Self-assessment against the CPMI-IOSCO Principles for Financial Market Infrastructures April 2012

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Introduction

European Central Counterparty N.V. (EuroCCP) has prepared this self-assessment of its compliance with the Principles for Financial Market Infrastructures (PFMIs), published by the Committee on Payments and Market Infrastructure (CPMI) and the International Organization of Securities Commissions (IOSCO) in April 2012. EuroCCP has followed the Disclosure framework and Assessment methodology published by CPMI-IOSCO in December 2012.

EuroCCP's self-assessment demonstrates how EuroCCP complies with the PFMIs. The assessment has been made following EuroCCP's authorisation as a Central Counterparty under the European Markets Infrastructure Regulation (EMIR) in April 2014.

This disclosure is prepared by EuroCCP under the PFMIs in March 2018.

As well as this assessment, EuroCCP publishes quantitative disclosures on its website, as expected of CCPs under Principle 23, Key Consideration 5, of the PFMIs, in accordance with the CPMI-IOSCO Public quantitative disclosure standards for central counterparties dated February 2015.

Table of contents **Page number**

1. Executive Summary	4
2. Overview of EuroCCP	5
3. Detailed assessment report	7
Principle 1: Legal basis	7
Principle 2: Governance	10
Principle 3: Framework for the comprehensive management of risks	16
Principle 4: Credit risk	21
Principle 5: Collateral	26
Principle 6: Margin	29
Principle 7: Liquidity risk	34
Principle 8: Settlement finality	40
Principle 9: Money settlements	42
Principle 10: Physical deliveries	45
Principle 12: Exchange of-value settlement systems	46
Principle 13: Participant-default rules and procedures	47
Principle 14: Segregation and portability	50
Principle 15: General business risk	53
Principle 16: Custody and investment risks	56
Principle 17: Operational risk	58
Principle 18: Access and participant requirements	63
Principle 19: Tiered participation arrangements	66
Principle 20: FMI links	68
Principle 21: Efficiency and effectiveness	71
Principle 22: Communication procedures and standards	73
Principle 23: Disclosure of rules, key procedures, and market data	75
A. Key Terms and Abbreviations	78

(Principles 11 and 24 do not apply to CCPs)

1. Executive Summary

The PFMIs set the standards for Financial Market Infrastructures ("FMIs"), which include payment systems, central securities depositories, securities settlement systems, central counterparties ("CCPs"), and trade repositories. FMIs play a critical role in the financial system and the broader economy. FMIs facilitate clearing, settling, and recording of monetary and other financial transactions, thus contributing to the goal of financial stability.

EMIR, and the Regulatory Technical Standards (RTS) made under it, establish the regulatory framework for CCPs in the European Union (EU) through a mix of principle and rule based requirements. Although EMIR and the RTS do not always use the same operative language as is used in the PFMIs, these requirements for CCPs are built to a significant extent on the PFMIs. In this way, EMIR and the RTS implement the PFMIs in the EU.

EuroCCP, as an EMIR authorised CCP, must comply with EMIR and the RTS and at the same time must operate in a manner which is consistent with the PFMIs. This self-assessment provides the relevant disclosure to EuroCCP's stakeholders, including its Clearing Participants and indirect users, on the key functions of EuroCCP and the methods it uses to manage the risks associated with providing the CCP services. In the PFMIs, Key Consideration 5 of Principle 23 sets out the disclosure requirement which leads to the publication of this report.

EuroCCP has not formally graded itself against the PFMIs, but considers that

- it observes all but a few in full, and;
- that those few principles which are not fully observed would qualify as being broadly observed.

2. Overview of EuroCCP and the markets it serves

2.1 General

EuroCCP provides post-trade services to stock exchanges, multilateral trading facilities (MTFs), other equities trading platforms and for Over-The-Counter (OTC) equities trades. EuroCCP centrally manages counterparty risk after a trade has been executed. EuroCCP will deliver securities or make payment to clients at the price agreed at trade execution, even if the original counterparty to the trade has defaulted on its obligations. EuroCCP also reduces settlement costs and operational complexity for clients.

CCPs are highly regulated financial market infrastructures. EuroCCP's home regulators are De Nederlandsche Bank (DNB, the Dutch central bank) and the Autoriteit Financiële Markten (AFM, the Netherlands Authority for the Financial Markets). EMIR requires all CCPs operating in the European Union to meet common risk management, governance and capital adequacy standards. EMIR has replaced the local regulatory regimes which previously applied in the EU Member States. EuroCCP received regulatory authorisation under EMIR from DNB on 1 April 2014.

