

# Central counterparties – risk minimizers?

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**Aim:** Recently, central counterparties (CCPs) have gained on popularity due to their positive impact on the financial markets during crisis (limiting contagion on cleared instruments). The post-crisis reforms favored CCPs as risk minimizers. The aim of the article is to critically assess the functioning of the CCPs and their role in the financial system.

**Design / Research methods:** In order to attain the article's goal, the critical analysis of the CCPs' activity was performed. For that purpose, the regulations and mechanisms for CCPs' functioning were considered. The next step was the analysis of the scale of CCPs' activity and dependencies between CCPs and various market participants based on the accessible data. Based on the desk research and content analysis, the risks of CCPs were derived.

**Conclusions / findings:** CCPs are not risk minimizers, but they are risk managers (redistributors). Moreover, due to the significant increase in their importance for the stable functioning of the financial markets, they should be treated as too big to fail institutions. Another recommendation that could be derived from analysis of CCPs' activity is to reframe their role in terms of running macroprudential policy. Last but not least, as the importance of proper functioning of CCPs for financial markets has increased, financial safety net mechanisms should also be properly reshaped in order to accommodate expanded role of CCPs.

**Originality / value of the article:** The literature, especially Polish, regarding the assessment of the CCPs' roles and functions is relatively scarce, especially concerning the potential dangers connected with them. The article contains the unbiased assessment of CCPs' impact on the financial markets and proposes inventive treatment of CCPs as risk redistributors, which are too big to fail.

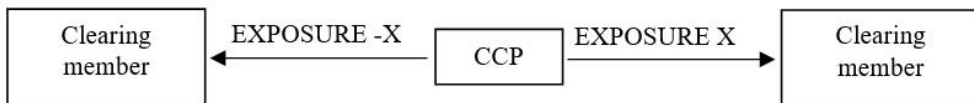
*Keywords:* central counterparties, central clearing obligation, systemic risk, risk management, crisis, too big to fail

*JEL:* G01, G18, G20, G28

## 1. Introduction

Central counterparty (CCP) is a clearing house which business involves the settlement and clearing of transactions in different classes of financial instruments. Its activity consists in entering between the original parties of the transaction – when settling and clearing a trade, CCP becomes the buyer to every seller and the seller to every buyer (taking over the entire counterparty credit risk). Simultaneously, the clearing house, theoretically, does not run any financial risks, as for every open transaction (e.g. with the original seller) it automatically enters into the opposite deal (with the original buyer), thus making CCP's position always netted and closed<sup>1</sup>.

**Figure 1. Exposures in the CCP clearing**



Source: own elaboration.

Experiences resulting from the Lehman Brothers (LB) bankruptcy showed that CCPs, due to their specific mechanism of functioning, are also skillful crisis managers. The system of charging margins from clearing members for every cleared transaction proved to be a tool limiting potential losses (resulting from transactions settled through the CCP) and, at the same time, containing the further spread of the crisis to the customers of the failed bank – most of the bank derivative transactions settled by CCPs (nominal value: over \$500 billion) after the collapse of LB were cleared without loss to its customers (Fleming, Sarkar 2014: 197). After this emergency situation (successful for CCPs), world leaders decided to implement reforms that would require institutions to settle and clear standard OTC derivatives through central counterparties. This led to an increase in the importance of CCPs. But is the current state-of-play appropriate from the point of view of the safety of financial markets?

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<sup>1</sup> There are two possible mechanism of clearing the transaction: novation and open offer (Sobczyński 2013: 111).

## CENTRAL COUNTERPARTIES – RISK MINIMIZERS?

The aim of the article is to critically evaluate the benefits and risks associated with CCPs' activities and the growing scale of their business. Based on the assessment of CCPs' functioning model, policy recommendations has been proposed.

The first part of the article summarizes the legal framework for functioning of CCPs. Second one deals with the advantages of the CCPs' functioning in the financial markets. The third chapter presents data related to the recent scope and scale of central counterparties' activity. The fourth paragraph comprises a critical assessment of CCPs' business – the emphasis was put on the risks they generate under current market and regulatory framework. The last part of the article provides a summary of the benefits and potential costs of the CCPs' activity, conclusions and recommendations for further policy actions.

### **2. Legal framework for CCP's functioning**

The functioning of CCPs is subject to the increasing number of legal provisions, which were initiated by the G-20 policy statement favoring CCPs as fundamental financial infrastructures (G20 2009). This declaration of the financial market reform was then implemented by countries in the form of national legal acts. The most crucial are Dodd-Frank Act in the USA and EMIR in the European Union (with executives acts elaborated by the respectively U.S. Securities and Exchange Commission and U.S. Commodity Futures Trading Commission, as well as European Securities and Market Authority), as these are the most essential jurisdictions for clearing financial contracts (mentioned markets clear the biggest volume of transactions).

The legal provisions implemented with reference to the functioning of CCPs can be principally divided into two groups:

- a) Provisions regarding the conduct of core CCPs' business – clearing,
- b) Provisions regarding the organization and functioning of CCPs' entity.

