

THE ROLE OF CENTRAL COUNTERPARTIES ON THE ENERGY MARKET¹

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ABSTRACT

Market structures, behaviors, and trading practices are affected by the required regulations aiming to make the market safe and transparent; therefore another crucial goal for regulators is to clear certain OTC (over-the-counter) derivatives and commodities through central counterparties. As a result of the risk-sharing mechanism of the central counterparty, some participants may express overconfidence about the security provided to avoid default. We analyzed the importance of central counterparties and the systemic risk these infrastructures bear and what are consequences of failure and near failures. After presenting the biggest fails and near in history, we focus on the energy market and the struggles regulators, and the system's participants face. In 2018 the electricity market was hit by distress, where central counterparties had a significant role in managing the stress. The situation was similar to the failures that occurred in the past caused by speculative positions. We analyzed this event by presenting the effects of developing countries.

Overall, the welfare effects of a central counterparty can be both negative and positive. Our results also identify critical pitfalls policymakers should take into account when considering a seemingly harmless intervention in the markets.

KEY WORDS: central counterparty, clearinghouse, energy market, regulatory frameworks, market infrastructures.

1. INTRODUCTION

Our paper focuses on the analysis of the central counterparty's presence on the energy market. We, therefore, analyze the welfare effects of a central counterparty. The importance of central counterparties is undoubtedly essential in the smooth functioning of the market, but the pitfalls policymakers should be taken into account when considering a seemingly harmless intervention. We will also point out the importance of the understanding of market participants' strategies in order to help decision-makers in future procedures and to simplify decision making.

Since 2008 the role and the systematic importance of the central counterparties gradually became essential on the financial markets. On the one hand, the sub-crisis regulators have implemented several steps aiming to handle and to mitigate systemic risk. The main areas are preventive measures to avoid shocks, resolution frameworks and firewalls against spillover effects (Kiff et al., 2010):

One of the tools for achieving these goals was to strengthen the position of central counterparties (CCPs) and force the markets participants to trade also on the over-the-counter (OTC) markets through a central counterparty. On the other hand, the interconnectedness yet appears among countries, therefore, uncertainty, and arisen risks shall be managed

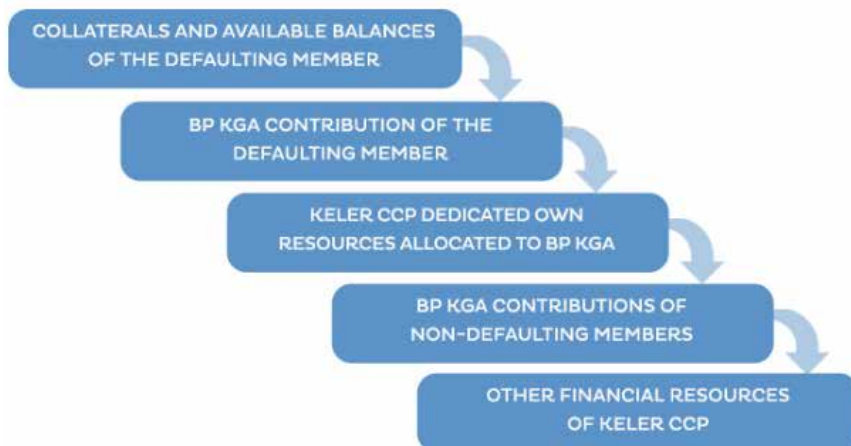
Bilateral relationships that prevailed between two counterparties are now by being settled through central counterparties, assuring the markets to be more secured. This guarantees the trade's fulfillment in case one of the trader's default. (Szanyi et al., 2018). Clearinghouses, or central clearing counterparties, play a critical role in the smooth functioning of financial markets both in over-the-counter and in exchange-based markets for stock and commodity too. The CCP becomes a "central" party between traders, becoming a buyer to the seller, and a seller to the buyer, a process called novation. The two parties are, therefore, no longer exposed to each other, but only to the CCP, which provides insurance

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against bilateral default risk (Biais et al., 2016). Central clearing is now mandatory for standardized derivatives in most countries, as regulators expect it to prevent market breakdowns or financial contagion (Duffie et al., 2014).