EuroCCP provides post trade services to the following venues as per 31 January 2018:

Alternext Brussels
Alternext Lisbon
Alternext Paris
Aquis
BlockMatch
Cboe Europe Equities
Easynext Lisbon
Equiduct
Euronext Amsterdam
Euronext Block
Euronext Brussels
Euronext Lisbon
Euronext London
Euronext Paris
London Stock Exchange
Marche Libre Brussels
Marche Libre Paris
Nasdaq Copenhagen
Nasdaq Helsinki
Nasdaq Stockholm
Nasdaq First North
Sigma-X
SIX Swiss Exchange
Turquoise
UBS MTF

19 national markets are cleared by EuroCCP as per 31 January 2018:

Austria
Belgium
Czech Republic
Denmark
Finland
France
Germany
Hungary
Ireland
Italy
Netherlands
Norway
Poland
Portugal
Spain
Sweden
Switzerland
United Kingdom
United States

2.2. Organisation

The governance of EuroCCP reflects the requirements of EMIR and the legal requirements for a Dutch limited liability company with a two-tier board structure. The governance structure is, in addition, designed to enable clients – both Clearing Participants who pay for services and platforms which give EuroCCP access to their trade feeds – to advise management of their service requirements.

2.3. Legal and regulatory framework

Headquartered in Amsterdam, EuroCCP was formed on 5 December 2013 through the combination of European Multilateral Clearing Facility N.V. and European Central Counterparty Limited, both incorporated in 2007. The company's shareholders are ABN AMRO Clearing Bank N.V., CBOE Europe Limited, Euronext N.V., NASDAQ AB and The Depository Trust & Clearing Corporation (DTCC), each with a 20% shareholding.

EuroCCP is a Dutch limited liability company incorporated under the laws of the Netherlands having its registered office at the Amsterdam World Trade Center, Strawinskylaan 1847, 1077 XX Amsterdam, the Netherlands.

It is registered in the commercial register under number: 34268194 and has a branch office in London that is registered in the UK as a UK Establishment with Company No. FC031747 and UK Establishment No. BR016817.

EuroCCP's LEI is 724500937F740MHCX307.

EuroCCP is a designated final system under the Settlement Finality Directive (SFD). The contracts governing the relationship between EuroCCP and the Clearing Participants are governed by Dutch law.

3. Detailed assessment report

3.1 Principle 1: Legal basis

An FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.

Key considerations

The legal basis should provide a high degree of certainty for each material aspect of an FMI's activities in all relevant jurisdictions.

The material aspects requiring a high degree of legal certainty are the contract formation between EuroCCP and the Clearing Participants and the interoperable CCPs (Co-CCPs), the collateral arrangements, the arrangements for the settlement of Open Positions in the CSD and the (enforceability of the) default procedures including the close-out netting.

The regulations, procedures and contractual provisions governing the operations of EuroCCP are laid down in the following documents:

1. Post Trade Services Agreements (PTSA) / Clearing Services Agreements (CSA): these are the agreements between EuroCCP and the trading platforms;
2. Clearing Participant Agreements: these are the contracts between EuroCCP and the direct and general Clearing Participants, binding the Clearing Participants to the Clearing Rules;
3. The Clearing Rule Book: this sets out the general terms and conditions of the service, including the default provisions;
4. The Regulations: these form the Clearing Rules together with the Clearing Rule Book. The Regulations provide more details, and are more operational by nature;
5. The Master Clearing Link Agreements with the Co-CCPs: these set out the contract formation between the CCPs and form the basis for collateral provision and default handling;
6. Pledge and Title Transfer Agreements for collateral provision.
7. Admission agreements between the CSDs and EuroCCP for the markets with direct access and contracts with settlement agents;
8. Contracts and service level agreements between EuroCCP and its (IT) services providers and vendors.

EuroCCP has its head office in Amsterdam, the Netherlands and a branch office in London. The branch office provides relationship management and client facing functions. EuroCCP also has a representative office in Stockholm.

The Clearing Rules are governed by the laws of the Netherlands. The relevant jurisdiction for the pledge agreements is the place where the pledged account is maintained. The Title Transfer Agreement is governed by the laws of the Netherlands. All collateral arrangements are financial collateral arrangements in accordance with the Financial Collateral Directive, as implemented in the relevant EU member state.

The enforceability of the contractual arrangements and clearing rules is assessed by the EuroCCP legal function, and where appropriate, through services or opinions provided by outside counsel. The core of the default procedures and in particular the close-out netting is provided for in the Clearing Rule Book in a way similar to the way in which netting is foreseen in ISDA agreements. The ISDA netting opinion confirms the enforceability of this part of the Clearing Rules under the laws of the Netherlands. EuroCCP has obtained legal opinions from reputable outside counsel confirming the enforceability of its Clearing Rule Book and the arrangements included therein.

Both Novation and Open Offer are used as contracting techniques by EuroCCP. Novation assumes that a legally binding trade is concluded on the trading venue which is then transferred to the CCP. Open offer does not contemplate that the trade itself is legally binding - the only legal agreements that ever exist are the trade legs between the CCP and its members. The rules of a trading venue and a CCP determine which contract formation method in used. For Over-The-Counter (OTC) trades, the Clearing Rules consider that in legal terms, these trades are posted by Clearing Participants directly to EuroCCP, with the trade data providers acting as the agent of the Clearing Participant

EuroCCP is a designated final system under the Settlement Finality Directive (SFD). The receipt of trade data, from the trade venue and from the Clearing Participants (via service providers) for OTC trades, is the instruction which results in the assumption or discharge of a payment obligation and a security delivery obligation which qualifies as transfer order under the SFD.