The first group of laws introduced the so-called central clearing obligation. This embraces the requirement to clear standard OTC derivatives (the market of which

was deemed to have significant impact on the burst-out of the financial crisis) through CCPs and report on them to central (authorized) repositories. The list of the centrally cleared transactions is set both by the CCPs (which decide what kind of transactions they want to clear and for which they apply for authorization) and regulators (which set the list of transactions that should be centrally cleared).

The second group of legal provisions envisages the rules of licensing CCPs, their minimal capital requirements, general organization and the functioning of the default waterfall. The latter seems to have the most significant contribution to the perception of CCPs as potential crisis managers, as it embraces the mechanism of sharing losses when one or a few clearing members default on their obligations towards a CCP (and they are not able to further serve their financial liabilities). As a general rule, clearing participants are obliged to provide CCP with appropriate margins (collateral) and contributions to the default funds (there can be a few default funds within one CCP – each for different class of cleared instruments). In general, the mechanism foresees that in the case of the CCP's member failure the collateral is taken over by the clearing house to cover losses or the auction is being organized to close the CCP's open position and its costs are covered by the collateral. If margins are insufficient, defaulter's default fund contribution is used to cover losses. In the next step (if margins and contribution to the default fund are scarce) the CCP's own capital is utilized (so called "skin-in-the-game" calculated basing on the capital requirements rules). The last line of defense consists in the remaining part of default fund.

The provisions implemented in the USA and EU are similar (they represent the same idea and pursue common goals), but not identical. The most important divergences lay in the subjective scope of the regulations (lower number of entities excluded from central clearing obligation in the USA), different treatment of the intra-group transactions (excluded from central clearing in the EU) and lack of push-out rules (forcing banks to transfer their swap transactions in which they are swap dealers or security-based dealers to special purpose vehicles, as a result of the impossibility to embrace such transactions with FDIC's guarantees) in the EU (Świdorski 2013: 127).

## CENTRAL COUNTERPARTIES – RISK MINIMIZERS?

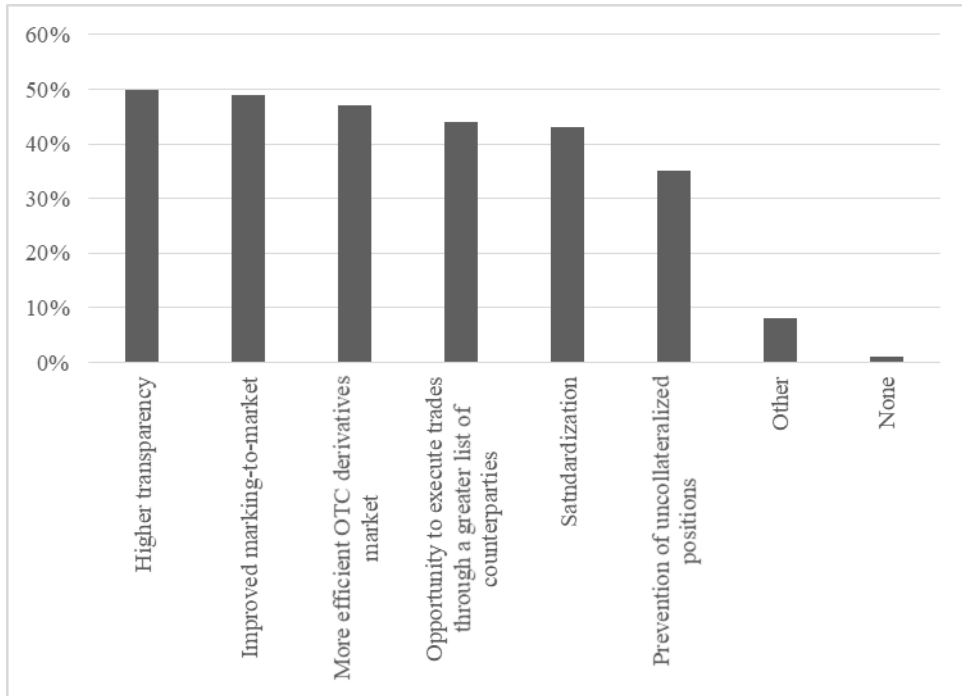
Legal binding provisions regarding the activity of CCPs is also supplemented by the whole set of guidelines and codes of good practices prepared by e.g. International Organization of Securities Commissions (IOSCO) or Committee on Payments and Market Infrastructures (CPMI).

The above-mentioned legal framework for central clearing and CCPs' functioning is assessed as wide, detailed and even casuistic. Nevertheless, the provisions are further being changed and expanded (e.g. by the rules regarding recovery and resolution of CCPs). Therefore, taking into consideration the enhanced legal status of CCPs and visible growth of their importance to the functioning of the financial markets, it is of the utmost importance to critically assess their role for the economy and capital markets.

### **3. CCPs as risk minimizers**

Although CCPs are not the originators of financial transactions and, in this sense, they do not create trends in the financial markets (they only serve an auxiliary role in transactions), they do perform a number of essential functions from the point of view of the whole financial system.

