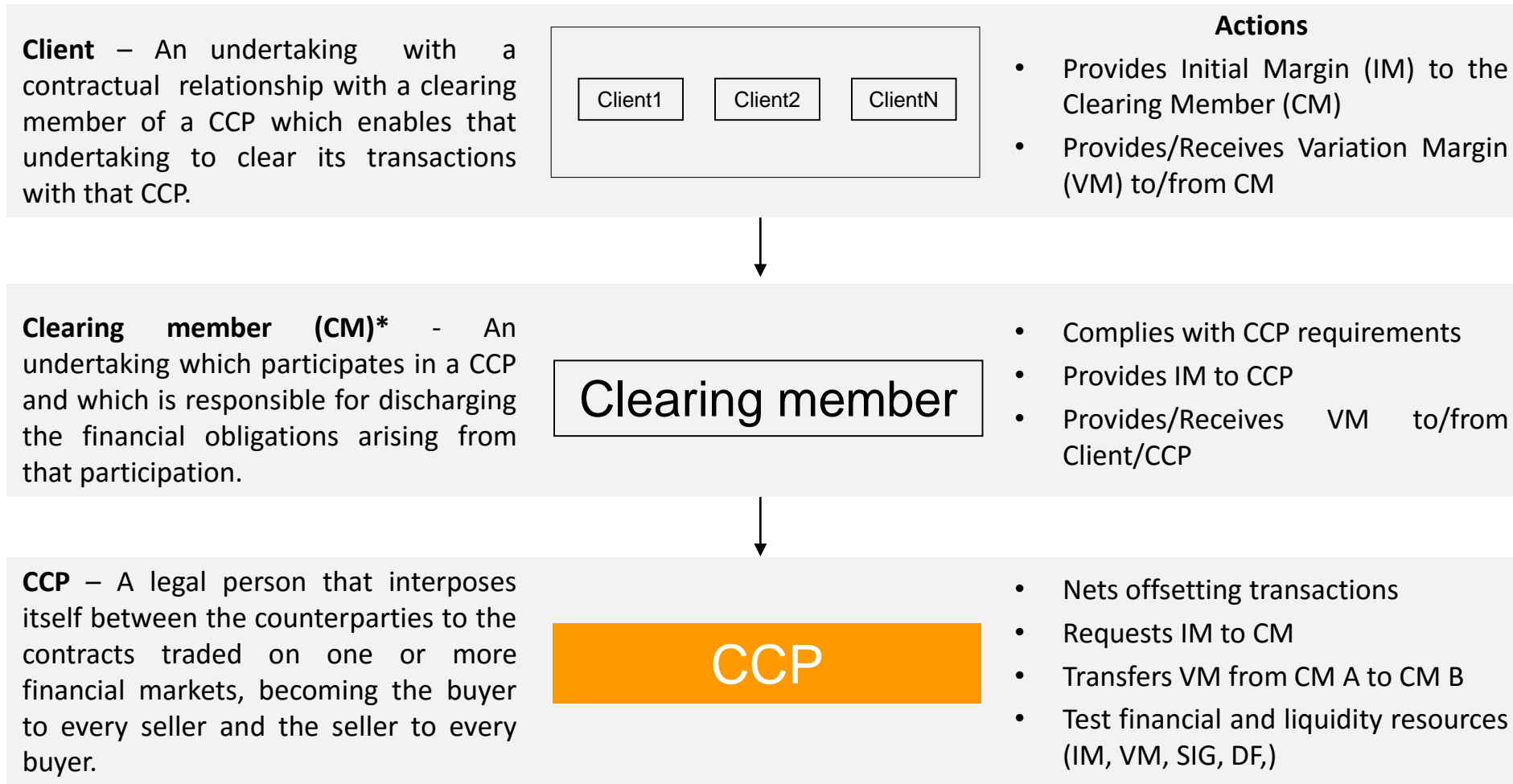


1.- How does clearing work?

