G20, “Declaration on Strengthening the Financial System” (London, 2 April 2009), www.g20.utoronto.ca/2009/2009ifi.html.

²⁰ G20, “Pittsburgh summit declaration” (Pittsburgh, 24–25 September 2009), www.g20.utoronto.ca/2009/2009communiqu0925.html.

²¹ Dodd-Frank Wall Street Reform and Consumer Protection Act 2010, H.R. 4173.

Furthermore, EMIR defines thresholds in relation to certain counterparties, above which transactions need to be cleared.²² Second, reporting obligation was introduced covering derivatives contracts.²³

2. The Functions of CCPs

What is a CCP from a legal and an economic point-of-view? A CCP is “an entity that interposes itself, in one or more markets, between the counterparties to the contracts traded, becoming the buyer to every seller and the seller to every buyer and thereby guaranteeing the performance of open contracts.”²⁴ Being a buyer to every seller and a seller to every buyer reflects the legal solution behind central clearing: counterparty substitution or novation. This legal solution is also true from an economic perspective. As Cox–Steigerwald argue, “a CCP, viewed from an economic perspective, is a “commitment mechanism.” The ultimate function of a CCP is to assure performance of contract obligations. They do so by becoming substituted counterparties to all trades submitted for clearing – becoming, in effect, the buyer to every seller and the seller to every buyer thereby ensuring the performance of open contracts.”²⁵

The direct consequence of central clearing is that the parties “are essentially indifferent to the creditworthiness of anyone but the CCP, which significantly decreases the cost of risk monitoring.”²⁶ A further advantage of central clearing is multilateral netting.²⁷ Instead of bilateral netting between the counterparties or contractually agreed multilateral netting between several counterparties²⁸,

²² See Article 4 of EMIR. The exact cases where the clearing obligation applies is not relevant for the purposes of this paper. For a useful overview, see “Clearing Obligation and Risk Mitigation Techniques under EMIR” (<https://www.esma.europa.eu/regulation/post-trading/otc-derivatives-and-clearing-obligation>).

²³ See Article 9 of EMIR. (This paper focuses on the regulatory principles and not the detailed rules. Where necessary, this paper will rely on the legal norms of the European Union).

²⁴ European Central Bank (2009) 4.

²⁵ CPSS-IOSCO (2012) 9. Cox/Steigerwald (2017) 2. For the analysis of the legal aspects of substitution, see Chamorro-Courtland (2011) 517. See further Evanoff/Russo/Steigerwald (2007) 6.

²⁶ Evanoff/Russo/Steigerwald (2007) 6. See further Weber (2016) 81–82. For a differing view see e.g. Levitin, who argues that CCPs concentrate counterparty risk (Levitin (2013) 463).

²⁷ Rehlon/Nixon (2013) 148, 150.

²⁸ For problems relating to contractual multilateral netting see Ansett Australia Holdings Ltd v International Air Transport Association [2008] H.C.A. 3 (HC (Aus)) and British Eagle International Airlines Ltd v Compagnie Nationale Air France [1975] 1 W.L.R. 758; [1975] 4 W.L.U.K. 28 (HL). See M. Bridge “Clearing houses and insolvency,” Law and Financial Markets Review, September 2008 418.

central clearing reduces counterparty risk by offsetting the amounts due from all counterparties. Furthermore, it is widely held that – in most cases²⁹ – central clearing reduces counterparty credit risk,³⁰ which refers to the risk that the counterparty cannot fulfil its obligations.³¹ Without close-out netting, the maximum of a party equals the positive replacement value.³² To reduce counterparty risk, the parties may net their bilateral positions. The effect of close-out netting is enormous. In case of OTC derivatives, mark-to-market exposures were reduced by 78.7 % as a result of close-out netting.³³ The residual net exposure can be covered by collateral.³⁴ These techniques help to reduce counterparty exposure, but they do not make such risk disappear.³⁵ Central counterparties remove the default risk of the original counterparty. As the parties novate their contract to the CCP, the CCP substitutes the original parties. Consequently, instead of the default risk of the original counterparty, each party bears the counterparty risk of the CCP. As a consequence of CCP clearing, OTC derivatives risk transfers to the CCPs, “which are perceived as more adept at managing counterparty risk.”³⁶

However, mandatory clearing may lead to a new problem: the CCPs can become systematically important institutions.³⁷ Instead of the “too-big-to-fail” formulation used in case of financial institutions, CCPs are often described as “too-interconnected-to-fail”³⁸. To support this view, it is worth looking at the increase of the CCP cleared transactions and the structure of the CCP market.

The growth of central clearing has been significant in the past decade. Looking at notional amounts outstanding by counterparty, the share of CCPs grew from below 40 % in 2008 to almost 80 % in 2020 in case of interest rate derivatives, and from 20 % in 2012 to over 60 % in 2020 in case of credit default swaps.³⁹ The

²⁹ For an empirical analysis see *Duffie/Zhu* (2011).

³⁰ See e.g., *Sayah* (2017) 3.

³¹ The relevance of counterparty credit risk is different in the case various derivative products. For empirical analysis see e.g., *Arora/Gandhi/Longstaff* (2012), *Du/Gadgil/Gordy/Vega* (2016), *Morkötter/Pleaus/Westerfield* (2012), *Xiao* (2019).

³² IMF (2010) 94.

³³ See ISDA (2021).

³⁴ See e.g., IMF (2010) 93.

³⁵ The extent of counterparty risk is different in case of various derivatives, but this difference is not relevant for the purposes of this paper. As long as counterparty risk exists, central clearing might be a useful tool for eliminating such risk.