To start with, it is important to stress that CCPs are governed by laws and internal regulations (similar in all clearing houses) that clearly define uniform access rules for the participation in CCPs and the clearing rules for handled assets classes. This results in the increased standardization and transparency of the settlements – transaction parameters that were previously agreed individually (bilaterally) for every trade are fixed and imposed by CCP. This is particularly important for the functioning of the OTC derivatives markets. In the studies conducted by Greenwich Associates, issues related to the greater market transparency, better marking-to-market and standardization were identified as key benefits of the CCPs' functioning in addition to the reduction of systemic risk (Greenwich Associates 2014: 4).

**Figure 2. Benefits of central clearing through CCPs (apart from systemic risk reduction)**

Source: Greenwich Associates (2015: 4).

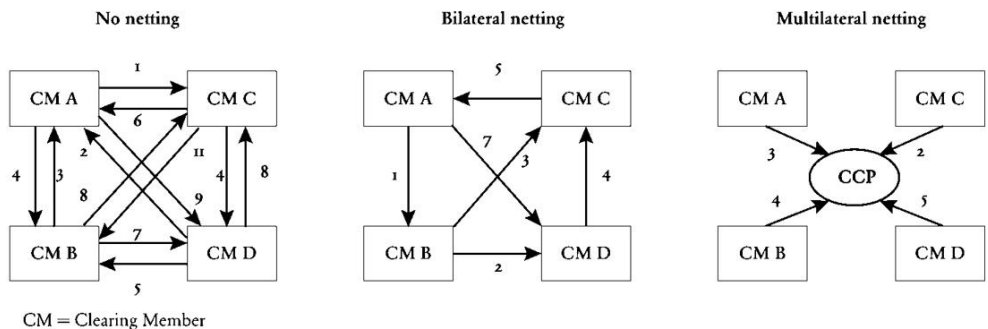
However, most important advantages of CCPs' activity are related to the potential reduction of the financial risks. First of all, CCPs guarantee the settlement and clearing of the transactions (from both parties' point of view – initial seller and buyer) even if the original contractor fails to meet its obligations. The counterparty's credit risk is therefore taken over by the clearing house that acts as a backstop. This hinders the risk for financial institutions operating in the market (CCP as a counterparty credit risk neutralizer), for which the only party in the transactions might be the regulated clearing house (instead of the whole range of contractors with diversified creditworthiness). In such a way, coordination problems are also limited. This minimization is of the utmost importance in a crisis situation. By guaranteeing settlement of transactions and managing the posted collateral, CCPs turn into crisis managers (entities specialized in the crisis management) because the rules they set

CENTRAL COUNTERPARTIES – RISK MINIMIZERS?

and apply to distribute losses resulting from the clearing member’s collapse enable the smooth burden sharing. Consequently, CCPs stabilize the markets and contribute to the reduction of their volatility (Pirrong 2011: 11).

It should also be emphasized that CCP’s activity simplifies to some extent the relationships between various market players, as bilateral transactions with multiple counterparties are displaced by the transactions with CCP. This, in turn, implies the use of multilateral netting for all cleared transactions, which reduces the net exposure of the given market participant (and hence its capital / liquidity needs to hedge taken risks) (Rehlon, Nixon 2013: 4). Consequently, it automatically entails the cost reduction of the CCP participant (multilateral netting implies that fewer securities are required as collateral, as the number of cleared transactions is reduced by as much as 90%; fewer number of transactions reduces also transaction costs). In this way, the clearing members’ management costs can also be curtailed as they may limit the resources that previously were devoted to monitor the financial condition of numerous contractors – instead of one clearing house (DnB 2013: 15). Therefore, the overall benefit of clearing transactions in CCPs is the increased market efficiency resulting from the improved counterparty credit risk management.

**Figure 3. Benefits of netting**



Source: DnB (2013: 13).

As a result of listed benefits, the clearing of transactions through CCP may result in the increase of the clearing member’s capacity to enter into further deals (e.g. due to savings on collateral achieved through netting of exposures). This, in

turn, boosts liquidity in the financial markets and reduces spreads between buying and selling prices of financial instruments (DnB 2013: 15).

Possible reduction in operational risk of CCPs could also be pointed out. It can be attained as a result of multilateral netting, as the number of settled and cleared transactions is lower than the number of traded transactions. Combined with the standardization effects, this reduces the risk of errors during servicing traded securities (DnB 2013: 14).

The above-mentioned benefits of CCPs' activity suggest that, at the level of the whole financial system, systemic risk is reduced, at least in relation to these financial market segments, which are engaged in trading of derivative instruments through CCPs. This phenomenon is indicated by 40% of respondents in the study carried out by Greenwich Associates (Greenwich Associates 2014: 3). Moreover, DnB points out that markets using CCPs are generally safer. However, the condition for that is safe and prudent management of the CCP (DnB 2013: 14).

All in all, the arguments and researches cited above suggest that CCPs are engaged in providing financial market not only with enhanced effectiveness, but also with a public good – financial stability. However, the model of delivering this good is unusual, as CCPs are usually private entities but not public authorities (these typically ensure the provision of public goods). This, however, may imply that due to these features, the activity of CCPs may be associated also with threats.