CCP clearing – Actors involved



*Types of clearing members

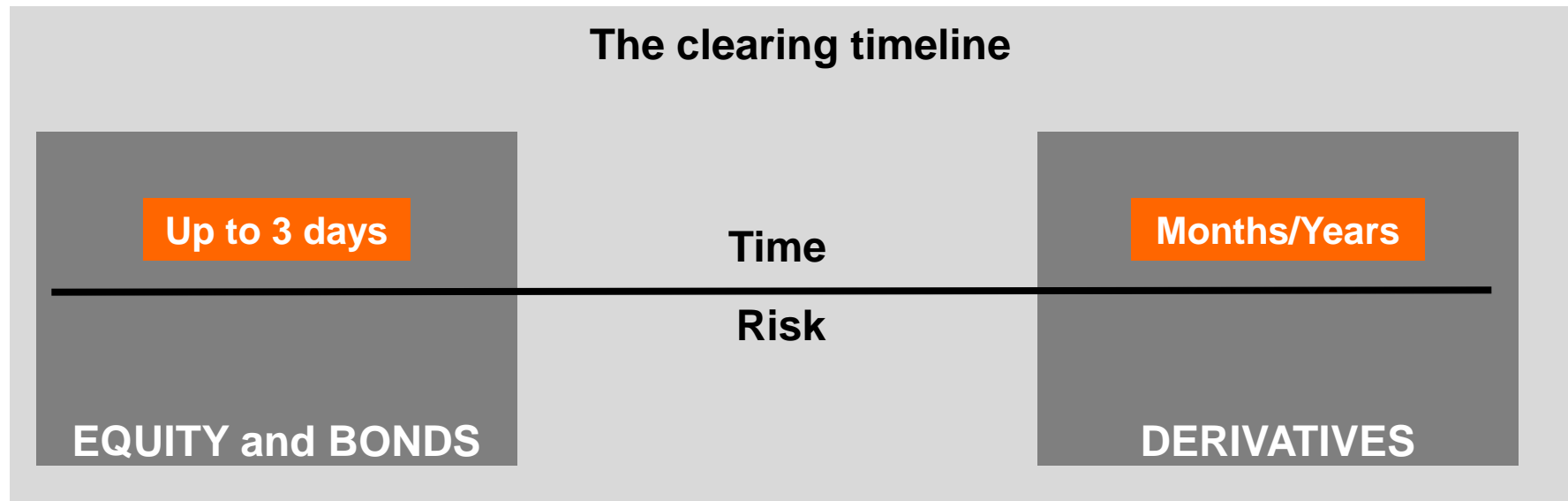
General clearing member (GCM) A CM that clears its own trades, those of its clients and those of NCM.

Direct clearing member (DCM) A CM that clears its own trades.

Non-clearing member (NCM) A participant of the trading venue where the GCM trades but which does not have access to the CCP.

Clearing different asset classes

The process of clearing varies depending on the asset class that is cleared: shorter timeframe to clear equities and bonds; longer timeframe to clear derivatives.



CCP Clearing – Resources to absorb losses (lines of defence)

- CCPs must ensure they have adequate **resources to absorb the losses** that result from the default of a clearing member.
- The resources are contributed by the CCP, the clearing members and the clients.
- The resources must be balanced in a way that provides **incentives** for the CCP, the clearing member and the clients to perform adequate risk management.
- The resources at the disposal of the CCP constitute the CCPs' **default waterfall**:



1.- Admission criteria

2.- Initial margin

3.- Variation margin

4- Default Fund (Def. CM)

5.- CCP's skin-in-the-game

6.- Default Fund (Non-Def. CM)

The CCPs' lines of defence – Admission criteria



1.- Admission criteria

2.- Initial margin

3.- Variation margin

4- Default Fund (Def. CM)

5.- CCP's skin-in-the-game

6.- Default Fund (Non-Def. CM)

Definition: The list of criteria that a financial institution must meet in order to become a clearing member of a CCP.

Determination: Defined by the CCP's Risk Committee. Criteria must be non-discriminatory, transparent and objective.

Objective: To ensure a safe and sound CCP with fair and open access to those clearing members that meet the CCP criteria.

Minimum: To ensure that clearing members have sufficient financial resources and operational capacity to meet the obligations arising from participation in a CCP. They include internal credit ratings of the clearing members.

Review: > Yearly

The CCPs' lines of defence – Initial margin



1.- Admission criteria

2.- Initial margin

3.- Variation margin

4- Default Fund (Def. CM)

5.- CCP's skin-in-the-game

6.- Default Fund (Non-Def. CM)

Definition: Margins collected to protect the CCP and its members against the potential future exposure to a defaulting clearing member from the last margin collection until the liquidation of positions.

Objective: To protect the CCP against the exposure of the clearing member that posted it in case of its default.

Calculation

- Risk model based on **historical** scenarios.
- Confidence level: 99.5% for OTC Derivatives; 99% for ETD
- Lookback period: > 12 months.
- Liquidation period: >5 days for OTC Derivatives; >2 days for ETD

The CCPs' lines of defence – Variation margin



1.- Admission criteria

2.- Initial margin

3.- Variation margin

4.- Default Fund (Def. CM)

5.- CCP's skin-in-the-game

6.- Default Fund (Non-Def. CM)

Definition: Margins collected or paid out to reflect current exposures resulting from actual changes in market price.

Objective: To avoid the accumulation of large losses over time.