³⁶ *Braithwaite/Murphy* (2017a) 483. See further *Genito* (2019) 955.

³⁷ *Armour et al.* (2016) 418.

³⁸ See e.g., *Wendt* (2015).

³⁹ BIS (2021).

latest ESMA statistics also show strong increase in central clearing for interest rate derivatives and credit default swaps for 2020.⁴⁰

Furthermore, the CCPs’ position is unique as only a handful of CCPs dominate the market. Systemically important banks, therefore, significantly rely on these CCPs.⁴¹ As Huang and Takáts show, “[t]he five largest members together account for more than one half of the total outstanding positions at CCPs”.⁴² As the latest ESMA stress test found, “most CCPs are connected to several of the top-10 EU clearing member groups. The analysis also shows some level of interconnectedness through custodians”.⁴³ Braithwaite also emphasises that “client and indirect access arrangements exacerbate the type of market interconnectedness that regulators intended to reduce by introducing compulsory CCP clearing.”⁴⁴

As a consequence of their interconnectedness, “the failure of a single CCP could compromise systemic stability and thus necessitating government intervention.”⁴⁵ The Financial Stability Board’s evaluation shows that “distress in a single point in the network could be directly transferred to the rest of the system”⁴⁶, and the default of a large clearing member could simultaneously affect multiple CCPs, with potentially dramatic consequences for the stability of global finance.⁴⁷ Although the failure of CCPs may seem unlikely,⁴⁸ taking into account the prudential requirements applying to typical clearing members,⁴⁹ as Duffie and Zhu convincingly show, the failure of a CCP can disrupt the financial sector and the real economy as well.⁵⁰

III. Avoiding CCP Default

The solvency of the CCP as a systematically important institution requires further measures, such as heightened capital and margin requirements, to protect the financial sector’s resiliency.⁵¹ This Chapter will provide an overview of the instruments used to minimise the risk of the CCP’s default.

⁴⁰ ESMA (2020a).

⁴¹ *Faruqui/Huang/Takáts* (2018) 77.

⁴² *Huang/Takáts* (2020a), see further *Faruqui/Huang/Takáts* 77.

⁴³ ESMA (2020b) 8.

⁴⁴ *Braithwaite* (2015) 16.

⁴⁵ *Genito* (2019) 940.

⁴⁶ FSB (2020) 55.

⁴⁷ FSB (2020) 57.

⁴⁸ *McLaughlin/Berndsen* (2021).

⁴⁹ *Priem* (2018) 352.

⁵⁰ *Duffie/Zhu* (2011) 74.

⁵¹ *Armour et al.* (2016) 418. See Article 16 EMIR.

1. Distinguishing CCPs from Banks

Whereas CCPs are sometimes compared to banks, and the resolution rules of the CCPs in many respects copy bank resolution rules, these two institutions are significantly different both concerning their business models and their risk profiles.⁵² In this Chapter, we will show the nature of risks in the case of CCPs is different from the risks of banks. The analysis will serve useful in explaining why the rules ensuring the solvency of CCPs introduced by the EMIR are different from bank solvency rules. In the next Chapter, we will show how the difference between the two institutions also leads to differences concerning resolution.

Banks provide various functions and take a risk as they take short-term deposits but provide long-term financing. Consequently, they operate on mismatched books. The primary risk in the case of banks arises from this inevitable mismatch. Regulation handles this risk by way of capital requirements.⁵³ CCPs do not take a similar risk. Their only function is clearing,⁵⁴ and they run matched books, meaning that “any position taken on with one counterparty is always offset by an opposite position taken on with a second counterparty”.⁵⁵ The only risk they take is the default risk of the counterparty they substitute.⁵⁶ In case of default of the substituted party, the CCP may use various tools to restore its matched book. These tools include the sale of the product, or the CCP may use default management auction to transfer the defaulting party’s position.⁵⁷ “Returning to this matched book is of considerable importance to the CCP, as an un-matched book would expose the CCP to changes in the market value of its un-matched positions, which can negatively evolve during stressed market circumstances.”⁵⁸

This leads to significant difference between the balance sheets of banks and CCPs. Whereas the balance sheet in case of banks provide valuable information about the banks’s financial position⁵⁹, the same is not true for CCPs, where not the CCP’s capital, but the margin and the default fund ensures that the CCP can

⁵² Cox and Steigerwald argue that “While both serve an intermediary function, the similarity ends there.” (Cox/Steigerwald (2017) 5).

⁵³ Priem (2018) 353, Cox/Steigerwald (2017).

⁵⁴ Singh/Turing (2018) 6, 12.

⁵⁵ Rehlon/Nixon (2013) 148.

⁵⁶ Nabilou/Asimakopoulos (2020) 74.

⁵⁷ Committee on Payments and Market Infrastructures – Board of the International Organization of Securities Commissions Central counterparty default management auctions – Issues for consideration, June 2020, 1.

⁵⁸ Priem (2018) 353. See further Duffie (2015) 88.

⁵⁹ See e.g. Cox/Steigerwald (2017) 9.

perform its obligations. The difference in the composition of the assets of these institutions⁶⁰ leads to two significant consequences. First, illiquidity is practically the same as insolvency, as the CCP “has no long-term assets to call in.”⁶¹ Second, the incentives of the stakeholders are different. Contrary to banks where equity owners take significant risk in the case of a resolution, in the case of a CCP resolution, the risk is primarily taken by the clearing members.⁶²

2. Managing Risk under the EMIR

The EMIR requires that the CCPs have a permanent and available initial capital of at least EUR 7,5 million.⁶³ As we have seen above, the capital requirement is significantly less relevant in the case of CCPs; therefore, this requirement, on its own, does not provide significant protection. The EMIR, however, contains further requirements ensuring the safe operation of CCPs. Part of these is organisational⁶⁴ and conduct of business rules⁶⁵, which are less important for this paper. However, the EMIR also contains prudential requirements⁶⁶, which are of utmost interest for avoiding the default of the CCPs.