#### **4. Scale of CCPs' activity in the world**

As a consequence of the enumerated benefits of the functioning of CCPs, their relevance for the financial markets has been increasing for several years. As mentioned earlier, the experiences of the global financial crisis played pivotal role in the growing popularity of CCPs<sup>2</sup>. These lessons prompted the leaders of the world largest economies (G-20) to initiate the financial market reform consisting in

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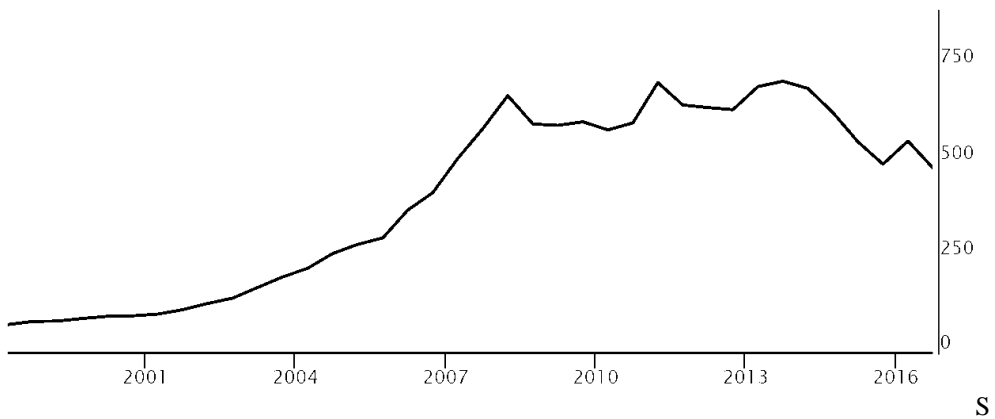
<sup>2</sup> In particular, the considerable bearing had the turbulences triggered by the involvement of financial institutions in trading OTC derivatives, as well as the collapse of LB and the effective management of its derivatives positions by the central counterparty in the United Kingdom and United States, thereby reducing the negative impact of its bankruptcy on the markets (Norman 2011: 3-6).



## CENTRAL COUNTERPARTIES – RISK MINIMIZERS?

obliging institutions to centrally clear all standard OTC derivatives (G-20 2009). In the EU, this reform was implemented by constituting the so-called “central clearing obligation” in the EMIR Regulation, which is applicable towards financial institutions (e.g. banks, insurers, asset managers) and non-financial institutions, whose exposure to OTC derivatives exceeds certain thresholds different for various instruments<sup>3</sup>.

**Figure 4. Nominal value of OTC derivatives traded globally (trillion US \$)**



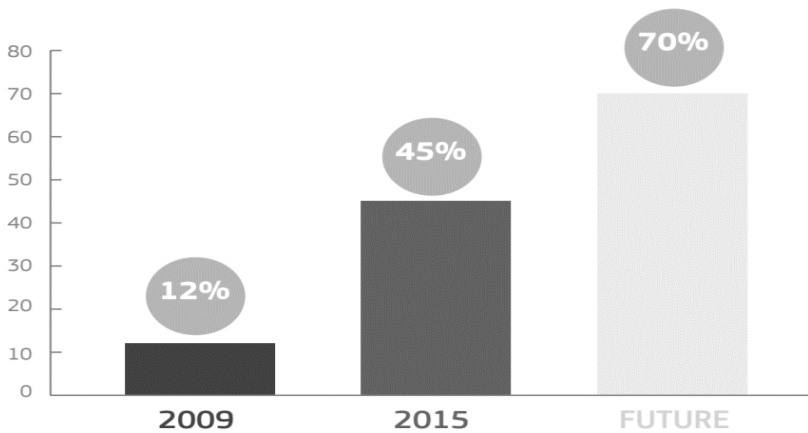
Source: own elaboration based on the data from BIS Statistics Explorer (accessed on 25.10.2017).

Although the nominal value of traded OTC derivatives has been falling slowly since the crisis, the volume of transactions cleared by CCPs and their share in all cleared derivatives has increased. Since 2009, the scale of CCPs operations has almost doubled (European Commission 2017: 2). According to the European Commission’s estimates, the value of transactions cleared by CCPs in Europe has already exceeded the equivalent of 15 times EU GDP (European Commission 2016: 1). According to the Bank for International Settlements, the value of OTC derivatives cleared by CCPs in the world amounted to approximately \$337 trillion at

<sup>3</sup> For credit derivatives – EUR 1 billion, equity derivatives – EUR 1 billion, interest rate derivatives – EUR 3 billion, currency derivatives – EUR 3 billion and commodity derivatives – EUR 3 billion. These limits apply to speculative transactions. Risk hedging transactions are not subject to central clearing (www 1).

the end of June 2016 (\$328 trillion in interest-rate derivatives) and accounted for about 62% of all derivatives (European Commission 2017: 2). From the EU perspective, CCP in the UK accounts for about 75% of the euro-denominated interest rate derivatives (European Commission 2017: 2) and is crucial clearing house for most EU institutions which clear there their derivative transactions directly or indirectly.