EuroCCP is subject to the provisions of Dutch Anti Money Laundering Law. These legal provisions implement the EU Third Money Laundering Directive and EuroCCP is deemed an institution that is subject to these provisions.

An FMI should have rules, procedures, and contracts that are clear, understandable, and consistent with relevant laws and regulations.

EuroCCP's Clearing Rules, standard contracts and selected procedures are publicly available on its website. The change management process for the Clearing Rules, including consultation procedures, and the role of governance bodies is explained on EuroCCP's website. The applicable consultation process for changes to rules obliges EuroCCP to notify or consult on each proposed change, providing explanations regarding its intended purpose and effect.

The EuroCCP Clearing Rules, standard contracts and procedures are properly organized and internally coherent. EuroCCP staff are readily available to answer queries regarding the interpretation or application of specific rules. All Clearing Participants have accepted the EuroCCP rules and procedures.

An FMI should be able to articulate the legal basis for its activities to relevant authorities, participants, and, where relevant, participants' customers, in a clear and understandable way.

EuroCCP describes the legal basis for its activities to relevant authorities and Clearing Participants on an ongoing basis. EuroCCP's Clearing Rules, standard contracts and selected procedures are publicly available on its website. Amendments are announced by newsflash and sent out for consultation to Clearing Participants in accordance with the procedure for changes to the Clearing Rules.

An FMI should have rules, procedures, and contracts that are enforceable in all relevant jurisdictions. There should be a high degree of certainty that actions taken by the FMI under such rules and procedures will not be voided, reversed, or subject to stays.

The Clearing Participant Agreement and Clearing Rules governing the relationship between EuroCCP and the Clearing Participants are governed by Dutch law, and have been written and maintained by the EuroCCP legal function, where necessary assisted by reputable Dutch legal counsel.

EuroCCP is not aware of any circumstances in which its actions under its rules, procedures or contracts could be voided, reversed or be subject to stays.

Publicly available resources (on EuroCCP website):

Clearing Rule Book, Regulations, Collateral Agreements, Governance procedure for rule changes, Corporate information.

3.2 Principle 2: Governance

An FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.

Key considerations

An FMI should have objectives that place a high priority on the safety and efficiency of the FMI and explicitly support financial stability and other relevant public interest considerations.

EuroCCP has set as its mission to be the leading equities CCP in Europe, to minimise post-trade costs, to maximise netting, and to continuously improve risk management. EuroCCP is required to observe high standards of risk management and financial soundness and corresponding governance arrangements.

EuroCCP's corporate priorities are determined by the Supervisory Board at the start of each year. The progress is monitored by management and by the Supervisory Board on a regular basis throughout the year. EuroCCP aims to continuously improve risk management and to continuously develop and implement improved controls to ensure regulatory compliance.

An FMI should have documented governance arrangements that provide clear and direct lines of responsibility and accountability. These arrangements should be disclosed to owners, relevant authorities, participants, and, at a more general level, the public.

EuroCCP has a clear and transparent governance structure including the Management Board, the management team, the Supervisory Board, the Risk Committee, the Advisory Boards and Councils.

The EuroCCP Supervisory Board consists of six members: two independent supervisory directors and four supervisory directors nominated by the shareholders. Each shareholder may nominate one supervisory director. It is expected that one shareholder representative and an additional independent supervisory director will be added to the Supervisory Board in 2018. The shareholders appoint all members of the Supervisory Board.

The Management Board consists of the Chief Executive Officer (Diana Chan), the Chief Technology Officer (Albert-Jan Huizing) and the Chief Risk Officer (Arnoud Siegmann). The Management Team further consists of the key staff responsible for relationship management and operations including the Head of Sales, Marketing & Relationship Management the Head of Client Services, the Head of Product Management, the Head of Finance and the Chief Compliance Officer.

The Risk Committee comprises four representatives from Clearing Participants, three representatives of clients of Clearing Participants, and the two independent members of the Supervisory Board.

The Advisory Board has representatives from eleven Clearing Participants and observers from the three largest trading platforms cleared by EuroCCP. The chairman of the Advisory Board has a standing invitation to be an observer at EuroCCP Supervisory Board meetings.

The Nordic Advisory Council consists of representatives from six Clearing Participants with headquarters in the Nordics. The Council has two representatives who are members of the Advisory Board. Additional regional advisory councils may be set up as required when the business scope of EuroCCP expands.

The Platform Advisory Council comprises of representatives from each platform cleared by EuroCCP and serves as a forum for them to discuss post-trade matters of common interest.

In addition, the governance structure is designed to enable clients – both Clearing Participants and platforms – to advise management of their service requirements. Through its Advisory Board and Nordic Advisory Council (comprising Clearing Participant firms), and its Platform Advisory Council (comprising all trading venues), EuroCCP engages with its client base to ensure that it continues to be responsive to their business needs.