CCPs shall measure and manage their exposure “on a near to real-time basis”.⁶⁷ They must hold financial resources that can absorb the losses arising from the clearing member’s default.⁶⁸ To this end, the CCPs hold two types of collateral: margins and a default fund.

The CCPs collect initial margins from its clearing members. “Initial margin is typically collected to cover potential changes in the value of each participant’s position (that is, potential future exposure) over the appropriate close-out period in the event the participant defaults”.⁶⁹ The initial margin needs to be posted for every trade without netting, and it needs to be immediately available in case of default.⁷⁰

⁶⁰ For difference in the balance sheets of banks and CCPs see *Faruqui/Huang/Takáts* (2018) 79–80.

⁶¹ *Singh/Turing* (2018) 6.

⁶² *Singh/Turing* (2018) 9.

⁶³ Art. 16 (1) of EMIR.

⁶⁴ Chapter 1 of Title IV of EMIR.

⁶⁵ Chapter 2 of Title IV of EMIR.

⁶⁶ Chapter 3 of Title IV of EMIR.

⁶⁷ Art. 40 of EMIR.

⁶⁸ *Braithwaite/Murphy* (2017b) 296.

⁶⁹ BIS (2012) 51.

⁷⁰ Margin requirements for non-centrally cleared derivatives (April 2020) (<https://www.bis.org/bcb/publ/d499.pdf>).

Furthermore, the CCPs shall set up a pre-funded default fund for losses from defaults that cannot be covered from the initial margin.⁷¹ The EMIR also sets quantitative requirements relating to the size of the fund. The default fund shall at least enable the CCP to withstand, under extreme but plausible market conditions, the default of the clearing member to which it has the largest exposures or of the second and third largest clearing members, if the sum of their exposures is larger.⁷² The contributions shall be proportional to the exposures of each member. The size of the clearing member's contribution to the default fund is very significant; for example, in the case of the CME Group, it varies between \$ 15,000,000 and \$ 50,000,000.⁷³ It is not surprising, therefore, that smaller firms are unable to become direct clearing members.⁷⁴ As Carter and Garner show, "The risk that participants' contributions will be used to absorb losses arising from the default of another clearing participant encourages each participant to monitor the broader risk management framework of the CCP to reduce the probability of this risk crystallising."⁷⁵

As an additional layer of protection, the CCPs must maintain further pre-funded financial resources and credit lines or similar arrangements.⁷⁶

Apart from the initial margin, the clearing members also pay variation margins to reflect changes in the mark-to-market value of the contract. In principle, this margin does not function as collateral to the CCP as – assuming an original contract between A and B – the variation margin collected by the CCP from A is immediately paid to B.⁷⁷

3. The Default Waterfall Rules

The EMIR not only defines the exposure and liquidity management tools but also determines the basic rules of the default waterfall, i. e., in what order these tools can be deployed.⁷⁸

In case of default, as a first step, the CCP shall use the margin⁷⁹ and – should the initial margining of the defaulting counterparty not be enough – the default

⁷¹ Art. 42 (1) of EMIR.

⁷² Art. 42 (3) of EMIR.

⁷³ Cited by Genito (2019) 945.

⁷⁴ Braithwaite/Murphy (2020) 2. For an analysis of the unintended consequences of indirect clearing, see Braithwaite (2016).

⁷⁵ Carter/Garner (2015) 84. See further Braithwaite (2015) 21.

⁷⁶ Art. 43 – 44 of EMIR.

⁷⁷ For practical problems see Braithwaite (2015) 19.

⁷⁸ Art. 45 of EMIR.

⁷⁹ Art. 45 (1) of EMIR.

fund contribution posted by the defaulting clearing member.⁸⁰ If these sources do not cover the CCP's losses, the CCP shall use a dedicated portion of its own fund ("skin-in-the-game")⁸¹, following which the default fund of the non-defaulting clearing members and all other resources referred to above can be used. The CCP may not use the margins posted by non-defaulting clearing member to cover the losses resulting from the default of another clearing member.⁸²

The minimum of the skin-in-the-game under the EMIR is 25 % of the CCP's capital requirement.⁸³ The skin-in-the-game is the amount the CCP will lose ahead of any loss of the non-defaulting members if the initial margin plus the defaulting member's contribution to the default fund is not enough to cover the CCP's loss. It functions, therefore, as an incentive, aligning the interest of the clearing members and the CCP's shareholders. The proper amount of the skin-in-the-game remains heavily disputed.⁸⁴ It is important to note that the risk that the CCP's shareholders take does not equal the skin-in-the-game amount. The CCP-RRR provides that in the course of the resolution, the shareholders suffer further losses (e. g. if the resolution authority writes down the CCP's equity).

The default waterfall is structured in this way to balance the interest of the clearing members and the interests of the market.⁸⁵ Considering that CCPs may become systematically important, the interest of the market or society could be to avoid the default of the CCP. However, to do so, the CCP may need to mutualise the default risk so that it is borne by all clearing members at least to the extent of their pro-rata share in the default fund.⁸⁶ As unlimited risk would be unmanageable for the clearing members, the pre-funded default fund is determined in advance, taking into account how the probability of the CCP's default reduces as we proceed through the steps of the waterfall.⁸⁷

⁸⁰ Art. 45 (3) of EMIR.