Calculation

- Frequency: > Daily
- Model: Mark-to-market

The CCPs' lines of defence – Skin-in-the-game (SIG)



1.- Admission criteria

2.- Initial margin

3.- Variation margin

4- Default Fund (Def. CM)

5.- CCP's skin-in-the-game

6.- Default Fund (Non-Def. CM)

Definition: An amount of the CCP's own resources contributed to by the CCP.

Objective: To further align the risk management interests of a CCP with those of its clearing members.

Calculation

- Calculation
 - >25% of the CCP's required capital¹ (> EUR 7.5 million)
 - The CCP's SIG and the default fund should be high enough to withstand the default of the of the **two** CMs with largest exposures.
- Frequency: Revised annually

¹ In line with EU legislation (EC 2012) A CCP's required capital shall at all times be sufficient to ensure an orderly winding-down or restructuring of the activities over an appropriate time span and an adequate protection of the CCP against credit, counterparty, market, operational, legal and business risks

The CCPs' lines of defence – Default Fund



1.- Admission criteria

2.- Initial margin

3.- Variation margin

4.- Default Fund (Def. CM)

5.- CCP's skin-in-the-game

6.- Default Fund (Non-Def. CM)

Definition: A mutualised fund of resources contributed by all clearing members. Contributions are proportional to risk of the positions of each clearing member.

Objective: To protect the CCP against losses that exceed the losses covered by margin requirements.

Calculation: Risk model based on **historical and hypothetical** scenarios.

Size:

- To withstand, under extreme but plausible market conditions, the default of the clearing member to which it has the largest exposures or of the second and third largest clearing members, if the sum of their exposures is larger.
- The **default fund and the CCP's SIG** should be high enough to withstand the default of the of the two CMs with largest exposures.

Which type of resources do CCPs accept?

CCPs accept **margin** and **default fund contributions** in two main types:

1. Cash

2. Collateral – CCPs accept **highly liquid collateral** with minimal credit and market risk to cover its initial and ongoing exposure to its clearing members (e.g. cash, financial instruments, gold).

Highly liquid collateral accepted by CCPs

2.1 Financial instruments

- Issued by government, central bank or other public institutions.
- Average time-to-maturity < 2 years
- Limited currencies
- They have an active repo market
- Other

2.2 Transferable securities and money-market instruments

- Issuer with low credit risk
- Instruments with low market risk
- Limited currencies
- Not issued by 'providing clearing member'
- Not issues by a CCP
- Other

2.3 Bank guarantees (Only in certain cases)

2.4 Gold

What does a CCP do with the resources?

1.- Investments

1.1 - Financial resources are invested in cash or in highly liquid financial instruments with minimal market and credit risk.



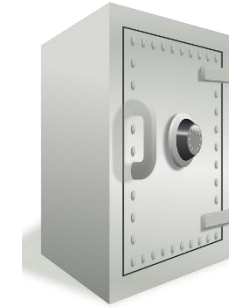
Highly liquid financial instruments

- Issued by government, central bank or other public institutions.
- Average time-to-maturity < 2 years
- Limited currencies
- They have an active repo market
- Other

What does a CCP do with the resources?

2.- Deposits

CCPs may deposit the collateral received (cash or financial instruments) as follows:



2.1 - Cash deposits – Cash deposits of a CCP shall be performed through highly secure arrangements with authorised **financial institutions** or, alternatively, through the use of the standing deposit facilities of **central banks or other comparable means** provided for by central banks.

2.2 - Financial instruments – In order to ensure its full protection, a CCP shall deposit the financial instruments posted as margins or as default fund contributions with operators of **securities settlement systems or other highly secure arrangements** with authorised financial institutions.

CCP risk management – Test performed

CCPs regularly test the key aspects of its default procedures and take all reasonable steps to ensure that all clearing members understand them and have appropriate arrangements in place to respond to a default event.



CCP risk management – Tests performed

Test	Objective	Frequency
Stress Tests	To ensure that the combination of margin, default fund contributions and other financial resources are <u>sufficient</u> to cover the default of at least the two clearing members to which it has the largest exposures under extreme but plausible market conditions.	Daily
Liquidity tests	To ensure that liquidity resources are <u>sufficient</u> to cover the CCP's settlement and funding flows.	Daily
Back tests	To assess the reliability of the <u>methodology</u> adopted to determine the margin coverage. It consists of an ex-post comparison of observed outcomes with expected outcomes derived from the use of margin models.	Daily
Sensitivity tests	To test the key parameters and assumptions of the initial margin model at a number of confidence intervals to determine the sensitivity of the system to errors in the calibration of such parameters and assumptions.	Monthly
Reverse stress tests	To identify under which market conditions the combination of its margin, default fund and other financial resources may provide <u>insufficient</u> coverage of credit exposures and for which its liquid financial resources may be insufficient.	Quarterly
Independent tests	Tests performed by a third-party in order to <u>validate</u> the CCP's risk management framework.	> Annually
Default procedures	To ensure default procedures are both <u>practical and effective</u> . Includes simulation.	Quarterly (test) Annually (simulation)

2.- What happens in a default in practice?