All governance bodies are subject to written rules or terms of reference, setting out the respective scope and objectives, roles and responsibilities, and where appropriate, their legal and regulatory basis or mandate.

Information on the governance arrangements is publicly available through the EuroCCP website.

The roles and responsibilities of an FMI's board of directors (or equivalent) should be clearly specified, and there should be documented procedures for its functioning, including procedures to identify, address, and manage member conflicts of interest. The board should review both its overall performance and the performance of its individual board members regularly.

The Management Board of EuroCCP is in charge of managing the company's general affairs and the business connected with it. Its roles and responsibilities are clearly defined in the articles of association and in the Rules governing the Management Board and the management team. The Management Board fulfils all duties and powers assigned to it by Dutch law, EU-regulations and the articles of association of EuroCCP. The Management Board is accountable to the Supervisory Board, the General Meeting of Shareholders as well as other stakeholders. The members of the Management Board are appointed by the shareholders.

EuroCCP's Rules governing the Management Board and the management team include procedures for its functioning. Conflicts of interest, whether actual or potential, are treated according to the articles of association, EuroCCP's Rules governing the Management Board and the management team and EuroCCP's Conflicts of Interest Policy. EuroCCP's Rules governing the Supervisory Board include procedures for its functioning and prescribe how to act in case of (potential) conflicts of interest.

The Supervisory Board is charged with overseeing the Management Board, supervising the general course of affairs of the company and the associated business, and providing advice to the Management Board. The Supervisory Board has three standing committees, the Audit Committee, the Remuneration Committee and the Nomination Committee.

The role of the Audit Committee is to assist the Supervisory Board in fulfilling its oversight responsibilities for the financial reporting process; the system of internal controls; the audit programme, priorities and implementation of recommendations; and the company's process for monitoring compliance with laws and regulations. The Audit Committee is chaired by an independent member of the Supervisory Board. The role of the Remuneration Committee is to assist the Supervisory Board in fulfilling its responsibilities for the remuneration of the members of the Management Board and for the target setting and performance evaluation of the members of the Management Board and of the company as a whole. The role of the Nomination Committee is to nominate independent members of the Supervisory Board for appointment by the General Meeting of Shareholders.

The terms of reference of the board committees form part of the Rules governing the Supervisory Board. The Supervisory Board performs a periodic self assessment on the basis of a questionnaire and a suitability matrix. The Management Board is assessed by the Supervisory Board and the shareholders.

The board should contain suitable members with the appropriate skills and incentives to fulfil its multiple roles. This typically requires the inclusion of non-executive board member(s).

Members of the Management Board are appointed by the General Meeting of Shareholders on the nomination by the Supervisory Board. When preparing nominations for the Management Board, the Remuneration Committee of the Supervisory Board prepares a profile of the scope and composition, taking into account the nature of the business, its activities, and the desired expertise and experience. The profile deals with the aspects of diversity in the composition of the Management Board that are relevant to the company and states what specific objective is pursued in relation to diversity.

Members of the Supervisory Board are appointed by the General Meeting of Shareholders. Each shareholder has the right to nominate a member while the independent members are nominated by the Nomination Committee of the Supervisory Board. When appointments are made, the Supervisory Board prepares a profile of its desired scope and composition, taking into account the nature of the business, its activities, and the desired expertise, experience and independence of its members.

The Supervisory Board makes a self assessment periodically in order to review and evaluate the Supervisory Board and its committees with a view to further improving the efficiency and effectiveness in the performance of their duties.

The independent members of the Supervisory Board receive compensation for their activities. The members of the Supervisory Board who are appointed based on nomination by the respective shareholders do not receive compensation.

The roles and responsibilities of management should be clearly specified. An FMI's management should have the appropriate experience, a mix of skills, and the integrity necessary to discharge their responsibilities for the operation and risk management of the FMI.

EMIR assigns duties, tasks, roles and responsibilities to the board of a CCP, which must be allocated to either the Management Board or the Supervisory Board, or both. This allocation is reflected in the Rules governing the Supervisory Board.

The Management Board, its roles, responsibilities and required skills are governed by Dutch law, EMIR provisions, EuroCCP's articles of association and the EuroCCP Rules governing the Management Board and the management team. Job descriptions and employment contracts provide further information on roles and responsibilities of Management board members, as well specifying skills and appropriate incentive programmes.