**Figure 5. Share of the CCP cleared transactions in the overall number of cleared derivatives transactions**



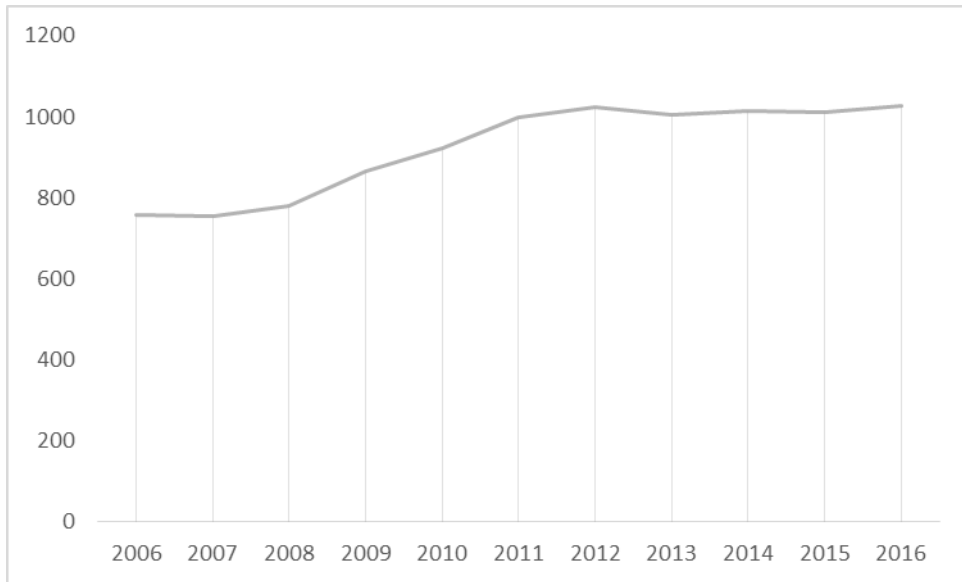
Source: European Commission (2016: 5).

Meanwhile, the number of clearing members in the CCPs is growing slowly – their main clients remain the largest financial institutions. Therefore, exposures to CCPs are concentrated in a narrow group of around 20 large institutions, which contribute to around 75% of all CCPs’ financial resources (i.e. initial margin and default fund) (BIS, FSB, OICU-IOSCO 2017: 2). The analysis of interconnections between CCPs and clearing members indicates that a few “major” CCPs are being formed (in which the largest financial institutions clear their transactions). The rest of CCPs creates a group of “peripheral” clearing houses with a greater number of less-connected members. At the same time, the largest financial institutions are usually also providers of various services to CCPs (such as credit lines, custody

## CENTRAL COUNTERPARTIES – RISK MINIMIZERS?

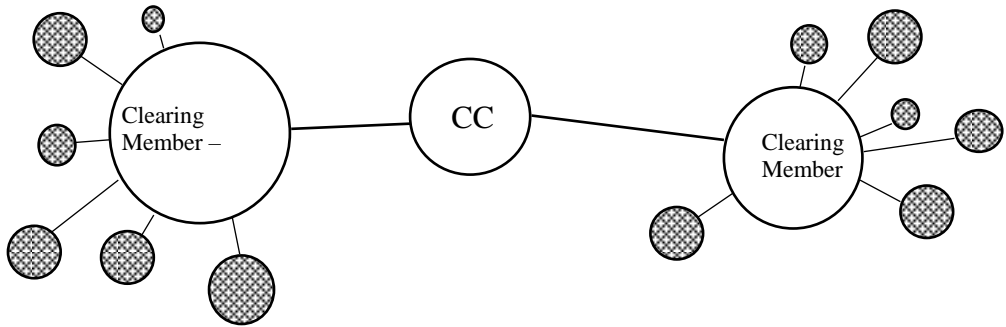
services, cash management) (BIS, FSB, OICU-IOSCO 2017: 2) or even their owners. This results in the creation of a negative feedback loop between (in particular) “major” CCPs and the largest financial institutions in the world, which increases the risk that during market turbulences the problems of CCPs or their clients will require public bailout.

**Figure 6. Number of clearing members in European CCPs**



Source: own elaboration based on the data from ECB Statistical Data Warehouse (CCP – Central Counterparty Clearing Statistics).

Beyond growing number of CCPs’ clearing members, it is also expected that the number of entities that will clear their transactions indirectly through CCPs (being clients of CCP clearing members) will gradually inflate. On the one hand, it results from the introduction of a central clearing obligation. On the other hand, it is an implication of the necessity to meet a dozen of requirements to become a direct member of CCP. The accession procedure is also quite time-consuming (www 3).

**Figure 7. Stylized structure of CCPs' interconnectedness**

Source: own elaboration.