⁸¹ Art. 45 (5) of EMIR.

⁸² Art. 45 (4) of EMIR.

⁸³ Art. 35 of 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.

⁸⁴ *Panetta* (2020); *Huang/Takács* (2020b) 2. See further *Huang* (2019) 3; *Carter/Garner* 86; *A Path Forward for CCP Resilience, Recovery, and Resolution* (2020); *European Association of CCP Clearing Houses* (2020).

⁸⁵ For conflicts of interest relating to the design of the default waterfall see e.g. *Padrik/Zhang* (2020).

⁸⁶ *Armour* et al. (2016) 472.

⁸⁷ *Faruqui/Huang/Takács* (2018) 81.

IV. Insolvency, Recovery and Resolution

Unless specific rules are introduced, if the measures explained above are not enough to restore liquidity, the CCP becomes insolvent. Although a CCP-insolvency may seem less likely⁸⁸, it is important to remember that central counterparties have become insolvent in the past. There have been three documented failures of CCPs: the Paris-based Caisse de Liquidation des Affaires en Merchandise (1974), the Kuala Lumpur Commodity Clearing House (1983) and the Hong Kong Futures Exchange Clearing Corporation (1987). These failures shared three key features: clearing members were unable to meet their margin requirement obligations in times of financial distress, the default funds were insufficient to absorb all financial losses and the markets where they operated shut.⁸⁹

This Chapter will first examine briefly why the traditional insolvency law rules are not appropriate in the case of CCPs. Then the paper will review questions relating to recovery and resolution of CCPs based on the new European regulation.

1. *Insolvency of CCPs*

When a company becomes insolvent, its assets are distributed among its creditors following the hierarchy defined in the applicable insolvency regime. At first sight, the insolvency of a financial institution operates the same way. However, bank defaults have shown that the classical insolvency rules are not appropriate in the case of banks. As this paper focuses on CCPs, we only provide a high-level overview of this topic to the extent necessary for this paper's purposes.

The major difference between non-financial and financial firms' insolvency is that in case the first, negative externalities borne by third parties are limited. In contrast, in the case of the latter, these are very significant. The failure of a bank could not merely lead to the default of other financial institutions (domino effect), but – as trust disappears – it could also freeze lending and cause significant disruption of the real economy.⁹⁰ After the 2008 financial crisis, several countries introduced bank resolution rules to tackle the systemic risk of bank insolvency.

The same logic seems to be true for CCPs. Applying the standard insolvency rules would seriously disrupt the CCPs default management rules. To give some examples, mutual set-off would be decided by the insolvency administrator, who

⁸⁸ See e.g. *McLaughlin/Berndsen* (2021).

⁸⁹ *Bignon/Vuilleme* (2017).

⁹⁰ *Armour et al.* (2016) 342, *Armour* (2015) 482.

may also set aside contracts relying on the prohibition of preferential treatment, and the administrator could also apply to the court for permission to dispose of property that is subject to a charge other than a floating charge.⁹¹ These examples clearly show why close-out netting requires statutory safe harbours, ensuring that the rules on close-out netting and collateral continue to apply irrespective of the insolvency of one of the counterparties.⁹² More generally, the length of procedure, the lack of continuity of banking function, and the fire sales that inevitably occur in insolvency cases support the view that the traditional insolvency rules are not appropriate. Therefore, it is not surprising that the Settlement Finality Directive and the Financial Collateral Arrangement Directive require special treatment of close-out netting arrangements.⁹³

However, after the financial crisis, further measures were sought. Since the market of CCPs is highly concentrated and the market participants are interconnected, margin calls of one CCP could have a devastating effect. To ensure that CCPs continue to clear and avoid bailouts, mass termination and close out, leading to liquidity and collateral strains and potential runs, the FSB proposed recovery and resolution tools similar to the BRRD. The CCP-RRR was introduced on this basis.⁹⁴ The CCP-RRR states that recovery and resolution are “necessary to prevent reliance on taxpayers’ money in the event of their disorderly failure”.⁹⁵ The objectives of the CCP-RRR – in line with the FSB Guidance⁹⁶ – are the maintenance of the critical functions of the CCP, preservation of financial stability and avoiding a significant adverse effect on the financial system and its ability to serve the real economy.⁹⁷

2. Recovery of CCPs

The CCP-RRR follows the logic of the BRRD when it distinguishes between recovery, focusing on the restoration of the operation of the CCP using contractual tools, and resolution conducted by authorities,⁹⁸ aiming at “picking out of

⁹¹ *Braithwaite/Murphy* (2017b) 299.

⁹² *Paech* (2016).

⁹³ Directive 2002/47/EC of the European Parliament and of the Council of 6 June 2002 on financial collateral arrangements.

⁹⁴ Impact Assessment Proposal for a Regulation of the European Parliament and of the Council on a Framework for the Recovery and Resolution of Central Counterparties and Amending Regulations (EU) No. 1095/2010, (EU) No. 648/2012, and (EU) 2015/2365 [SWD(2016) 369 final] (28.11.2016) 14.

⁹⁵ Recital (6) of the CCP-RRR.

⁹⁶ FSB Guidance on Central Counterparty Resolution and Resolution Planning 2.

⁹⁷ Recital (7) and Art. 23 of the CCP-RRR.