In order to fulfill this role and to avoid the domino effect, CCPs must have a “default waterfall” to cover the losses arising from a defaulting member. EMIR requires the establishment of this pre-funded default fund, and it also imposes the order of exhaustion of the waterfall elements. (EMIR, Article 48.) An example of a default waterfall system:

Figure 2. KELER CCP’s default waterfall system



Source: <https://english.kelerkszf.hu/Risk%20Management/Trading%20Platform/Default%20waterfall/> (accessed: 28.01.2019)

EMIR and the RTS regulations regulate the elements of the guarantee systems. Regulators’ primary objective is that the margins determined by the CCP shall be prudent, stable, and reproducible by market participants. The methodologies applied are complex and rigid, so it may impose a burden on the market participants and thus, pill out members of the clearing system due to their inability to meet their contributions to the default fund.

Central counterparties do mitigate counterparty risk and are prepared to withstand under “extreme but plausible market conditions.” However, a new risk arises in current circumstances, namely the default of the CCP itself. The default of a CCP, however, becomes a systemic risk, triggering the collapse or at least weakening the resilience of an industry or economy. Duffie (2015) claims that in the case of this event, it would have dramatic effects on financial stability.

In the case of commodity markets a considerable drop in the availability of the good cause significant fluctuation and price peaks. Energy is a special kind of commodity, as it cannot be stored, consumption is seasonal, and it depends highly on the weather. This dependency is proved by the cases we are about to analyze. The most prominent lesson to be learned by the CCPs besides accepting the uncertain weather condition that affects the availability of goods is speculative behavior, and the increased risks traders are willing to take.

First, we will present three fails and three near of CCPs since 1973, pointing out the main lessons learned. The second main part of this paper contains significant issues regarding energy markets, pointing out the regulatory struggles to obtain liberalized markets. The last part analyzes the effects of near fail events in developing countries, followed by the conclusion.

2. CASE STUDIES ON FAILED AND NEAR FAILED CCPS

In our paper, we will present the three events the system faced since 1973 and we will also discuss a few near fails. Many may think that these rare events took place in the money market, but all were related to the commodity markets. From the CCPs point of view, soothing the adverse effects of the market volatility and managing them properly, can be challenging. The range of the products a CCP can clear is broad; it is not limited to money market products only.

2.1 The failure of the Caisse de Liquidation des Affaires et Marchandises (CLAM), Paris, 1974

Bignon and Vuillemeys (2017) analyzed the fail of the French CCP from 1974. The CLAM was a market for cocoa, coffee, and sugar futures, being the only CCP on the Paris Commodity Exchange. 1970-1974 was a turbulent period all over the world: the oil crisis and the stock market crash were all major events that put the expansion to rest. In one year timeframe, the price of the sugar has been multiplied by six, peaking from 1,300 to 8,100 FRF/ton.

Meanwhile, several countries experienced shortages of sugar and “a combination of structural and exceptional factors, which created widespread expectations of a long-lasting sugar shortage” (Bignon, 2017). Two primary drivers were identified that led to the closure of the market. A registered broker named Nataf had a sizeable long position that reached 56% of the total opened position of CLAM. The positions were held on diversified retail investor’s account, but as prices started to drop, Nataf and the account holders faced large variation margin calls.²

The second issue was that a number of investors stopped responding to margin calls from Nataf or other brokers. “Once it appeared that Nataf would fail on its variation margin calls, it was clear that the CLAM would not be able to find counterparties to liquidate defaulted exposures and return to a matched book.” (Bignon, 2017)

All in all, the unmet margin calls were the leading cause that led to the breakdown of the CLAM due to the sharp drop in sugar prices on the futures exchange. The CCP’s mistake was that it not increased the margin requirements as a response to the higher market volatility. The high level of concentration against Nataf Trading House was not managed properly; authorities should have ordered the reduction of such exposure of one single party. Lacking transparency in the loss-allocation also aggravated the clearing house’s situation. Researchers point out the lack of proper risk management as well. Severe distortions were identified as soon as sugar prices collapsed and the concentration level had a large negative impact as well. It is also shown that “the interests of the CCP and those of the member in distress became closely aligned, which induced the CCP to delay the declaration of default and attempt manipulation of settlement prices.” (Bignon, 2017) Conflicts between managers and the supervisor leading to misreporting, as well as between managers and creditors (risk-shifting), was challenging to mitigate only by regulations (Bignon, 2018).

