



## QUESTIONS AND ANSWERS (Q&A) ESMA CCP STRESS TEST

The European Securities and Markets Authority (ESMA) has published today the results of its second EU-wide stress test exercise regarding Central Counterparties (CCPs) which it conducted under the European Markets Infrastructure Regulation (EMIR). This Question and Answers (Q&A) document summarises the overall scope of the stress tests exercise, the different scenarios and methodologies applied as well as how to understand the results.

### **Why are CCPs needed? Why is central clearing necessary?**

Financial market infrastructures such as CCPs lie at the heart of the financial system. They help to reduce the risk of counterparties and provide post-trade transparency. CCPs sit between the buyer and seller of a transaction, leading to a less complex and centralised system of exposures. CCPs effectively guarantee the obligations under the contract agreed between the two counterparties, both of which would be participants of the CCP. If one counterparty fails, the other is protected via the default management procedures and resources of the CCP.

### **How many CCPs are there in the EU and who uses them?**

Currently, there are 16 CCPs authorised in the EU. These CCPs have close to 900 Clearing Members (CMs) Union-wide, which can also include multiple entities belonging to one group structure. CCPs are mostly used by financial counterparties such as banks and investment firms.

### **Which CCPs did ESMA include in the stress exercise?**

ESMA assessed the resilience of 16 European CCPs, including all CCPs that are currently authorised under EMIR. Namely, these are:

CCP	
<b>ATHX</b>	Athens Exchange Clearing House
<b>BME</b>	BME Clearing
<b>CCG</b>	Cassa di Compensazione e Garanzia S.p.A.
<b>CCPA</b>	CCP Austria Abwicklungsstelle für Börsengeschäfte GmbH
<b>ECC</b>	European Commodity Clearing
<b>ECAG</b>	Eurex Clearing AG
<b>EUROCCP</b>	European Central Counterparty N.V.
<b>ICEEU</b>	ICE Clear Europe



<b>ICENL</b>	ICE Clear Netherlands B.V.
<b>KDPW</b>	KDPW_CCP
<b>KELER</b>	Keler CCP
<b>LCHSA</b>	LCH.Clearnet SA
<b>LCHUK</b>	LCH.Clearnet Ltd
<b>LME</b>	LME Clear Ltd
<b>NASDAQ</b>	Nasdaq OMX Clearing AB
<b>OMI</b>	OMIClear – C.C., S.A.

### **Why is ESMA conducting these tests? Why are CCPs risky?**

CCPs are connected to financial firms and the markets, both locally and globally, which makes them exposed to and a potential source of systemic risk. Given the systemic importance of CCPs, assessing their resilience is important to ensure sound and safe market infrastructures. Stress testing CCPs' default waterfalls, both individually and EU-wide, is an important supervisory tool to ensure the sector is safe and resilient to member defaults and market shocks.

### **Are ESMA's CCP stress tests similar to the ones of EBA and EIOPA?**

The common aim of such tests in general is to assess the resilience of financial institutions to adverse market developments, as well as to contribute to the overall assessment of systemic risk in the EU financial system. Even if the overall aim of the stress tests is the same, there are differences between the three stress tests exercises due to the types of businesses and different risks faced by CCPs compared to banks or pensions funds.

### **Why is ESMA testing CCPs' resilience now? Is ESMA concerned about specific issues?**

EMIR requires ESMA to run annual EU-wide tests in order to assess the resilience of CCPs to adverse market developments. This is the second EU-wide CCP stress test executed by ESMA.

### **When was the exercise conducted exactly, based on what data?**

ESMA ran the exercise in different stages in 2017, assessing the actual exposures of EU CCPs using data provided by the CCPs for one reference date in Sep 2016. Following the definition of the [framework](#)<sup>1</sup> for conducting the exercise, CCPs provided in March 2017 the data for the stress test, which were initially validated by the National Competent Authorities (NCAs) and then by ESMA, before calculating the different stress scenarios.

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<sup>1</sup> <https://www.esma.europa.eu/file/21270/download?token=EmSs2Ank>

## What exactly did ESMA test?

ESMA tested the resilience of 16 European CCPs by exposing them to adverse market conditions. ESMA's stress test included both the *counterparty credit risk*, which CCPs may face because of multiple CMs defaults and simultaneous market price shocks, as well as *liquidity risk*, meaning that CCPs may have insufficient liquid funds to meet their payment obligations in a timely manner. The exercise was complemented with an analysis of the concentration of CCPs exposures, their interconnectedness through CMs, custodians or liquidity providers and of the potential spill-over effects to non-defaulting CMs.