The Management Board is responsible for the management of the company. The roles and responsibilities of the Management Board, as described in EuroCCP's Rules governing the Management Board and the management team, include the following:

- establishing objectives and strategies, discussing progress and tactics and ensuring consistency of the Company's activities therewith;
- managing client satisfaction, retention and acquisition;
- compliance with applicable laws and regulations and regulatory and supervisory requirements;
- continuously monitoring and managing the risks of the Company in accordance with the risk tolerance statement approved by the SB, thus ensuring that risks posed to the Company by its clearing and activities linked to clearing are properly mitigated;
- ensuring that sufficient resources are devoted to risk management and compliance;
- designing, establishing, implementing and maintaining compliance and internal control procedures that promote the objectives of the Company;
- regularly assessing the completeness, coherence and effectiveness of the internal risk management and control systems;
- subjecting the internal control procedures to regular review and testing;
- ensuring that policies, procedures and controls are consistent with the risk tolerance and risk bearing capacity and that they address how the Company identifies, reports, monitors and manages risks;
- providing the necessary decisions or approvals regarding any changes in the policies and procedures and Clearing Rules of the Company, in respect of which a Management Board decision is required;
- providing advice as required in the Company's policies and procedures to the Supervisory Board (such as advice on the selection of the external auditors for the Company's annual audit);
- preparing annual accounts, the annual budget and significant capital expenditures;
- publication of information required by applicable laws and regulations;
- informing the competent authorities in a timely manner on required topics, assessments, or changes regarding the Company (whether or not on the request of the authorities); and
- taking proactive responsibility for corporate and social responsibility issues.

The role of the Supervisory Board is overseeing the Management Board, supervising the general course of affairs of the company and the associated business, and providing advice to the Management Board. EMIR provisions, Dutch company law, EuroCCP's articles of association and the EuroCCP Rules govern the Supervisory Board. The rules reflect, amongst other things, the responsibilities of the Supervisory Board, their duties assigned by EMIR, their composition and organisation and rules for conflicts of interest.

The members of the Management Board and the Supervisory Board may be suspended or dismissed by the General Meeting of Shareholders, pursuant to the articles of association.

The board should establish a clear, documented risk-management framework that includes the FMI's risk-tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision making in crises and emergencies. Governance arrangements should ensure that the risk-management and internal control functions have sufficient authority, independence, resources, and access to the board.

All material risks are described in EuroCCP's General Risk Policy. This policy forms the basis for, the more detailed policies, procedures and systems. The Risk Tolerance Statements are approved by the Supervisory Board, following advice of the Risk Committee. The Management Board is responsible for compliance with and execution of the statements. Each statement is delegated to an individual function within EuroCCP. Relevant metrics are regularly made available to the Supervisory Board and the Risk Committee.

Regular monitoring and controlling is an integral part of EuroCCP's Risk Management Framework. Automated real-time information systems are in place for managing credit and liquidity exposures. Other types of exposures are less suited to be monitored in an automated way (e.g. monitoring reputational risk is a less quantitative process than monitoring market risk). These types of exposures are monitored and controlled in line with the relevant policies.

EuroCCP has a Business Continuity Management System which includes a Crisis Management Plan. This plan provides EuroCCP's Crisis Management Team members with all necessary information, including crisis communications, and tools to enable the Crisis Management Team to function properly. EuroCCP's Business Continuity Management System is ISO certified.

EuroCCP has a Breach and Default Management Committee to handle severe breaches and defaults of Clearing Participants.

The Risk Management, Legal and Compliance and audit functions report to the Supervisory Board, as shown in the company's Governance Structure and Organisation Chart, through the Chief Risk Officer, the Chief Compliance Officer and the Chief Audit Executive.

EuroCCP's Risk Committee gives advice to the Management Board and the Supervisory Board. The advice of the Risk Committee is independent of any direct influence by the management of EuroCCP.

The board should ensure that the FMI's design, rules, overall strategy, and major decisions reflect appropriately the legitimate interests of its direct and indirect participants and other relevant stakeholders. Major decisions should be clearly disclosed to relevant stakeholders and, where there is a broad market impact, the public.

EuroCCP's governance structure is designed to enable clients – both Clearing Participants and platforms – to advise management of their service requirements. Through its Advisory Board and Nordic Advisory Council and its Platform Advisory Council EuroCCP engages with its client base to ensure that it continues to be responsive to their business needs.

As for EuroCCP's Clearing Rules and the way its stakeholders are involved in its change process, EuroCCP's change management process for its Clearing Rules is available on the website. EuroCCP publishes major decisions on its website and through newsflashes, which provide for client/stakeholder alerts.

Publicly Available Resources (on the EuroCCP website):

Organisation charts, Annual Reports, information of goals and objectives available via the website.

3.3. Principle 3: Framework for the comprehensive management of risks

An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.

Key considerations

An FMI should have risk-management policies, procedures, and systems that enable it to identify, measure, monitor, and manage the range of risks that arise in or are borne by the FMI. Risk-management frameworks should be subject to periodic review.

EuroCCP has recognised both CCP-specific type risks and enterprise risks within its risk framework. The CCP-specific risks are credit, liquidity, investment and market risk, and the enterprise risks are operational risk and general business risk. EuroCCP also recognises two more generic risks - reputational risk and people risk - as separate risk categories within its risk framework. Legal risk is seen as a subcategory of operational risk. These risks as well as the tools and systems to manage them are discussed in more detail below.