⁹⁸ *Duffie* (2015) 90.

the wreck what is needed to achieve the wider social and economic objectives⁹⁹. The regulation sets forth that resolution authorities, resolution colleges shall be designated, which shall operate with the European Supervisory Authorities' involvement.¹⁰⁰

CCPs shall draw up and maintain a recovery plan providing for measures to be taken in the case of both default and non-default events and combinations of both, to restore their financial soundness, without any public financial support, and allow them to continue to provide critical functions following a significant deterioration of their financial situation or risk of breaching their capital and prudential requirements under the EMIR.¹⁰¹ The competent authority shall assess the recovery plans.¹⁰² Where a CCP intends to activate its recovery plan, it shall inform the competent authority. The authority may require the CCP to refrain from taking that proposed measure if it may cause significant adverse effects to the financial system or is unlikely to be effective.¹⁰³

CCPs may utilise three primary tools: guarantee-fund replenishment payments (cash calls), variation margin gains haircutting and tear-up of contracts.

The CCP will first require its members to contribute to the guarantee fund. This tool, however, has its limits. First, if the recovery tools need to be deployed not due to the default of one clearing member but as a consequence of a market event that negatively affects several of its members, requesting further payments might lead to the default of more clearing members. Second, to increase efficiency, the recovery tools should be predictable so that clearing members can foresee the risk they take.¹⁰⁴ It is not surprising, therefore, that the CCP-RRR requires, for example, that cash calls need to be capped; otherwise the clearing members would face unmanageable risk and onerous regulatory capital requirements.¹⁰⁵

The CCP might try to collect cash by reducing its variation margin payment obligation. As explained above, variation margin is collected to reflect changes

⁹⁹ *Singh/Turing* (2018) 8.

¹⁰⁰ Title II of the CCP-RRR. As a comparison, the resolution authorities under the BRRD is available on the EBA's website: <https://www.eba.europa.eu/about-us/organisation/resolution-committee/resolution-authorities>. Typically central banks (see e.g. Belgium, Croatia, Hungary, Ireland, Italy, Lithuania, Portugal, Romania and Slovenia) and national financial supervisors (see e.g. Austria, Denmark, Estonia, Luxembourg) act as resolution authorities, unless the Member State established an independent resolution authority (see e.g. Finland, Slovakia).

¹⁰¹ Art. 9 (1) of the CCP-RRR.

¹⁰² Art. 10 (1) of the CCP-RRR.

¹⁰³ Art. 9 (4) of the CCP-RRR.

¹⁰⁴ *Duffie* (2015) 94.

¹⁰⁵ *Duffie* (2015) 92.

in the mark-to-market value. The variation margin collected from the seller is paid to the buyer. Counterparty risk materialises when the out-of-the-money party is unable to post variation margin, but the CCP is still under an obligation vis-à-vis the other party to pay the variation margin.¹⁰⁶ In the case of A's default, assuming that the margins and the guarantee funds are not enough to handle the loss arising from the CCP's unmatched books, the CCP might accumulate cash by collecting the variation margin in full but reducing its variation margin payment obligations (variation margin gains haircutting, VMGH). This tool seems to provide only a temporary solution and may not be sufficient to ensure the sound operation of the CCP in the longer run. However, this tool also has a significant advantage: it creates only limited exposure since the clearing member's loss equals the difference in value between the moment of default and the actual value.¹⁰⁷ A further advantage of the VMGH is that it is clear and unbiased.¹⁰⁸

A third solution for the CCP is to tear-up contracts with clearing members. This tool allows the CCP to cancel some or all of its positions.¹⁰⁹ A tear-up may enable the CCP to survive, but “the function of the CCP, namely to ensure counterparty performance, is disregarded”.¹¹⁰

Similarly to the BRRD, the CCP-RRR also introduces early intervention powers for the competent authorities, where a CCP infringes or is likely to infringe in the near future the capital and prudential requirements, or poses a risk to financial stability, or where other factors could affect the operations of the CCP.¹¹¹ These powers include, among others, the implementation of recovery measures, the convening of the shareholders' meeting, the changing of the CCP's business strategy and the replenishing of the CCP's financial resources.¹¹²

¹⁰⁶ Although it is easy to say when a clearing member is in default, but the CCP will only have access to the margin and the default fund if it officially acknowledges default. Such a step could, however, lead to the CCP losing its skin-in-the-game and it could also mean reputational loss to the CCP. It is not surprising, therefore, that the regulators limit the CCPs' discretion on calling default. (*Faruqui/Huang/Takáts* (2018) 85).

¹⁰⁷ *Priem* (2018) 360.

¹⁰⁸ *Singh/Turing* (2018) 14.

¹⁰⁹ *Duffie* (2015) 93.

¹¹⁰ *Singh/Turing* (2018) 13.

¹¹¹ Art. 19 (1) of the CCP-RRR.

¹¹² Art. 18 (1) of the CCP-RRR.

3. CCP Resolution Tools

Parallel to the CCP's preparation of a recovery plan, the resolution authority shall draw up a resolution plan for the CCP.¹¹³ Under the CCP-RRR, a CCP is deemed resolvable, where the resolution authority considers it feasible and credible to either liquidate it under normal insolvency proceedings or to resolve it using the resolution tools and exercising the resolution powers while ensuring the continuity of the CCP's critical functions and avoiding any use of extraordinary public financial support and avoiding, to the maximum extent possible, any significant adverse effect on the financial system and the potential for undue disadvantage to affected stakeholders.¹¹⁴

