
Best Practices in CCP Credit Risk Management

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1. Introduction

Credit risk refers to the risk that a counterparty will not fulfil an obligation either when due or any time thereafter. Credit risk is one of the main types of financial risks that CCPs are designed to manage within the clearing & settlement- and treasury & investment risk categories.

EMIR Regulation and CPMI IOSCO Principles for FMIs ensure that CCPs are well prepared and resourced to deal with credit risks related to defaulting members rather than preventing defaults or minimising the impact by early detection of credit deterioration.

Most credit relevant pieces of EMIR regulation:

- 1) EMIR (level 1)
<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012R0648>
(Article 37: Participation requirements. Articles 40-49: More general risk expectations)
- 2) EMIR RTS organisational requirements (level 2).
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:052:0041:0074:en:PDF>
(Article 4: Relevant from a general perspective. Articles 24-60 explain the technical requirements of CCP risk management, however without specific focus on credit risk)
- 3) EMIR Q&A (level 3)
https://www.esma.europa.eu/sites/default/files/library/esma70-1861941480-52_qa_on_emir_implementation.pdf
(This is only tangential to credit risk)

Relevant CPMI IOSCO Principles for Financial Market Infrastructures (PFMI):

- 1) Final version of PFMI
<https://www.bis.org/cpmi/publ/d101.htm>
(Principle 4: Credit Risk is most relevant)
- 2) Follow up report to the PFMI – Resilience of CCPs – Further Guidance on the PFMI
<https://www.bis.org/cpmi/publ/d163.pdf>
(Section 3: Stress Testing has some focus on credit risk)

In general, the credit risk management procedures of CCPs are over and above the regulatory requirements referred to above. This paper outlines the best practices in managing credit risk currently observed by the FMI industry. This document shall be kept outside and in addition to the EMIR regulatory framework to give CCPs discretion with the operationalisation of their risk management framework.

2. Best practices for CCP Credit Risk Management

The following 6 principles are identified as CCPs' best practices for CCP risk management:

Principle	Description
Principle I - Governance	Risk Appetite Statement and Credit Risk Policy need to consider: <ul style="list-style-type: none"> • minimum internal ratings for all categories in the credit portfolio (members, counterparts, collateral, investment agents, custodians, payment- / settlement banks) • evaluation of possible risk reducing measures in case of rating deterioration (e.g. below the minimum)
Principle II - Model validation	Credit risk models need to be validated annually to ensure a consistent performance.
Principle III - Annual Credit Review	Annual credit review (including internal rating) should be conducted on all clearing members, investment counterparties, acceptable collateral and critical service providers like investment agents, custodians and payment- / settlement banks. This shall comprise a validated statistical and credit expert driven approach that uses financial ratios and/or qualitative inputs based on CCP's view to assign counterparties an internal credit rating, by ensuring - at the same time - an adequate level of transparency.
Principle IV - Operational Capabilities	The operational set-up of clearing members needs to be suitable for the business model (house- / client clearing or both).
Principle V - Risk Management Capabilities	All clearing members need to have an independent risk management function appropriate to the activities they undertake.
Principle VI - Portfolio Monitoring	The credit portfolio needs to be monitored with suitable early warning indicators (EWIs). Examples might be: Share Prices, external credit ratings, related news and CDS prices are monitored as part of the Early Warning Indicators and margin calls are monitored by the market risk and operations teams on an intra-day basis.

3. Principle I - Governance

The governance framework (Risk Appetite Statement and Credit Risk Policy) needs to ensure that credit risk for all relevant entities is proactively monitored and assessed by maintaining a robust and holistic credit risk assessment and management framework that represents market best practice.

The relevant credit portfolio needs to be defined. Credit risk can arise from the following entities:

- Members;
- Custodian Banks;
- Sovereign (or other) Issuers of Cash and Securities;
- Investment Counterparties;
- Other Banking Relationships;
- Other Critical Service Providers; and
- Co-CCPs (if applicable)

For each of the above categories minimum internal ratings need to be considered in the Risk Appetite Statement and in the Credit Risk Policy in order to ensure that each entity brings risks consistent with the activities undertaken and with the risk tolerances.

Risk reducing measures need to be defined to manage potential risks arising from creditworthiness deterioration of such entities. These could include e.g. additional margin requirements or reduction of cleared portfolio for members or phasing out for other entities. The changes need to be gradual and in defined steps as to take Anti-Procyclicality considerations into account.