EuroCCP is exposed to credit risk predominantly in the event that a Clearing Participant fails to meet a financial or contractual obligation. EuroCCP mitigates credit risk through minimum capital requirements for Clearing Participants and by monitoring their financial health. To cover potential loss to EuroCCP in the event of a Clearing Participant default, collateral is required from Clearing Participants. EuroCCP accepts both cash and non-cash collateral with haircuts as specified in EuroCCP's Regulation Collateral. Clearing Participants must deposit a percentage (currently 70%) of their required collateral directly with EuroCCP. The remaining collateral may be held in an account at a financial institution and pledged to EuroCCP or it may be directly deposited with EuroCCP.

The cash held by the Clearing Participants in the cash collateral accounts, the cash element of own funds of EuroCCP and the cash held in the Clearing Fund account are invested in accordance with the Regulation EuroCCP Investment Policy (REIP). Investments under the REIP require an over-margined amount of high quality collateral for each cash placement. EuroCCP receives full title to the collateral. The collateral may be used to secure intraday credit from DNB or to support credit arrangements with commercial banks.

Besides potential defaults of Clearing Participants, the main credit risk faced by EuroCCP is exposure to Clearing Participants when a trade fails to settle. To mitigate these risks, EuroCCP charges a fail fee to discourage late settlements. In the event that a trade still fails to settle, EuroCCP will start a buy-in process in accordance with the Regulation Buy-in.

EuroCCP is exposed to liquidity risk – the risk that the company is unable to meet its payment obligations at any point in time. EuroCCP operates a liquidity risk framework to identify, measure and monitor its settlement and funding flows. EuroCCP continuously manages its payment obligations which are covered through both committed and uncommitted liquidity facilities. EuroCCP has access to TARGET2 as an ancillary system in order to obtain very rapid access to liquidity. A credit facility with DNB is in place for the provision of emergency liquidity under unforeseen circumstances.

EuroCCP is exposed to (latent) market risk. To mitigate market risk, EuroCCP collects collateral from Clearing Participants to cover the probable loss during normal market conditions, and requires contributions to the Clearing Fund to cover losses exceeding the collateral and the

EuroCCP skin in the game. After each day's trades have been netted, EuroCCP calculates the maximum theoretical loss of the portfolio of all open net positions based upon a 99.7% confidence level (three standard deviations) and assumes a three-day time horizon would be required for liquidation. In this calculation the dominant factor is the price risk for each security, but other risk factors such as FX risk are also taken into account.

For intraday calculations, EuroCCP recalculates the margin requirement at least every 5 minutes, using the most up to date positions and market prices.

The financial resources required to cover for extreme but plausible market conditions are provided through the Clearing Fund. On a daily basis, stress tests are performed where portfolios are stressed according to various scenarios. These stress tests can be as extreme as anticipating a market move of 40% across the whole portfolio of equities. The results of the stress tests are used to confirm that the EuroCCP risk framework is adequate at all times. The outcome of these stress tests is reported to EuroCCP's regulators, to the Boards and to the Risk Committee.

Investment risk is the risk that invested cash is reduced in value upon maturity. This risk is mitigated through the strict application of the REIP, which requires high quality counterparties and collateralisation.

Operational risk is monitored and controlled by the Risk Management department. It initiates and coordinates the implementation of risk-reducing, mitigating actions, as directed by the Management Board. Key risk indicators are used to monitor this process, in the context of the Supervisory Board's Risk Tolerance Statements.

General business risk refers to the risk EuroCCP assumes due to potential changes in general business conditions which can impair its financial position as a consequence of decline in its revenues or an increase in its expenses. EuroCCP measures and monitors general business risk by adopting and tracking progress towards the business strategy and annual goals and by tracking the net operating result against the annual budget. Furthermore the actual calculated capital versus the capital requirements is monitored. In case the measurements lead to differences between intentions and reality, additional measures will be considered and, where required, taken by the Management Board.

EuroCCP has a risk management system in place (COH/RTRM –Collateral Haircut – Real Time Risk Management) to calculate the margin requirement of Clearing Participants and Co-CCPs. The system also has the capacity to calculate the margin requirements on the level of the clients of the Clearing Participant. Transactions are fed to the system as soon as they are received from the trading platform, and prices are updated instantaneously upon receipt from Reuters. The P&L in the portfolios is recalculated in real-time and the margin is recalculated at least every five minutes.

EuroCCP uses various self-developed systems/databases to perform stress tests, back tests, sensitivity analysis and reverse stress tests and to calculate the required size of the financial resources, such as the Clearing Fund. To capture operational risk incidents (and losses), EuroCCP uses a tool to log each incident. Through this system, EuroCCP tracks the follow up for each incident including the root cause and mitigating actions that are taken or planned.

The Liquidity Plan is refreshed daily to model the required liquidity resources based on the actual outstanding settlement amounts. The invested funds are tracked and monitored against the parameters stipulated in the REIP through the use of (database) reports.

The margin system in use by EuroCCP provides the margin requirement at the level of each Clearing Participant and at the level of the client of each Clearing Participant. As there are real-

time feeds between the trade capture system (TVS), the price data provider (Reuters), the back-office system (CF) and the margin system (COH/RTRM), the exposures of Clearing Participants can be viewed in near-real time by EuroCCP.
The policies related to risk management (for example Margin Policy, Collateral Policy, Stress Test Policy) require at least Managing Board approval, but depending on the specific policy, Supervisory Board, Risk Committee and/or DNB and AFM approval or non-objection is required.