2.2 The failure of the Malaysian Kuala Lumpur Commodity Clearing House (KLCE), Kuala Lumpur, 1983

In 1983 the Malaysian Kuala Lumpur Commodity Clearing House was closed down. The reason is similar, the margin calls were not met after a crash in palm oil futures prices on the KLCE. Concentration is present too since six large brokers had accumulated huge positions. The price volatility generated tremendous losses that ended with the default of the counterparties. The dedicated task force reported poor management and unwieldy rules leading to the default of the entity.

The crisis was ignited when Chinese millionaire Loo Cheng Ghee - the Kentucky Fried Chicken franchise holder for Malaysia and Singapore - tried and failed to corner the palm oil futures market by legally selling short. Before speculation began to, contract defaults and trading suspensions paralyzed the market. Despite the warning of the Palm Oil Refiners Associations’ regarding possible speculations and market manipulation, KLCE claimed to watch but not take actions. Loo Cheng Ghee and his traders increased their trading activity, and although the crisis seemed to be outlined, it did not warrant the declaration of emergency powers. Instead, the exchange agreed to hefty increases in good-faith deposits. After a few days, the exchange invoked emergency regulations limiting trading and forcing brokers to identify non-exchange members. Lee’s brokers defaulted as well the next day and were suspended. (Robinson, 1987)

We can highlight again the lack of proper timing of involves by the supervising authority and delayed response to the market volatility of the clearinghouse. The suspension of trading was delayed as well, aggravating the situation. Reports show a sloppy trade confirmation and registration resulted in long delays in sorting out who owed what to whom (Kiff, 2019).

2.3 The failure of the Hong Kong Futures Exchange (HKFE), Hong Kong, 1987

In 1987 worldwide stock markets experienced great falls followed by the crash at Wall Street. The Hong Kong stock market was also hit by the crash. The Hang Seng Index fell losing 11.1% of the market capitalization and was closed for the next four days. The crisis was mainly due to the lack of monitoring in maintaining initial margins, the destructive characteristic of the market system, and some lack of proper knowledge of contracts. The CCP did not respond appropriately to the fluctuating process on the market. It only required its member firms to deposit their net margins instead of gross margins. The protection to either its member firms or investors was way below the expected level. Some steps were taken; “people were prohibited from short selling shares.” but due to the illusions of bullish³ market lead traders to speculation. HKFE needed the government to provide loans for a bail-out. (Lui Ho-chung, 1992).

“During a four-day market closure initiated by the stock exchange, clearing member performance failures were of sufficient magnitude to overwhelm the solvency of the guarantor of the clearing house’s trades.” In this case, researchers

² Variation margin is the collateral exchanged to cover the gains or losses associated with the change in the price of a centrally cleared or bilaterally margined contract. On a periodic basis – often daily – collateral is exchanged to reflect the change in mark-to-market of a deal or portfolio of deals.

³ People, longing index futures, could not short index constituent stocks in the stock market to hedge their risk. Their long positions in futures market were totally speculative.

also point out the dramatic loss in confidence. The Hong Kong government put in place a resolution plan, this being the only known example in the CCP world (Cox, 2015).

2.4. Near fails of CCPs

Near fail defaults may seem less exciting, but these events are too pointing out the discrepancies of the system. Two entities faced near fails in October 1987. The Chicago Mercantile Exchange (CME) and the Options Clearing Corporation (OCC) faced difficulties in collecting the margins from the market. The primary lesson for CME was that they should change their policy because clearing members retained too much discretion over the timely payment of margin, leading to a critically small amount of time for the clearinghouse.

In the case of the OCC, the issue again was the high level of concentration. The exposure towards a large clearing member that had difficulties in meeting its requirements in the form of margin calls was great. The member reached out to an emergency loan from its bank in order to avoid suspension and default (Kiff, 2019).

Since the 1987 crash, there were no significant issues among clearing houses with such tremendous stress to cover. Along with the resilience from the regulatory side, technology helped the automatization of the payment system, so institutions are on the path to mitigate arising risks.

In 2018 the electricity market was hit by distress. We can call the event a near fail but also a test to the current systems that occurred on the energy market. The issues in this case were similar: the member could not meet its margin requirements, so the member was declared in default. In the previous years, the Norwegian trader Einar Aas earned millions of kroners by speculative trades that ended with success. In 2018 he bet that the spread between the Nordic and German power would narrow. Carbon emission allowances, the best performing commodity during the period, were on a tear. This helped push up the German market, while at the same time, wetter weather forecasts sunk the Nordic next-year contract. His positions were massive compared to the liquidity on the market (Paulsson and Hotler, 2018). On the same day, he has been declared defaulted for not meeting the margin requirements.