For the purpose of this exercise, a stress test is a combination of a clearing member/liquidity provider default and a market risk factor scenario.

The stress test exercise has the following four components:

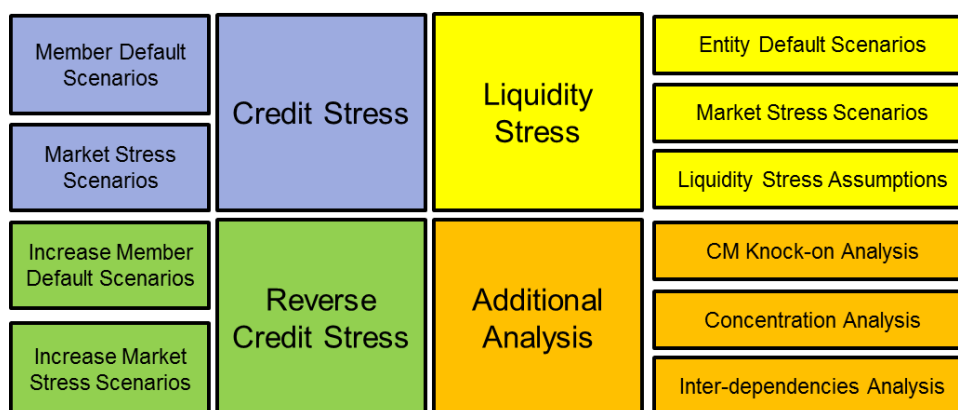


FIGURE: COMPONENTS OF THE STRESS TEST EXERCISE

- **Credit Stress:** Assess the sufficiency of CCPs' resources to absorb losses under a combination of market price shocks and CM default scenarios.
- **Liquidity Stress:** Assess the sufficiency of CCPs' liquid resources under a combination of market price shocks, member/liquidity provider default scenarios and additional liquidity stress assumptions.
- **Reverse Credit Stress:** Increase the number of defaulting entities and level of shocks to identify at which point resources are exhausted.
- **Additional Analysis**
  - **Concentration analysis:** Assess the degree of concentration of CCPs exposures.
  - **Inter-connectedness:** Assess the degree of inter-connectedness of CCPs through common CMs / service providers groups.

- **CM knock on analysis:** Assess the impact of the loss sharing mechanism of CCPs (default fund contributions and powers of assessments) on the capital of non-defaulting CM.

#### *Clearing member default scenarios*

ESMA's stress test exposed CCPs to three<sup>2</sup> different CM default scenarios, which include:

- the default of the two groups of CMs EU-wide with the largest aggregate exposures to EU CCPs (**scenario MD-B**),
- the default of the two CMs with the largest exposures per CCP taking into account the common membership across CCPs (**scenario MD-A**),
- the default of CMs being part of the top-2 groups of CMs for each CCP (**Cover-2 groups per CCP**).

#### *Market price shock scenarios*

ESMA's stress tests applied extreme market price shocks to CCPs using three market stress scenarios. This constitutes one of the key methodological changes of the new exercise. In particular, the stress results are not based on the CCPs' own scenarios subject to a list of minimum price shocks. The stress results are now based on a set of pre-defined and internally consistent market stress scenarios provided by ESRB for the purpose of this exercise. The scenarios are common across all CCPs and are used both for credit and liquidity stress tests.

#### **Why is ESMA testing for simultaneous CMs defaults and market price shocks?**

From a credit risk perspective, a combination of CM defaults and simultaneous severe shifts of risk factor prices is needed to put a CCP at risk. If CMs continue to post margin and meet their obligations, periods of extreme market volatility in isolation will not pose a specific market risk to a CCP. Similarly, defaults of CMs without simultaneous adverse market shocks should not put a CCP at risk. CMs post margins and provide default fund contributions which taken together provide a very high confidence level, assuring CCPs have sufficient resources to manage a default of a CM in normal market conditions – and close out the resulting open positions in a stable market before suffering a loss. Therefore, under normal market conditions, the CCPs will have the resources to withstand multiple defaults. Hence, from a credit risk perspective and with the

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<sup>2</sup> We also explored the use of an additional member default scenario (MD-C), which would also consider the probability of default (PD). The results would be very similar to the results of MD-B and are therefore not presented.

exception of investment risks, only simultaneous defaults and extreme, adverse shifts of market prices could pose potential risk to a CCP.