EuroCCP maintains the so-called three lines of defence model whereby the second line (Risk Management and Compliance) monitors and challenges the risk management in place by the first line (the operational/functional departments). The third line (internal audit) determines whether EuroCCP's network of risk management, control, and governance processes, as designed and represented by management, is adequate and functioning correctly. All policies and procedures related to risk management are reviewed and updated at least annually and whenever significant changes require this. Significant changes could arise from changes in risk, environments and market practices but are not restricted to these elements.

An FMI should provide incentives to participants and, where relevant, their customers to manage and contain the risks they pose to the FMI.

EuroCCP provides a full suite of reports for its Clearing Participants, including margin requirement reports, interoperability fund deposit reports, Clearing Fund contribution reports, transaction reports, outstanding settlement reports and fees reports. These reports are provided on at least a daily basis. Participants have the option to receive transactions reports on a real-time basis and/or on a batch basis.

Clearing Participants may also use the (risk management) tool TRACE. TRACE is a read only system available over the internet allowing the Clearing Participant to follow his own positions, P&L and margin requirement. The Clearing Participant can also set warning limits based on the P&L and margin requirement.

The credit risk that a Clearing Participant poses to EuroCCP consists of the net positions resulting from cleared but not yet settled transactions. EuroCCP requires collateral from the Clearing Participants to cover the margin on these positions. The collateral that the Clearing Participants need to deposit is proportionate to the exposure they bring to EuroCCP. Furthermore the contribution that Clearing Participants are required to make to the Clearing Fund is proportionate to their average margin requirement and the same applies to the deposits in the interoperability fund.

The Risk Committee is asked for advice on new policies and updates to existing policies that relate to material risks that the interaction between Clearing Participants (and/or their customers) and EuroCCP may create. All material changes to rules and regulations are subject to consultation with all Clearing Participants. In this way Clearing Participants (and their customers) provide advice so that both EuroCCP and its Clearing Participants can be effective in managing and containing their risks.

An FMI should regularly review the material risks it bears from and poses to other entities (such as other FMIs, settlement banks, liquidity providers, and service providers) as a result of interdependencies and develop appropriate risk-management tools to address these risks.

EuroCCP routinely reviews the parties with which it interacts and whether this results in material risks due to interdependencies. EuroCCP has identified the following entities from which it bears or poses material risks: CCPs with which EuroCCP has established an interoperable link (Co-CCPs), CSDs, Central Banks, Settlement agents and Liquidity providers.

The risk that Co-CCPs bring to EuroCCP is comparable to the risk that a Clearing Participant brings. The credit risks arising from Co-CCPs are mitigated in the same way as for Clearing Participants, through margin requirements and inclusion of the portfolios of the Co-CCPs in the tests of the adequacy of financial resources.

The other parties pose the risk that they may not be able to provide their services to EuroCCP either temporarily or for a longer period. For temporary hiccups, business continuity plans are in place but if a service provider is not performing for a longer period, EuroCCP may be subject to substantial risks, which could result in temporary lower service levels. For that reason, EuroCCP engages with various settlement agents and liquidity providers and assesses these parties against both credit risk and operational risk standards regularly. For CSDs and central banks monitoring is limited to operational risk standards.

The service providers (CSDs, central banks, settlement agents and liquidity providers) are also monitored continuously to ensure that the status of the settlements and transfers is up to date.

An FMI should identify scenarios that may potentially prevent it from being able to provide its critical operations and services as a going concern and assess the effectiveness of a full range of options for recovery or orderly wind-down. An FMI should prepare appropriate plans for its recovery or orderly wind-down based on the results of that assessment. Where applicable, an FMI should also provide relevant authorities with the information needed for purposes of resolution planning.

EuroCCP maintains a risk register in which specific scenarios for EuroCCP are listed. At least on an annual basis the complete risk register is reviewed by the Management Board, the Risk Management department and specialists from various departments. During this review all scenarios are rated by both likelihood and impact. Where the combined likelihood/impact score is deemed too high, additional mitigation actions will be planned. Specific events may also trigger a review of (part of) the risk register. The risk register takes all scenarios into account on an independent basis. Related risks are in principle decomposed so that they can be seen as independent risks.

EuroCCP has measures in place for various recovery scenarios and a plan for orderly wind-down. EuroCCP can make calls for replenishment of the Clearing Fund and it has a procedure for reinstating the skin in the game as well as access to liquidity, which are recovery tools identified by CPMI-IOSCO in their publications on recovery.

As mandated under EMIR, EuroCCP has a wind down plan which describes the expected steps to terminate CCP services. Winding down commences with the external communication of the decision to do so, if EuroCCP can no longer operate as going concern, if the EMIR requirements can no longer be met, or if the license is revoked or in danger of being revoked. In an orderly wind-down strategy the aim is to cease the operations and services of the CCP over time while at the same time providing the operations and services at a basic level until they are wound down. Both the recovery and orderly wind-down plans are reviewed and updated periodically and ad hoc whenever significant changes require this.