An internal document should describe the various rating categories and define the individual rating levels.

4. Principle II - Model validation

Counterparty rating systems (usually a suite of scorecard models) shall be classified as models according to EMIR RTS Article 47 and therefore shall be subject to robust review and validation by a qualified, independent party (internal or external) at least annually to ensure it remains appropriate. The models developed to support the process shall be regularly validated and managed to limit model risk in a controlled environment.

The scorecard model can either be purchased from recognised providers or developed in-house and shall meet the following criteria:

- **Comprehensive** – Using loss data statistics that span out a long period of financial statement and benefits from being validated against a reliable number of defaults.
- **Consistent** – Capability for the internal PDs (PD – “Probability of Default”) and internal ratings to be mapped to the same ratings scale as external rating agencies.

- **Reliably Maintained** – The scorecard models are calibrated against historical defaults and is updated and recalibrated every year.
- **Broadly Applicable** – Scorecard models usually are industry and geographic specific. CCPs will need a number of different scorecards to cover the credit portfolio
- **Transparent** – The scorecard model needs to come in a form where formulas, equations, and weightings are transparent.
- **Allow for Credit Expert Judgment and Forward-Looking View** – The model needs to allow for a credit judgement via qualitative and forward-looking input factors, by ensuring at the maximum extent possible an adequate level of transparency

From a more general perspective an effective model validation framework typically combines the following 5 elements:

Elements	Description
Input Data	'Rubbish in, rubbish out': Reliable, accurate data is an integral part of the modelling process. Poor data quality will lead to false model outcomes which may incorrectly influence decisions. An effective model validation process must ensure that model input data is accurate and complete and any shortcomings highlighted and their impact understood in the context of the model.
Governance and Control	A strong governance framework which clearly outlines the roles and responsibilities and controls surrounding model development and model lifecycle is a key component of the framework - Model documentation is an important part of this.
Model Performance	Process of monitoring how a model and its assumptions perform against realised observations. Back-testing is probably the best example of a model performance test another would be benchmarking.
Model Implementation	Ensuring that the model has been implemented in line with its specification. Any change to the model will result in subsequent re-review.
Model Methodology	The process of assessing whether a model is conceptually sound and fit for purpose – this is typically performed annually and will

	challenge the conceptual design of the model to ensure that the modelling assumptions made are appropriate and align with industry best practice, regulatory and business objectives.
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The Scorecard Credit Rating Model shall be tested annually to ensure the ratings produced were reflective of the internal view on the counterparty's credit quality and of any possible change of credit quality. Below are examples of what the testing of the scorecard model can consist of:

Benchmark Testing

Compare the internal ratings of counterparties in the current portfolio with external agency ratings (S&P, Moody's, Fitch) as well as the "street view" (e.g. Credit Benchmark).

Granularity test

Study the distribution of the counterparty's ratings to examine minor difference in the model and granularity of risk factors to identify marginal differences in the risk profile of counterparties.

Historical Stress Scenario

Rate the same portfolio of counterparties using stressed financial data during a stressed period (e.g. financial crisis, Covid crisis, etc.). This is to ensure that the model will react to similar stress events in the future.

Hypothetical Sensitivity Test

Modify the scorecards by using extreme, but plausible scenarios in which the counterparties' financials would be significantly damaged (e.g. financial crisis, Covid crisis). This is a hypothetical stress testing scenario to measure the limitations of the scorecard while identifying counterparty credit quality deterioration.

Note that the scorecard model usually is a multifactor model and multiple financial ratios (if not all) will be affected simultaneously by any credit-related event.

5. Principle III - Annual Credit Review

The scorecard credit rating model is used to form a base initial rating using quantitative and qualitative inputs based on credit expert judgement.

The purpose of the credit review is:

- To highlight key risks associated against the counterparty
- To discuss the rationale behind the scorecard model inputs,
- To justify the qualitative risk factors and inputs, and

- To provide a final credit rating based on current information, forecasts on the trend of the business and industry and other off-balance-sheet and market implied information.
- Comparative analysis against peers
- To ensure the rating is reflective of credit view

The review can include the following sections:

- Counterparty profile: To identify the nature of the counterparty's business, trend of the business and industry and ability of management to address the potential risks to the business.
- Financial analysis: To analyse the impact of (1) off-balance-sheet information, and (2) assess and discuss the financial position of the counterparty with more granularity
- Key risks
- Evaluation of the exposure

The review cycle should be annual – the level of detail can be risk based.