### What is counterparty credit risk?

A key risk attached to financial market transactions is counterparty credit risk — the risk that one party to a contract defaults and cannot meet its obligations under the contract. This can lead to a loss for the counterparty on the other side of the contract. If those losses are severe enough, they may cause the affected parties financial distress, which, in turn, can have a knock-on effect for their creditors. CCPs were setup to reduce the counterparty credit risk stemming from bilateral relationships. But CCPs themselves are also exposed to this risk, as they become – with respect to a cleared transaction – the counterparty of two CMs and are therefore exposed to risks arising from the default of one, or multiple, of its counterparties.

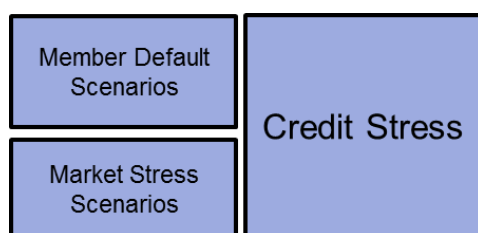


FIGURE: ELEMENTS OF COUNTER-PARTY CREDIT RISK

### Is counterparty credit risk the only risk that CCPs face?

No. CCPs are also subject to other types of risks, such as liquidity, investment (credit & market) and operational risks that could in isolation, or combined with counterparty credit risk, challenge their resilience.

### What is liquidity risk in this context?

Liquidity risk is the risk that a CCP may have insufficient liquid funds to meet its payment obligations in a timely manner when these become due over a relevant time horizon. It can arise due to unexpected liquidity needs and/or absence of sufficient liquidity resources. The liquidity stress test assesses the resilience of EU CCPs to market-wide and idiosyncratic liquidity stress events. It captures the systemic dimension of liquidity risk, in addition to the analysis of resilience of individual

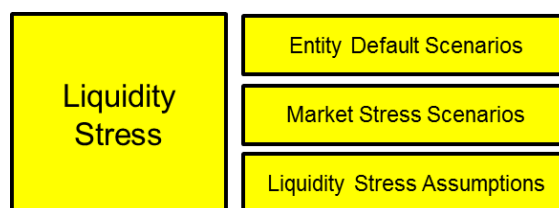


FIGURE: LIQUIDITY STRESS TEST COMPONENTS



CCPs, and enables ESMA to identify potential shortcomings and issue recommendations to address those.

A liquidity scenario involves the combination of market shocks with the simultaneous default of market participants. The shocks are equal to those applied in the context of counterparty credit risk. The default of market participants is the actual or technical insolvency of CMs and/or providers of liquidity and services with impact on the liquidity profile of an individual CCP.

### **Is stress testing part of CCPs risk management?**

Yes. CCPs are required to conduct daily stress tests as part of their on-going risk management.

### **What is the difference between a CCP stress test and the one ESMA conducted?**

CCP stress tests mostly focus on the specific CCP and its market environment. CCPs are however inter-connected through common CMs. Thus, a default of one of the top CM in one CCP could trigger a simultaneous default of one or more entities in other CCPs. Individual stress tests run by CCPs cannot reveal any systemic implications because of their reduced scope. Therefore, the EU-wide stress test is an extremely useful tool in assessing the resilience of the system of EU CCPs.

### **What are the different levels of protection a CCP has in place?**

CCPs have rules, arrangements and resources to ensure that they can respond, in an orderly and efficient way, to a defaulting member. For example, a CCP might seek to find new counterparties to take on the positions of the defaulting member and bring the CCP back to a matched book of contracts. This is sometimes achieved through an 'auction' of the defaulter's position among surviving members.

In terms of resources to cover its obligations, CCPs have access to financial resources provided by the defaulting party, the CCP itself and the other, non-defaulting members of the CCP. The order in which these are drawn down helps to create appropriate incentives for all parties (members and CCPs) to manage the risks they take on. These funds are collectively known as the CCP's 'default waterfall' (see figure below).

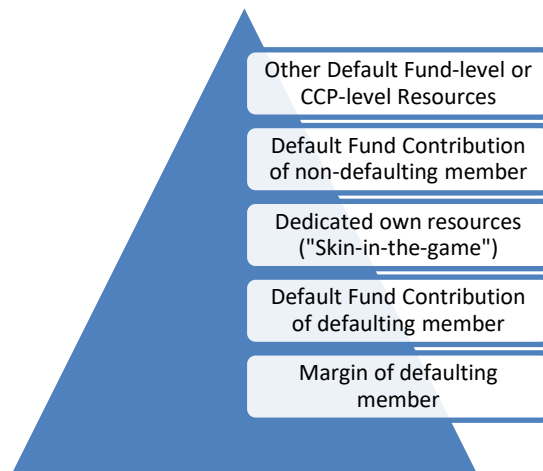


FIGURE: CCP DEFAULT WATERFALL

**How does this look like for the CCPs tested?**

EU CCPs provided for the purpose of this exercise detailed data on their exposures and financial resources for one reference date. The aggregate amount of collateral held by CCPs on the test date in the form of margin requirements and default fund contributions, was approximately EUR €270bn.