From the Nasdaq Clearing point of view, the defaulted portfolio contained a significant spread position between Nordic and German Power that was negatively impacted by extraordinary fluctuations. By not meeting the margin calls, within 48 hours all of the positions had been closed through an auction, but the losses to be covered exceeded the defaulting member's collateral and default fund contribution. New capital needed to be injected and the Nasdaq Clearing has decided to increase margin levels too. (Nasdaq, 2018). The Swedish Financial Supervisory Authority is investigating the situation as well.

As these major events show, transparency and cooperation among parties is a crucial element to avoid exacerbating systemic risks that CCP fails may cause. As previously mentioned, energy is also subject of the clearing activity, but due to its unique characteristics, CCPs shall deal with these peculiar aspects in order to mitigate uncertainties. The sector went through several reforms in the past years that affected its "economic performance in terms of techno-economic efficiency, investments, the sector's technological improvements and sector's environmental productivity" (Corsatea, 2018). The main concept is the harmonization and liberalization of markets which.

3. THE LIBERALISATION OF ENERGY MARKETS

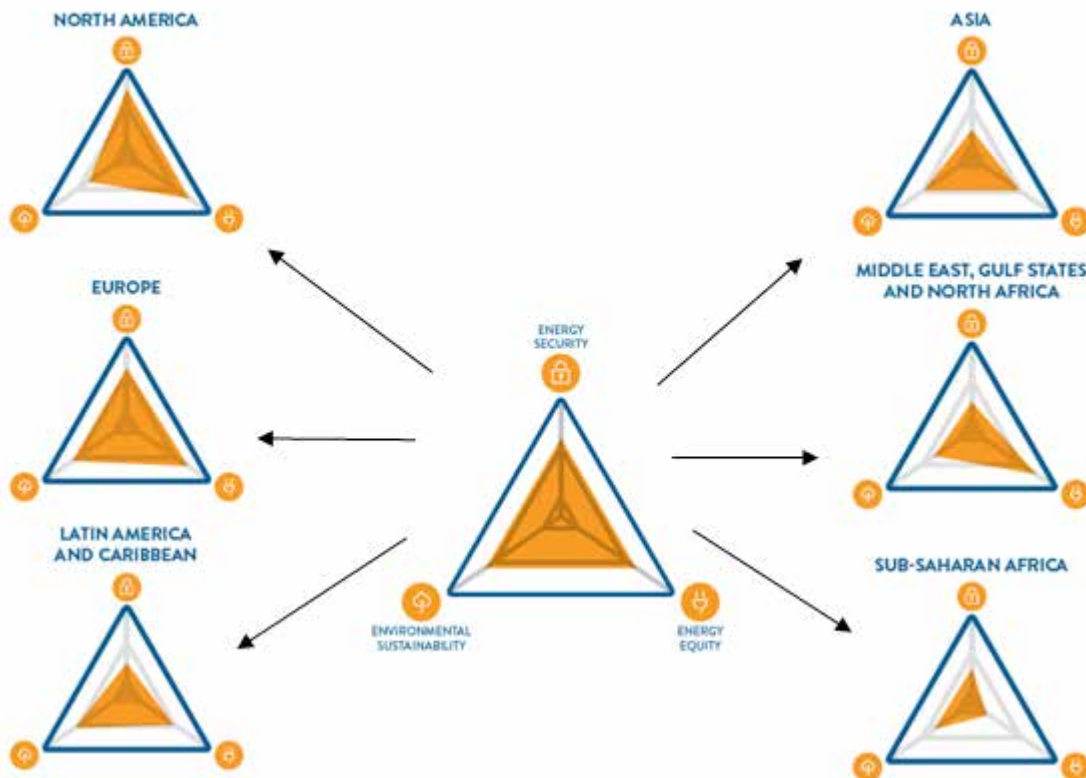
3.1. World energy markets overview

The energy market has some critical issues globally in terms of both high uncertainty and competitive environment for energy providers aiming to achieve sustainable energy consumption. Climate concerns also arise. Based on the World Energy Council's 2017 annual report on the energy, it is clear that the move towards the decarbonization of energy is the biggest single driver behind the energy transition. Technology is the solution to the world's energy problem. The future, therefore, relies on advances in electric storage and renewable energy. "The rapid implementation of renewable energy capacity across the globe, (...), means that there is a degree of certainty about the future role of renewable energy in the global energy mix." (WEC, 2018a)