The above-mentioned figures confirm the growing importance of CCPs in the stable functioning of financial markets. Due to the introduction of central clearing obligation, CCPs are becoming increasingly popular not only among the largest players in the financial markets, but also among smaller ones (indirectly). However, forced regulation and freely structured use of central clearing services (directly or indirectly) may lead to unexpected consequences (e.g. a real shift of CCPs' functions to their clearing members – who are not subject to regulations regarding the conduct of CCP business – due to the lack of direct access to CCPs' services by smaller entities).

### **5. Critical evaluation of the CCP's activity – areas of potential risks**

The launch of the central clearing obligation was accompanied by the endorsement of the benefits that financial markets can derive from the activities of CCPs. As a result of the actions taken and the regulations implemented, the importance of such entities has increased, as evidenced by the data cited above. Nevertheless, the activity of CCPs is also associated with multiple risks.

Firstly, the regulatory reform associated with CCPs' business changes the structure of financial market, as growing standardization in all segments (especially OTC market) is observed. In such an environment, the diversity of instruments is

## CENTRAL COUNTERPARTIES – RISK MINIMIZERS?

being reduced. This is limiting the institutions opportunities to manage their risk and is tunneling them to one of standardized areas of financial markets. Increasing number of institutions being assigned to one of such areas makes the whole system vulnerable to shocks, as the diversification benefits disappear.

Secondly, by performing the functions enumerated in the preceding paragraphs, CCPs take over the credit risk of entities that clear transactions in the clearing house. As a consequence, although from the individual market participants' perspective credit risk is reduced, it is nevertheless concentrated in CCPs. As a result, their activity does not diminish the credit risk in the system, but only shifts it to them contributing to the rise in their systemic risk. Consequently, CCPs set of tasks should be enlarged with systemic risk management. However, they currently do not have any appropriate instruments and expertise in this field. Moreover, CCPs do currently seem to be itself perceived as macroprudential quasi-tool. Thus, visible conflict of tasks and roles arises.

Additionally, it should be emphasized that the participation of clearing members in a given CCP is not automatic. Entities must be accepted by CCP as clearing participants based on the assessment criteria elaborated by CCPs themselves. However, the latter are not professionals (unlike banks) in the management of credit risk, so there is a danger that they will not be able to properly assess the credit risk of potential clients and diversify them. In such a way an asymmetry arises – clearing participants reduce their exposure to credit risk when clearing in CCPs but the latter not necessarily. It should also be added that the participation requirements are similar in all CCPs. This leads to the situation that direct clients of CCPs are institutions with analogues risk profiles, which favors further concentration of risk (lack of diversification effects). This effect is escalated by the increased interest of market participants in CCP services and makes the crisis management mechanisms of the CCP increasingly important.

Furthermore, as a consequence of introduction of central clearing obligation and limited possibilities for some obliged entities to clear in CCPs (participation requirements), the concentration of risk increases not only in CCPs, but also in the largest financial institutions through which the transactions of non-direct CCP customers are settled (DnB 2013: 23). Thus, although there is a break in the

interdependence resulting from the bilateral settlement of transactions between institutions, new relationships arise because of the implementation of the central clearing obligation making CCPs “single points of failure”. These dependencies, however, are the next channels through which the losses can spread during the crisis. These losses may result not only from the bankruptcy of the clearing member but also from the financial problems of the CCP itself. Although some existing studies indicate on the low risk of contagion (Heath et al. 2015: 35-42), it is worth noting that due to legislative changes, the scale of CCP activity has increased dramatically and in practice their resistance in the new regulatory environment has not been tested. Therefore, it is difficult to assess the actual level of risk.

It is worth adding that many CCP’s participants are also providers of services necessary for its continuous operation (BIS, FSB, OICU-IOSCO 2017: 2). The reason for that is that CCPs often do not have (due to legal restrictions) accounts in such financial safety net institutions such as central banks. Consequently, in order to be able to provide their services they are forced to utilize such facilities through other institutions (usually their clients). This creates a dangerous risk of feedback loop between CCP and its customer-service providers, as the problems (also technical, operational) of the latter can easily spread to the former. The paralysis of the functioning of CCP, however, implies the dysfunction of whole segments of the financial markets. Therefore, it seems that the institutional architecture for central clearing obligation should be expanded. The increased role of CCPs on financial markets should be associated with the enhanced safety mechanisms dedicated for CCPs. As an example, the provision of liquidity could be pointed.

By settling and clearing transactions on a daily basis, CCPs take over also a valuation risk since they determine the current value of the instruments, the amount of margins and credit exposures of the clearing members according to the market prices and their own valuation models. It is worth pointing out, at the same time, that most transactions are settled by a limited number of CCPs that have similar valuation and margin calculation models, which exposes the financial markets to the intensified effects of risk materialization (in case of the certain risk materialization, the effects appear simultaneously in several clearing houses, as almost all of them are exposed to the similar customer profiles and models). It should be stressed that

## CENTRAL COUNTERPARTIES – RISK MINIMIZERS?

the risk lies also in the dependence on the historical data. Additionally, it should be pointed out that due to regulatory favoring of CCPs, their popularity may grow also in those classes of instruments that are currently not subject to mandatory clearing. This will probably be highly-complicated financial contracts (also highly-risky), in valuation of which CCPs will not have appropriate expertise. The asymmetry of information may be crucial here, as contract originators may be the only parties that are aware of genuine risk profile of the transaction. This exposes CCPs to the financial risk that may have to be borne by other clearing members in case of CCPs' financial problems (contagion effect).