Additional prefunded resources, including CCPs’ dedicated own funds (“skin-in-the-game”), accounted overall for a very small share of the default waterfall.

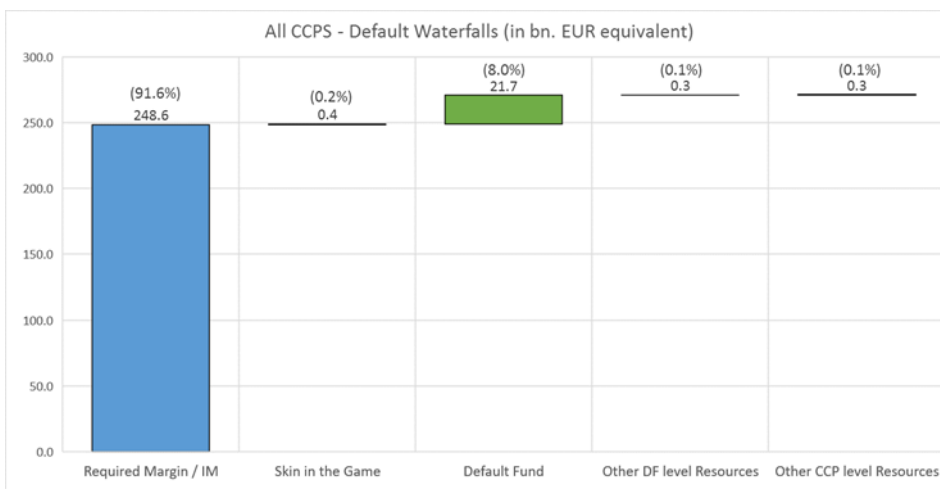


FIGURE: DEFAULT WATERFALL AMOUNTS – ALL CCPs

## **How do overall results look like?**

This year exercise confirms the results of last year, i.e. that EU CCPs are overall resilient to common shocks and multiple defaults. However, the exercise revealed in the credit stress test: 1) one minor failure of no systemic relevance and 2) for another CCP, high sensitivity to marginal increases of price shocks or number of defaults that might have systemic relevance.

Also for the liquidity stress tests, the exercise did not reveal any systemic risk. CCPs use different tools to cover their liquidity needs, some are highly reliable as central bank repos, other less, but no particular deficiency was found in the management of liquidity risks by EU CCPs.

## **Are any individual CCP results highlighted by the exercise?**

The second CCP stress test finds that EU CCPs are overall resilient, however, with a more developed stress methodology, this year's exercise allowed ESMA to highlight some individual CCP-specific results for the credit stress test. Under one of the scenarios tested, and in order to assess the resilience of each individual CCP to the default of its most relevant clearing participants under harmonised price shocks, we also assumed the default of the top-2 groups of CMs selected for each individual CCP. The defaulting CMs could be different for each CCP under this particular scenario, but still using the common market stress scenarios.

- For one CCP (BME Clearing), this scenario lead to a minor shortfall of required prefunded resources and with no systemic impact. The shortfall is only marginal and with no systemic impact, considering also that the CCP had access to surplus collateral of the defaulting members in other default funds and excess margin that could be used to cover this very small shortfall; and
- For another CCP (ICE Clear Europe), the required prefunded resources would be enough, but these would only marginally cover the simulated stress losses. The excess margin held on top of the minimum required, could also significantly reduce the consumption of prefunded resources. The reverse stress analysis was used to capture the sensitivity of the credit stress results to small changes of the underlying assumptions. It showed a high sensitivity to relatively small increases of either the number of defaulting groups (to 3) or the shocks (to 120% of the baseline stress shocks) that could lead to material breaches of its prefunded resources.





For the liquidity part of the stress tests, ESMA did not detect any major systemic risk concerns. CCPs use different tools to cover their liquidity needs, such as access to the short term FX markets and the use of highly reliable central bank repos or others, but ESMA found no particular deficiency in the management of liquidity risks by EU CCPs.

### **What are the planned next steps?**

In line with the EMIR mandate, where the assessments expose shortcomings in the resilience of one or more CCPs, ESMA will issue as a next step the necessary recommendations. ESMA is currently considering whether any recommendation is needed and what form it should take.