In order to measure the energy performance of the countries, the World Energy Council uses an Index named Energy Trilemma Index on along three dimensions: **Energy Security** (active management of primary energy supply from different resources, reliability of energy infrastructure, and ability to meet current and future demand), **Energy Equity** (accessibility and affordability) and **Environmental Sustainability** (achievement of supply- and demand-side energy

efficiencies and development of energy supply from renewable and other low-carbon sources). “The Trilemma concept implies that positive growth in each dimension needs to take account of and offset any consequential effects. Unmanaged consumption growth can lead to unbalanced systems. Rapid decarbonization can impact the security of supply.” (WEC, 2018b). The Energy Trilemma Index report shows the following structures from around the world:

Figure 2. Energy Trilemma Index and the performance of regions – 2018.



Source: World Energy Trilemma Index, 2018.

The report shows that many countries are managing the balance successfully, Europe being the closest to the ideal balance.

3.2 The European Union’s energy policy endeavors

In the last decades, electricity markets of the European Union’s countries have undergone major changes. The deregulation of electricity markets stimulated investments in the production and distribution of energy (Cevrone et al., 2014). Market liberalization is expected to give opportunities and to encourage entrepreneurship. It is not surprising that this liberalization process is complex and difficult (Tönurist et al., 2015).

The elimination of customs duties, quantitative restrictions, and physical and technical barriers among the European Union members made possible the free movements of the four fundamental freedoms of the market. Electricity is also a tradable form of good, so its free movement is achieved through the single market. Since 1996 measures have been adopted to harmonize and liberalize the EU’s energy market. Moreover, the establishment of the internal energy market is a main priority for the European Union. The purpose is to offer a more consumer-centered electricity market with market-based supply prices and also to increase competition as a result of the high level of interconnection capacity. With this step achieved the concentration at national and regional levels could be reduced (Costa-Campi, 2018).

The primary purpose, therefore, is the creation of single energy market that results in the harmonized energy prices and the higher quality of services (Correlje and Van der Linde, 2006; Glachant, 2009). In order to achieve the targets proposed by the Treaty on the Functioning of the European Union, various rules and regulations have been established on both European and regional levels. The “Clean Energy for All Europeans” program is one of the most important initiatives that propose, among others, legislative changes regarding energy efficiency, renewable energies or design of the electricity market.

To achieve the balance above, the EU has developed various action plans and made significant steps to secure energy supply and a competitive environment for energy providers (e.g. European Energy Security Strategy and Resource-

Efficient Europe). The aim is also to obtain sustainable energy consumption, too. Currently, the protection of investments aiming to achieve a functioning and an integrated market is governed by specific acts, including the Energy Charter Treaty, . (Jaś-Nowopolska, 2018). Moreover, Costa-Campi et al. (2018) bring to reason via an empirical study showing that “the increase of FDI is mainly due to the reduction in price dispersion.”

Researchers point out that gains in efficiency are typically associated with the adoption of technologies, while technology improvements are associated with innovation. (Corsatea, 2018). Nicoletti et al. (2003) point out the inequalities in technology among markets, that cause problem.

The several changes in this field that aim to liberalize the market, but also to make the trading system safer, requires the flexibility and the co-evolution of technological and business model innovations to comply with policy and system regulation (Foxon, 2011). Hall and Roelich (2016) examine the ‘complex value’ as a key concept in understanding business model innovation in the energy sector. The process of complex value identification poses a challenge to energy researchers, commercial firms, and policy-makers in liberalized markets.

It is indisputable that the cooperation among the countries is crucial in order to maintain a smooth functioning energy market. Energy and power exchange markets are developing as well, but several other challenges appear when looking into the specifics of the commodities. Electricity is difficult to store in large quantities. It shall be consumed as it is generated. This fundamental property creates many challenging problems in both the generation and delivery of electricity. Electricity sources are limited, and to supply them with the least waste possible, the physical networks and infrastructures shall be reliable as well (Nguyen et al., 2012). The seasonality of energy consumption is undeniable as well as large fluctuations in prices on the exchange (Grabara and Kot, 2017; Kolcun, 2018). Felsmann et al., (2018) shows the issues in pricing stemming from bureaucracy.