As a general rule, the CCP-RRR requires – with certain exceptions – that all contractual obligations and other arrangements in the CCP's recovery plan are enforced, the shareholders of the CCP under resolution bear first losses, and that – similarly to the no-creditor-worse-off principle of the BRRD – shareholders, clearing members and other creditors do not incur greater losses than they would have incurred had the resolution authority not taken resolution action, and the CCP had instead been wound up under normal insolvency proceedings, following the full application of the applicable contractual obligations and other arrangements in its operating rules.¹¹⁵ Although this rule is based on Art. 34 of the BRRD, there is a significant difference. The requirement that all contractual obligations in the CCP's recovery plan are enforced to the extent that they have not been exhausted before entry into resolution¹¹⁶ does not exist in the case of the BRRD. This requirement shows that in the case of CCPs, the recovery and resolution tools overlap, but is also reflects the intention to use tools that are “likely to affect the clearing members less than other, unanticipated measures adopted by the resolution authority”.¹¹⁷

There are also relevant differences between the resolution tools under the BRRD and the CCP-RRR. Art. 37 (3) of the BRRD introduced four resolution tools: (i) the sale of business tool, which allows the transfer of the bank's shares or assets to a purchaser that is not a bridge institution;¹¹⁸ (ii) the bridge institution tool according to which a public authority created for the purpose of temporary acquisition of the shares or the assets of a failing bank;¹¹⁹ (iii) the asset separation tool according to which resolution authorities have the power to

¹¹³ Art. 13 (1) of the CCP-RRR.

¹¹⁴ Art. 16 (2) of the CCP-RRR.

¹¹⁵ Art. 23 (1) and Art. 60 of the CCP-RRR.

¹¹⁶ Art 23 (1) of the CCP-RRR.

¹¹⁷ Binder (2021) 23.

¹¹⁸ Art. 38 – 39 of the BRRD.

¹¹⁹ Art. 40 – 41 of the BRRD.

transfer assets, rights or liabilities of an institution under resolution or a bridge institution to one or more asset management vehicles;¹²⁰ and (iv) the bail-in tool, which allows the writing off of debts and the conversion of debt to equity.¹²¹ The CCP-RRR recognises the first two tools, but instead of asset separation and bail-in, it introduces position and loss allocation tools and the write-down and conversion tool.¹²²

The position allocation tools (e.g. termination of contracts¹²³, reduction of the value of any gains payable by the CCP to non-defaulting clearing members¹²⁴, resolution cash-calls to clearing members¹²⁵) are used to rematch the CCP's book. In contrast, the loss allocation tools are used to cover losses of the CCP (or the bridge-CCP), to restore the ability of the CCP (or the bridge-CCP) to meet payment obligations as they fall due; and to support the transfer of the CCP's business by way of the sale of business tool to a solvent third party.¹²⁶ Furthermore, the resolution authority may also terminate all or some of the CCP's contracts¹²⁷ or reduce the amount of the CCP's payment obligations to non-defaulting clearing members where those obligations arise from gains due following the CCP's processes for paying variation margin.¹²⁸ The last regulatory tool relating to position and loss allocation is the resolution authority's right to require non-defaulting clearing members to contribute in cash to the CCP up to twice the amount equivalent to their contribution to the CCP's default fund.¹²⁹

The CCP-RRR also empowers the resolution authority to write down and convert instruments of ownership and debt instruments or other unsecured liabilities.¹³⁰ Also, in line with the BRRD, the CCP-RRR allows that the resolution authority enters into financing arrangements to meet temporary liquidity needs to ensure the effective use of the resolution tools.¹³¹ In exceptional cases, government stabilisation tools can be used.¹³² The authority's resolution powers are similar to the BRRD's powers.¹³³

¹²⁰ Art. 42 of the BRRD.

¹²¹ Art. 43 – 44 of the BRRD.

¹²² Art. 27 (1) of the CCP-RRR.

¹²³ Art. 29 of the CCP-RRR.

¹²⁴ Art. 30 of the CCP-RRR.

¹²⁵ Art. 31 of the CCP-RRR.

¹²⁶ Art. 28 of the CCP-RRR.

¹²⁷ Art. 29 of the CCP-RRR.

¹²⁸ Art. 30 of the CCP-RRR.

¹²⁹ Art. 31 of the CCP-RRR.

¹³⁰ Art. 32 of the CCP-RRR.

¹³¹ Art. 44 of the CCP-RRR.

¹³² Art. 45 of the CCP-RRR.

¹³³ Art. 48 of the CCP-RRR.

We will now turn to the question of whether the resolution tools in the CCP-RRR are appropriate.

4. Sale of Business and Bridge Institution Tools

The CCP-RRR copies the BRRD's sale of business tool and bridge institution tools. These rules allow the resolution authority to transfer instruments of ownership issued by a CCP under resolution and any assets, rights, obligations or liabilities of a CCP under resolution to an independent third party or a bridge institution, without the consent of the shareholders of the CCP or any third party other than the purchaser.¹³⁴

Several authors argue that neither the sale of business tool nor the bridge CCP tool is viable in the case of CCPs for various compelling reasons.

The size and complexity of the entities involved and the minimal number of potential acquirers make the transfer of business “nigh impossible”.¹³⁵ Bank resolutions typically happen very quickly. Speed is even more critical in the case of CCPs, considering that due to the change in the market conditions, the CCPs position can very quickly deteriorate. However, due to the complexity of the CCP's business, it might be impossible to restore the operation of the CCP over a weekend.¹³⁶ Transferring the CCP to a bridge CCP would not be feasible in a timely manner as this entity “would have no ready-made risk model of its own”.¹³⁷ If the business is sold to a competitor with a more robust risk model, readjusting the margin and matching the eligibility criteria would pose significant problems.¹³⁸

Others argue that the idea of asset separation is fundamentally wrong in the case of CCPs. Whereas banks have various products, out of which a few may be bad, CCPs only have one product: clearing.¹³⁹ If a CCP defaults, that is due to the failure of its risk model. It is, therefore, not possible to distinguish between good and bad assets. The transfer of the business to a bridge CCP would simply

¹³⁴ Art. 40 and 42 of the CCP-RRR.