The mechanism that partially secures the materialization of financial risk is system of collecting margins and contributions to the default fund. However, the financial means received by the CCP must be managed safely. Therefore, they are frequently invested in “safe and liquid assets”. It should be noted that due to the whole range of regulatory reforms, many institutions (in order to fulfill new requirements) are forced to maintain its funds in the form of “safe and liquid assets” (e.g. deposit guarantee funds, *resolution* funds, banks and their liquid reserve to fulfill LCR requirements). As a result, the demand for such assets is increasing. Two consequences of such a trend may be indicated. First, the growing demand for “safe and liquid assets” will influence their pricing mechanism (probably inflating their prices which will no longer represent their real value; potential for bubble creation may also be indicated). Second, when searching for appropriate assets (and in the face of the lack of real “safe and liquid assets”), CCPs may purchase new more risky instruments, which will be evaluated as safe and liquid.

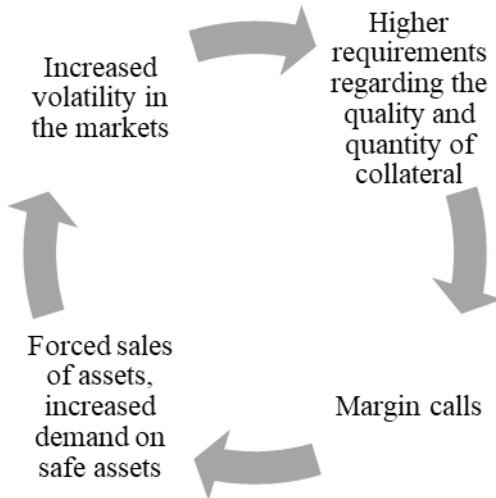
Moreover, the system of collecting margins may be a further mechanism that exacerbates the problems of CCPs' participants during a crisis, as it has pro-cyclical character and may entail the so-called cliff effect (Hermans et al. 2013: 10). CCPs increase the amount of margins charged (and increase the amount of haircuts used in relation to pledged securities) precisely at the time of increased market volatility (in particular, margins are increased during the falls in the market)<sup>4</sup>. This means that

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<sup>4</sup> As an example, the actions of LCH RepoClear could be pointed out. They consisted in raising margins on Irish bonds during the Irish crisis and thus causing difficulties for its participants (Pirrong 2011: 12). Another example is the increase in deposits resulting from increased market volatility

clearing members need to provide additional collateral in the situation of probably reduced liquidity in the markets (this implies problems with raising funds and, for the whole market, deepens the liquidity problems). As a result, the credit exposure of the counterparty to the CCP increases when its creditworthiness deteriorates, which is referred to in the literature as a “wrong-way risk” problem (Hermans et al. 2013: 11).

**Figure 8. Procyclicality of margin calls**



Source: own elaboration.

In case of large clearing members’ bankruptcies, the need to sell the securities accepted as a margin from the liquidated institution may contribute to further price decrease. In view of the above-mentioned facts, the most important type of risk for CCPs seems to be the liquidity risk (when the CCP needs to restore the balanced accounts) and the counterparty credit risk (materializing when the participants are unable to fulfill their obligations). Additionally, CCPs must face a number of other specific risks, such as legal, business, investment, money settlement and operational one. The materialization of the identified dangers (in case of both default and non-default events) may be particularly dangerous if the financial resources of the CCP

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following the announcement of the results of the referendum in the United Kingdom, which favored the exit from the European Union (www 2).



## CENTRAL COUNTERPARTIES – RISK MINIMIZERS?

are exhausted and will need to be replenished by the participants or shareholders. This will contribute to the enhanced tensions on the market.

One should also emphasize that, as a result of CCPs' credit risk takeover, central clearing obligation can exacerbate the problem of moral hazard. This may occur by running the increased risk (e.g. through higher exposure to risky derivatives) by CCP's participants that are aware that the counterparty's credit risk is taken over by the clearing house. In case of the collapse of the opposite side of the original transaction, its consequences will be borne by CCP or all its members (and not only by the entity that entered into a transaction with failing institution). In addition, if a CCP participant bankrupts, its losses are limited to the posted collateral (Greenwich Associates 2014: 5). Furthermore, CCPs may also be prone to the risk of negative selection as they may not have full information about the level of risk associated with the cleared complex financial instruments (as opposed to the originator). This may incentivize participants to conclude more transactions of this kind, as the potential risk is transferred to the CCP.

### **6. Conclusion**

In the financial markets, CCP's business is treated as an innovation that aims to reduce the risk on the OTC derivatives market. Although such entities have been operating in the economy for a long time, only the lessons from the recent financial crisis and the regulations introduced afterwards have led to a significant increase in their importance for the markets.