6. Principle IV - Operational Capabilities

- The operational set-up of clearing members needs to be suitable for the business model. Each member of the Clearing house needs to demonstrate complete operational suitability, capability and accountability – hence, the clearing house shall require dedicated staff on-site at the admitted member entity. The required staff would ideally Have appropriate knowledge of risk, compliance and operations functions.
- Be fully trained on their clearing house obligations, including knowledge of key funding timings
- Have defined and nominated channels for escalation

As a best practice guidance member firms should have designated Chief Risk- and Compliance Officers.

7. Principle V - Risk Management Capabilities

Clearing members need to have an independent risk management function. Best practice would be that this function follows the three lines of defence model (3LOD) for market, liquidity, credit and operational risks:

- 1st line - Functions that own and manage risk;
- 2nd line - Functions that oversee or specialise in risk management, compliance;
- 3rd line - Functions that provide independent assurance, above all internal audit.

Ideally risk management should be fully integrated at both operational and strategic levels. The existence of uncertainty as an inherent part of being in business needs to be recognised at all levels.

8. Principle VI - Portfolio Monitoring

The credit portfolio needs to be monitored with suitable early warning indicators (EWIs). Examples might be: Share Prices, external credit ratings, related news and CDS prices are monitored as part of the Early Warning Indicators and margin calls are monitored by the market risk and operations teams on an intra-day basis.

- **Market Risk specific factors:** Market risk can have an influence on the credit risk view and needs to be considered from a credit perspective (e.g. concentration-, liquidity-, wrong-way risk at member- or counterparty level). The credit risk appetite and the credit risk parameters need to be determined taking a holistic view of all important factors and their interdependencies.
- **Early Warning Indicators:** The credit portfolio needs to be monitored with suitable early warning indicators (EWIs). In the below table is an example of an EWI toolset that can be utilised:

Early Warning Indicators Tool	Description
CDS	<p>CDS spreads are the suitable example of EWI's, as they point to the cost of protection against the deterioration of counterparty credit quality. CDS spreads of a company will move almost immediately in reaction to company news and announcements, and far before the influence of this news can be observed in financial records of the company.</p> <p>Monitoring individual CDS spread moves relative to a benchmark (e.g. suitable CDS index) creates the most meaningful results.</p> <p>CCPs may also consider trigger levels with associated actions on absolute CDS levels and CDS level changes relative to the benchmark.</p>
Share Price	<p>Share prices can be monitored compared to relevant indices. Negative developments and news trigger a drop in share price, however a declining share price does not conclusively mean there is a fundamental credit problem.</p> <p>Any material share price movements considered credit negative should get escalated.</p>

<p>Monitoring high attention names</p>	<p>More granular monitoring of any counterparts that need higher attention due to their risk profiles or unavailability of market indicators which may have an impact on their credit worthiness.</p> <p>This can be done via a quarterly High Attention Members Quarterly Report that provides additional transparency on high attention members on closer watch. Interim financials are obtained from members and used to gauge current financial performance using e.g. the following metrics: profitability, leverage, liquidity, and capitalisation and IM vs capital. Key trends are identified and comments provided for significant changes.</p>
<p>External Ratings Agency- / Credit Benchmark Downgrade</p>	<p>Compared to first three categories of EWI subsystems, the External Rating Agencies (Fitch, Moody's and S&P) downgrades are a lagging indicator. However they do offer additional information on the financial health of an organisation undertaken by researchers with significant resources and access. As such the rating is relevant and should be considered as part of the overall information flow available.</p> <p>Credit Benchmark may be also used to provide a view on rated entities and greater visibility in to the larger unrated universe. It use anonymised views of the world's most sophisticated financial institutions using a contributory model to add value to determine a consensus rating of an entity.</p>
<p>Late payment of margin</p>	<p>If an entity makes late payment of margin, it may be an early indication of liquidity issues facing the entity.</p> <p>The reason for the late payment of margin needs to be identified as well as the procedures agreed to avoid a similar event in the future.</p>
<p>News Alerts</p>	<p>Monitor the news and set alerts to stay abreast of any relevant developments.</p>

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