¹³⁵ *Singh/Turing* (2018) 8. See further *Braithwaite/Murphy* (2019) 439. The authors convincingly show how resolution gets even more complicated in case of multiservice CCPs (i.e. CCPs providing clearing services and the necessary infrastructure allowing the services to clear) (*Braithwaite/Murphy* (2019) 441 – 442).

¹³⁶ *Singh/Turing* (2018) 8. The term ‘resolution weekend’ is widely used, reflecting the idea that the resolution measures are applied outside normal market hours so that the institution under resolution is back in business on Monday. The preparatory steps often take weeks or months.

¹³⁷ *Singh/Turing* (2018) 12.

¹³⁸ *Singh/Turing* (2018) 12 – 13.

¹³⁹ *Singh/Turing* (2018) 12.

“perpetuate a failed risk model”.¹⁴⁰ Furthermore, as Singh and Turing argue, sale in this case might be a “misnomer” as the buyer will “take over a net loss-making book.”¹⁴¹

These problems are exacerbated by the fact that CCPs typically have complex operational structures. It is not uncommon that a company operates several CCPs (multi-silo CCP), where the availability of cross-silo netting in the case of CCP default is made contractually available. Resolution of such a CCP is even more problematic. Transferring the CCP’s assets to a bridge institution might block cross-silo netting. Duffie argues that for this reason, “the resolution process for a CCP should be designed so as to avoid the breakup of netting sets”,¹⁴² explaining that this could lead to the result that CCPs are resolved at the parent level.

Braithwaite and Murphy describe similar problems when they propose organisational reforms to multiservice clearinghouses. They argue that each clearing service shall be separated into a separate legal entity, with an additional entity contracting to provide the services that support clearing. To ensure partial property transfer, they propose that resolution authorities should have the power to set up new operating companies and oblige service companies to provide their services to the new company on substantially the same terms as their existing agreements.¹⁴³

The critical voices correctly point out the difficulties of applying the transfer tools. These difficulties should, however, not mean that we abandon the concept of CCP resolution. Instead, as Duffie, Braithwaite, and Murphy convincingly suggest, further rules would be necessary to ensure that the different operational structures of CCPs do not hinder the application of resolution tools.

5. *No Creditor Worse Off*

The application of the “No creditor worse off” (NCWO) principle also seems problematic.

The NCWO requires that the outcome of the resolution and the hypothetical outcome of a normal insolvency proceedings are compared. Suppose the comparison shows that the outcome of the resolution for a creditor is worse than the outcome would have been in the case of an insolvency procedure. In that case, the creditor should be compensated for the difference. The BRRD introduced

¹⁴⁰ *Singh/Turing* (2018) 12.

¹⁴¹ *Singh/Turing* (2018) 13.

¹⁴² *Duffie* (2015) 97.

¹⁴³ *Braithwaite/Murphy* (2019).

this requirement¹⁴⁴ to ensure that bank resolutions do not qualify as expropriation.¹⁴⁵ NCWO is, therefore, a fundamental cornerstone of bank resolution that ensures the constitutionality of the procedure.¹⁴⁶

Against such a backdrop, it is not surprising that the same rule also applies in the case of CCPs.¹⁴⁷ However, it is often argued that “it is not clear what would be the most relevant counterfactual benchmark scenario, when judging whether some creditors are worse off than they would have been in that scenario.”¹⁴⁸ As de Serière notes in relation to BRRD, “the principle is difficult to apply in practice. At the time resolution is decided upon, there is no way in which a reasonably dependable determination can be made of what creditors would have received in insolvency.”¹⁴⁹ Among other examples, the author argues that it is difficult to determine what claims would arise under derivatives contracts.¹⁵⁰

These remarks seem valid. However, the NCWO principle should be looked at as a protection of the creditor’s property right. The CCP-RRR provides the resolution authority with the extraordinary power to intervene in contractual and property rights. Such intervention could be challenged on constitutional grounds. However, if the regulation ensures that irrespective of the intervention in the contractual and property rights of the creditors, no creditor is worse off than in liquidation, such a constitutional challenge seems to be based on less solid grounds. Therefore, as this principle ensures the constitutionality of resolution, it must apply in CCP resolutions. But to help develop a uniform interpretation of the rule, the European Securities and Markets Authority could develop technical standards.¹⁵¹

6. Access to Central Bank Liquidity

The CCP-RRR leaves the question open whether central bank liquidity shall be available to CCPs. CCPs may need liquidity with their daily payments and in the case of systemic events.¹⁵² There are European CCPs holding banking licence, and consequently, these CCPs have access to central bank liquidity,

¹⁴⁴ Art. 34 (1) (g) of the BRRD.

¹⁴⁵ See e.g. *de Serière/van der Houwen* (2016).

¹⁴⁶ *Koskelo* (2017) 133–145.

¹⁴⁷ Art. 60 of the CCP-RRR.

¹⁴⁸ *Duffie* (2015) 104. See further *Singh/Turing* (2018) 15, and *Priem* (2018) 359. There are more radical voice arguing that the no creditor worse off than in liquidation principle.

¹⁴⁹ *de Serière* 437.

¹⁵⁰ *de Serière* 438.

¹⁵¹ Similar proposal is made in relation to the NCWO principle of the BRRD by de Serière (*de Serière* 440).