It is noteworthy that as a result of post-crisis regulatory changes, the dependence of financial markets on CCPs is rising steadily (share of transactions cleared by CCPs is constantly growing). At the same time, the group of such entities is not wide (only 17 authorized CCPs in EU), and their activity is quite specific. This poses a threat that, in case of CCPs' crisis, its services in a given area may be difficult to substitute (no alternative entities, relatively long period of joining the new CCP). This may result in a sudden termination of the transactions (for a longer

period of time), which in turn will cause paralysis of the financial institutions that have used the services of a problematic CCP.

At the same time, the activity of CCPs, while providing many benefits, also entails many other risks. They are summarized in the table below.

**Table 1. Benefits and costs of clearing in CCP**

Benefits of clearing in CCPs	Costs of clearing in CCPs
Risk reduction due to: <ul style="list-style-type: none"> <li>- Multilateral netting</li> <li>- Improved risk management practices</li> <li>- Firewall function (results from the default waterfall)</li> </ul>	Risk concentration as: <ul style="list-style-type: none"> <li>- Counterparty risk of each clearing member is shifted towards CCP</li> </ul> As a result systemic risk increases. Default of CCP may result in credit and liquidity shortages of clearing participants and linked CCP and causing contagion to other markets.
Operational efficiencies because of: <ul style="list-style-type: none"> <li>- Reduced amount of settlement instructions,</li> <li>- Straightforward processing</li> </ul>	Costs of participation consisting of: <ul style="list-style-type: none"> <li>- Costs of collateral for margins and default funds</li> <li>- Membership fee</li> <li>- Operational costs</li> </ul>
Trading benefits resulting from: <ul style="list-style-type: none"> <li>- Anonymity</li> <li>- Increased liquidity and reduced spreads</li> </ul>	Economic costs of potential freeze of the market if CCP fails Procyclicality of margins
Transparency	

Source: own elaboration based on Wendt (2015: 5).

Weighing up the pros and cons of CCPs, one can talk about the existence of a CCP paradox<sup>5</sup>. On the one hand, they reduce the risk associated with the clearing of the transactions, especially derivatives, because they guarantee their settlement. On the other hand, the takeover of the counterparty credit risk and the increase in the scale of cleared transactions mean that CCPs are becoming systemically important institutions. Given that the main players in CCPs are also systemically important institutions, these entities are both exposed and vulnerable to systemic risk. The main channels that strengthen the systemic risk of CCPs are connections with both

<sup>5</sup> It is also indicated by P. Norman (Norman 2011: 5).

## CENTRAL COUNTERPARTIES – RISK MINIMIZERS?

participants (by providing central clearing services) and other contractors (who technically support CCPs). In addition, all CCPs operate according to similar strategies and based on very similar operating rules (e.g. regarding the permission to centrally clear in a given CCP, default waterfall etc.) and exposures to comparable asset classes. Therefore, the materialization of risks in one CCP is highly likely to spur the problem of another CCP.

Therefore, the analysis leads to the conclusion that CCPs are not risk minimizers. They are rather risk redistributors or risk managers, and that is the issue that constitutes the positive aspect of CCPs' provision of services on the financial markets.

### *Policy recommendations*

CCPs have certainly become systemically important institutions. The stability of the entire financial system depends on their proper functioning, as due to the scale of the handled transactions and the linkages between CCPs and other entities, their problems can easily spread to clearing participants (who are usually also systemically important). As a result, the “too big to fail” (or “too important to fail”) doctrine should be extended also on central counterparties. This is justified by their following features:

- The volume of cleared transactions is usually high, sometimes exceeding the GDP of the country in which they are registered.
- Their activities are international.
- Their bankruptcy exposes financial stability to the negative consequences.
- There is a risk of necessity to use public funds to save the institution in case of any problems.

For the reasons elaborated above, CCPs should be embraced by the legal framework analogous to the one applicable towards “too big to fail” institutions (adjusted to their specificities). It is therefore important to provide reliable mechanisms to stabilize the situation of CCPs in the event of failure. The basic example of this are the CCPs' default waterfalls using the CCP's “defense lines”. Nevertheless, capital requirements as one of them should be enhanced, so that

CCP's shareholders provide real backstop for CCP's turmoil. Furthermore, the resolution framework should also be considered.

Another recommendation that could be derived from analysis of CCPs' activity is to reframe their role in terms of running macroprudential policy. CCPs are seen as entities that reduce systemic risk, as they reduce the interdependencies between financial market participants. Nevertheless, the analysis provided in the article indicates that CCPs are accumulating systemic risk, therefore the interest of macroprudential policy should be shifted from banks to CCPs. Also, the set of macroprudential tools should be appropriately remodeled in order to include more CCPs specific tools (currently, macroprudential tools are concentrated on bank capital requirements and other parameters characteristic for bank business).

Last but not least, as the importance of proper functioning of CCPs for financial markets has increased, financial safety net mechanisms should also be properly reshaped in order to accommodate expanded role of CCPs. As an example, the provision of liquidity instruments for CCPs should be considered.

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