4. CENTRAL COUNTERPARTIES IN DEVELOPING REGIONS

The common regulatory framework available for the European CCPs is proposed by the European Securities and Markets Authority (ESMA). Firms wanting to offer CCP services in the EU must seek authorization under the European Market Infrastructure Regulation (EMIR). CCPs become the focal point for derivative transactions, thus increasing market transparency and reducing the risks inherent in derivatives markets (ESMA, 2019).

There are two possible models on the energy market for CCPs. One model is the classic one, presented in the first section when the legal entity interposes itself between the counterparties to the contracts traded on one or more markets. Another model, when the CCP has been approved by the clearinghouse for clearing of principal transactions and client transactions on behalf of the CCP’s clients, thus becoming a so-called general clearing member (GCM). There is no novation by the GCM during the clearing of transactions; however, it has joint and several liabilities for financial settlement by the market both towards the clients and the clearinghouse. The CCP contributes to the default fund of the clearinghouse, but its clients have no such obligation. Although these central counterparties do not guarantee the physical delivery in case of any goods or commodities, the cash side of these transactions is assured. As mentioned before, a member’s default losses that exceed its initial margins and default fund contribution are absorbed first by the CCP’s equity capital, and then by the default fund contributions of surviving members on a pro-rata basis. (Capponi et al., 2018). This means that if stress hits the system that requires further liquidity, all members are required to increase their contribution towards the clearinghouse.

The capital may drop below the minimum level due to the increased contribution. In this case, the supervising authority shall be announced. Because CCP’s have a vast and diversified client base and a high number of assets cleared, their default may have a systematic impact on not just the commodity being short on the market, but other segments may be affected as well. If the commodity prices on the international market increase as an aftermath of these events, we can say that other parts of Europe would not remain unaffected, but mayor crashes can be handled in time with proper risk management.

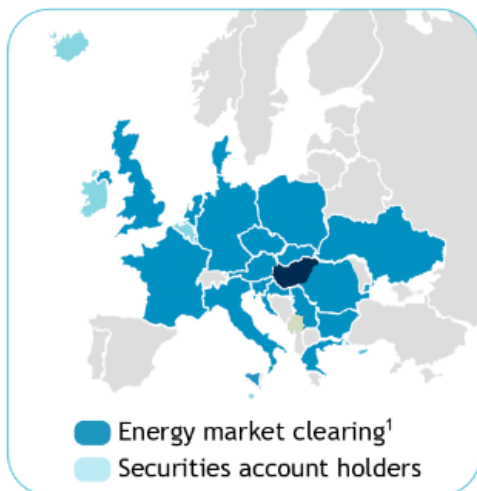
4.1 The central counterparty in Hungary

The Hungarian CCP, KELER CCP, licensed under EMIR, is the leading clearing house in the Central Eastern European region. Apart from the Hungarian capital markets, clients can reach all major European energy markets through a single and harmonized connection. (KELER CCP, 2019)

⁴ EEX, EPEX, HUPX, PXE, SEEPEX, AXP/BELPEX, Powernext, CEGH

Along with the parent company (KELER CSD), the group's geographical coverage in Europe is significant. KELER CCP it offered clearing services to 138 direct and indirect clients from 23 countries.

Figure 3. KELER Group's geographical coverage



On the energy market, the Hungarian clearinghouse is a general clearing member, the European Commodity Clearing (ECC) is the central counterparty performing the novation. In this role KELER CCP has non-clearing members that trade on the markets cleared by ECC, KELER CCP is responsible towards ECC for the risks they take. The ECC determines the collected margin requirements, but due to the additional risks taken, the Hungarian party is also entitled to collect additional margins from its members. (KELER CCP, 2019)

This model is beneficial from the small energy traders' point of view too. Via KELER CCP, they have the opportunity to connect to international energy markets while counterparty risk is mitigated. Becoming a direct member of huge clearinghouses may be unaffordable for smaller traders due to the high level of mandatory default fund contribution rate. KELER CCP contributes to the default fund of ECC, but the non-clearing members have no such contribution obligations.