¹⁵² *Nabilou/Asimakopoulos* (2020) 81.

whereas CCPs not holding banking licence typically do not have such access. It is interesting to see that a couple of central banks make intraday liquidity available to regulated nonbank financial institutions.¹⁵³ The IMF proposes that “CCPs should be able to deposit cash collateral with their central bank.”¹⁵⁴

Genito argues that “The possibility of a public bail out for failing CCPs undermines the original intent of the mandatory clearing reforms: reducing the risk posed by OTC derivatives while avoiding resorting to taxpayers’ money to rescue the financial sector.”¹⁵⁵ This view is shared by Duffie, who argues that due to moral hazard, government bailout of systematically important CCPs “should not be part of the failure resolution design. [...] In order to align incentives in a socially efficient manner, the CCP operator and its clearing members should expect that they are on the hook for all of the losses, one way or another.”¹⁵⁶ Chamorro-Courtland distinguishes two types of moral hazard relating to central bank liquidity. First, this could lead to clearing members undertaking excessive risk. “Second, moral hazard can arise when a CCP believes that it will automatically receive emergency liquidity from a central bank if it becomes insolvent. [...] CCPs, which know that they are too big to fail, may attempt to cut costs by compromising their risk management standards and demanding less collateral from their clearing members.”¹⁵⁷ He proposes that this risk can be avoided if central banks have discretionary power to decide whether to provide liquidity to a CCP.¹⁵⁸

The CCP-RRR draws a fine balance when it does not exclude the opportunity of central bank liquidity to CCPs, but provides that such emergence liquidity assistance cannot be assumed in the CCP’s resolution plan.¹⁵⁹

V. COVID-19 Perspectives

As explained above, margin protects the CCP against counterparty risk. However, this comes at a price. Margin calls can significantly affect liquidity available on the market, and “the sudden demand for extra collateral can exacerbate existing liquidity crises.”¹⁶⁰ As Cont shows, this might have a destabilizing effect on large clearing members in case of market stress.¹⁶¹ Faruqui-Huang-Takás

¹⁵³ IMF (2010) 110.

¹⁵⁴ IMF (2010) 110.

¹⁵⁵ *Genito* (2019) 940.

¹⁵⁶ *Duffie* (2015) 96.

¹⁵⁷ *Chamorro-Courtland* (2012) 441.

¹⁵⁸ *Chamorro-Courtland* (2012) 441.

¹⁵⁹ Art. 12 (4) of the CCP-RRR.

¹⁶⁰ *Genito* (2019) 940.

¹⁶¹ *Cont* (2017) 16.

convincingly show that “The increase in market volatility leads to liquidity strains.”¹⁶² Margin, therefore, does not make counterparty risk disappear, but it transforms it into liquidity risk.¹⁶³

The financial turbulence caused by the COVID-19 pandemic served as a test to see whether the turbulence lead to problems in clearing.

Did the CCPs remain resilient? Papers published since the outbreak of the crises, came to positive conclusions. Huang and Takács in their papers published during the first wave in May 2020, found that CCPs issued large margin calls. Within less than a month, CCP deposits at the Federal Reserve tripled.¹⁶⁴ Still, “CCPs remained resilient”.¹⁶⁵ The ISDA survey published in January 2021 came to the same conclusions: “central clearing remained resilient during the period. In total, there were three member defaults/close-outs [...]. However, other than these three defaults/close-outs, there were no reported issues of clearing participants not meeting margin calls in time.”¹⁶⁶ The European Association of CCP Clearing Houses (EACH) paper published June 2021 also emphasised that margin increased due primarily to higher volatility, but argued that “CCPs margins responded largely as designed and remained well above regulatory thresholds.”¹⁶⁷

VI. Summary

As a direct consequence of mandatory clearing introduced after the financial crisis, CCPs became systematically important institutions. The first wave of post-crisis legislation focused on ensuring that the CCPs avoid default by introducing capital and prudential requirements. These rules effectively reduced the chances of a CCP default. The experiences of the COVID-19 pandemic shows that the regulatory attempts were successful. Most counterparties were able to post margin as requested by the CCPs, and the CCPs were able to handle the default of those clearing members, which were unable to meet the margin requirements.¹⁶⁸

¹⁶² *Faruqui/Huang/Takács* 83.

¹⁶³ *Cont* (2017) 5.

¹⁶⁴ *Huang/Takács* (2020a) 2.

¹⁶⁵ *Huang/Takács* (2020a) 1.

¹⁶⁶ ISDA COVID-19 and CCP Risk Management Frameworks, <https://www.isda.org/a/3jjTE/COVID-19-and-CCP-Risk-Management-Frameworks-January-2021.pdf> 3.

¹⁶⁷ EACH Paper – CCP resilience during the COVID-19 Market Stress June 2021, <https://www.eachccp.eu/wp-content/uploads/2021/06/EACH-Paper-CCP-resilience-during-the-COVID-19-Market-Stress-June-2021.pdf> 3.

¹⁶⁸ Huang and Takács *supra* fn. 25.

It remains to be seen whether – in light of the regulatory technical standards currently in draft – the CCP recovery and the resolution rules introduced by the EU in 2021 will be as useful as the bank recovery and resolution tools. The regulation follows the logic of the EU bank recovery and resolution directive that has proved to be a useful bank resolution tool in the past six years. However, this paper found that – although the resolution of banks and CCPs might seem similar – CCPs and banks are significantly different from legal, structural and operational perspective. Consequently, the traditional resolution tools might not be appropriate for the resolution of the CCPs. This paper argues that whereas the recovery provision, the early intervention rules, the position and loss allocation tools and the write-down and conversion tools are useful, further rules would be necessary to provide ex ante certainty and to ensure that the sale of business and the bridge institution tools can be safely used in resolutions.

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