Milestones **BEFORE** the CCP declares a clearing member in default

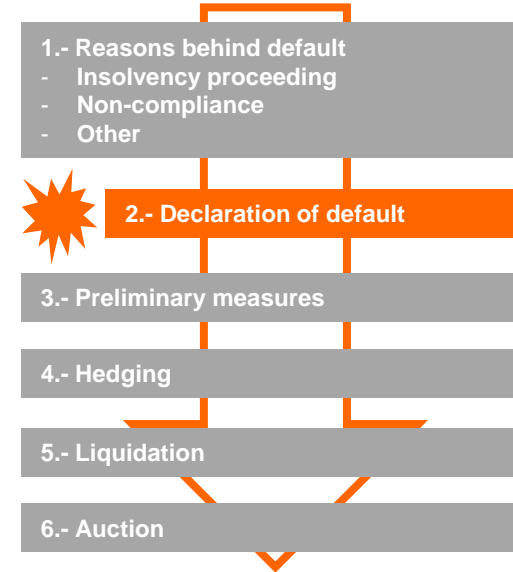
- A CCP may declare a clearing member in default in the following cases:
 - **Initiation of insolvency proceedings on a particular clearing member** – In this case, the declaration of the default is automatic.
 - **Failure to comply with clearing conditions for a particular transaction** - (e.g. lack of margin payment/delivery) – These events, although not automatic, may result in a CCP declaring a default.
 - **Other events** – In other events such as the suspension of a clearing member by other CCPs or exchanges, a CCP may also decide to trigger the default management process.



- Once a clearing member is declared in default, the CCP will **initiate the default management process**.

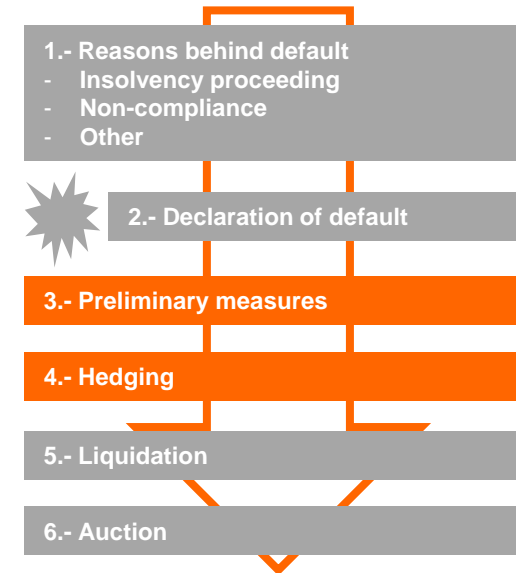
Milestones **AFTER** the CCP declares a clearing member in default

- **Initiation of the default management process**
 - **Objectives:**
 - To minimise disruption to the wider market
 - To protect the lines of defence
 - To protect the defaulting clearing members clients' positions and collateral
 - To protect the surviving clearing members' positions and collateral and those of their clients



Milestones **AFTER** the CCP declares a clearing member in default

- **Preliminary measures**
 - Call on default management committees
 - Contact the CCPs' DM coordinator
 - Client porting - The positions and collateral of the defaulting clearing member's client are transferred where possible.
 - Evaluation - The CCP would evaluate the defaulting clearing member's portfolio in order to start the liquidation process.
- **Hedging**
 - Hedging aims to neutralise the overall risk of the defaulter's portfolio as quickly as possible (protecting the CCP and its participants against any further market moves). During the auction process, a hedged portfolio would likely receive better prices than an unhedged one.



Milestones **AFTER** the CCP declares a clearing member in default

- **Liquidation of positions (Close-out)**

- **Closing out the positions of the defaulting clearing members by the CCP itself.** The CCP would try to swiftly close-out the positions of the defaulting clearing member (including the realisation of any assets) by executing transactions that offset its open positions or unsettled cash obligations.

- **Auction (or similar)**

- The CCP would organise an **auction (or similar) process** in order to transfer the position (risk) inherited from a defaulted clearing member to other members willing to absorb it. The hedging and auction processes may be used to differing degrees depending on the product or market being cleared.

- A process similar to an auction could for example be a book building process through which a bidding process is performed by a third party, such as a broker dealer.