KELER CCP took the act to the significant price fluctuations, and increases as the international trading market of carbon quotas, the rate of the collective guarantee fund contribution has risen suddenly and steeply on the pan-European markets (KELER CCP, 2018a). Due to the fast action of the CCPs all over Europe, the event that took place in Norway, overall it did not affect the market negatively. The sufficient capitalization combined with a transparent regulatory framework not only the Hungarian, but all other CCPs managed to pass the turmoil.

4.2 Overregulation

The presence of inflexible and extreme overregulation is as dangerous as no regulation at all. Capponi et al. (2018) demonstrate that sharing the pool of default funds creates dependency among members. By examining externalities they conclude, that "when members take excessive risk to earn potentially higher returns, a negative externality arises" and that "the degree of the externality links directly to the size of the default fund. A higher default fund contribution, although more costly, can mitigate the externalities by incentivizing members to take safer investments."

However, there are always speculators on the market, who cause distress. If the trading on the international market becomes more expensive as a result of risk mitigation or distress avoidance step and act way over the requirements, smaller – not necessarily riskier – members of the system may not be able to afford the membership fees and contribution. This kind of measure would be a step back from achieving a balanced system and proper distribution of energy.

5. CONCLUSION

Market infrastructures, such as central counterparties aim to improve the transparency of markets and control the excessive risk-taking of speculators. CCPs beneficial presence on the different markets is undeniable. Smoothing the flows and enhancing transparency is a key to diminish risks in order to protect the market from distress and its spillover.

As shown through the case studies, a new risk, the systemic risk appears. Regulators aim to minimize potential events occurring from this latter risk by assessing rigorous regulations. However, regulators shall also take into consideration that way too strict policies may put an excessive burden on market participants, phasing them out from the system, which increases the imbalance between regions.

Regulators aim to promote and to obtain innovative business models that reduce carbon footprint, energy costs, and manage system risks. A multidisciplinary view is indispensable to handle such a complex system. We pointed out that the well-balanced policy framework encourages investment while taking a step to sustainable energy consumption, and also fine-tuning financial parts is not easy to achieve.

Energy markets give opportunities for traders to buy and sell energy in case of shortage or excess. In order to achieve well balanced and stable energy markets, the regulatory framework shall be stabilized. In well-regulated market liquidity and efficiency is expected to increase, moreover, social welfare can be obtained, too.

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ULOGA SREDIŠNJIH DRUGIH UGOVORNIH STRANA NA ENERGETSKOM TRŽIŠTU

SAŽETAK

Tržišne strukture, ponašanja i trgovačke prakse su pod utjecajem nužnih regulacija koje imaju za cilj učiniti tržište sigurnim i transparentnim, stoga još jedan ključan zadatak regulatora je očistiti određene OTC (over-the-counter) izvedenice i robe putem središnjih drugih ugovornih strana. Kao posljedicu mehanizma podjele rizika koje nude središnje druge ugovorne strane neki sudionici mogu iskazivati pretjeranu pouzdanost u jamčenu sigurnost od promjene zadane vrijednosti, tj. od neizvršenja novčanih obaveza. Analizirali smo važnost središnjih drugih ugovornih strana i sistematski rizik kojeg te infrastrukture nose sa sobom kao i posljedice štete i moguće štete. Nakon predstavljanja najvećih financijskih šteta i bliskih šteta u povijesti fokusirat ćemo se na energetska tržišta i prepreke s kojima se regulatori i sudionici u sistemu suočavaju. U 2018. tržište električne energije zahvatile su nevolje, pri čemu su središnje druge ugovorne strane imale značajnu ulogu u upravljanju proizašlim stresom na financijskom tržištu. Situacija je nalikovala štetama iz prošlosti koje su uzrokovala spekulacijske pozicije. Analizirali smo taj događaj kroz prikaz učinaka zemalja u razvoju.

Općenito, ekonomski učinci središnje druge ugovorne strane mogu biti podjednako i negativni i pozitivni. Rezultati također ukazuju na kritične zamke koje bi donosioci politika trebali uzeti u obzir kada razmatraju naizgled bezopasne intervencije na tržištu.

KLJUČNE RIJEČI: središnja druga ugovorna strana, klirinški zavod, energetska tržišta, regulatorni okviri, tržišne infrastrukture.