Publicly available resources (on the EuroCCP website):

EuroCCP Regulations, TRACE information. Breach of Rulebook and Default handling procedures, Margin model – user manual, Risk Management Overview.

3.4 Principle 4: Credit risk

An FMI should effectively measure, monitor, and manage its credit exposure to participants and those arising from its payment, clearing, and settlement processes. An FMI should maintain sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two largest participants and their affiliates that would potentially cause the largest aggregate credit exposures to the CCP in extreme but plausible market conditions. All other CCPs should maintain, at a minimum, total financial resources sufficient to cover the default of the one participant and its affiliates that would potentially cause the largest aggregate credit exposures to the CCP in extreme but plausible market conditions.

Key considerations

An FMI should establish a robust framework to manage its credit exposures to its participants and the credit risks arising from its payment, clearing, and settlement processes. Credit exposure may arise from current exposures, potential future exposures, or both.

EuroCCP is exposed to credit risk predominantly in the event that a Clearing Participant fails to meet its obligations. EuroCCP manages credit risk relating to towards Clearing Participants through minimum capital requirements and by monitoring their financial health. To cover a potential loss to EuroCCP in the event of a Clearing Participant default, collateral is required from Clearing Participants. If collateral to cover the margin requirement does not completely cover the loss in a default of the Clearing Participant, there are additional financial resources available to EuroCCP. Co-CCPs also pose credit risk to EuroCCP in the same way as a regular Clearing Participant, and this is mitigated in a similar way.

An FMI should identify sources of credit risk, routinely measure and monitor credit exposures, and use appropriate risk-management tools to control these risks.

EuroCCP identifies sources of credit risk by assessing the activities of its Clearing Participants in the books of EuroCCP. Sources of credit risk can be found in the (price) volatility of the products in the portfolio of the Clearing Participants, and in both the size and the composition of the portfolio of the Clearing Participant. All three sources are taken into account when calculating the margin requirement for the Clearing Participant.

The volatility indicates the likelihood and severity of value changes in the portfolio. The composition provides indications of the level of concentration within the portfolio and the vulnerability to certain market segments (either geographically or based on industry). The size of the portfolio is related to the overall value at risk in the portfolio.

EuroCCP’s exposure to a Clearing Participant is measured by calculating the margin requirement and covered by collateral received from the Clearing Participant. Monitoring takes place continuously during the business day by the Risk Management department with the aid of real-time risk systems. Besides the overnight margin calculation, EuroCCP also calculates the margin during the day (intra-day). For intraday margin requirement calculations, EuroCCP recalculates the margin requirement at least every 5 minutes, using the most up to date positions and market prices. EuroCCP has the authority and the operational ability to demand additional collateral at any time, whenever there is a significant intraday collateral deficit.

The most important tool to control the sources of credit risk is to settle the netted trades at the intended settlement date (usually T+2). For this reason a high settlement efficiency ratio is crucial. Settlement fail fees and a strict buy-in regime are tools to foster the settlement efficiency ratio.

A CCP should cover its current and potential future exposures to each participant fully with a high degree of confidence using margin and other prefunded financial resources (see Principle 5 on collateral and Principle 6 on margin). In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure for the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure for the CCP in extreme but plausible market conditions. In all cases, a CCP should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount of total financial resources it maintains.

The current and potential future exposures to each Clearing Participant and to each Co-CCP are covered by the collateral that is provided by these parties. The collateral must cover the margin requirement as calculated by EuroCCP. The calculation of the margin requirement is designed to cover losses in the portfolio over the holding period of three days in 99.7% of all cases. The forms of collateral are specified in the Regulation Collateral. Collateral can consist of cash, government securities and corporate securities. The risk of decline in value of the (pledged or deposited) collateral is taken into account by the haircut that is charged on collateral.

EuroCCP only clears cash equity instruments; these have a strictly linear pay-off. EuroCCP understands that it is systematically important in multiple jurisdictions as it has mostly non-Dutch Clearing Participants, interoperability links to two CCPs outside the Netherlands and the volumes it clears in the various markets are sizable. EuroCCP clears products in various currencies, most importantly in CHF, DKK, EUR, GBP, NOK,SEK and USD.

In the case of default of a Clearing Participant, the following financial resources are applied to cover any losses in the order presented below (assuming the close out will lead to a loss):

A. Collateral of the defaulted Clearing Participant (including Interoperability Fund Deposit and Clearing Fund Contribution of the Clearing Participant);

B. Skin in the game; EuroCCP will use its Dedicated Own Resources before using the Clearing Fund contributions of non-defaulting Clearing Participants. The dedicated own resources are calculated following the Regulation Dedicated Own EuroCCP Resources;
C. Clearing Fund; in the unlikely event that a Clearing Participant is declared to be in default and the resources under A and B are not sufficient to cover the liquidation of the portfolio of the defaulted Clearing Participant, the Clearing Fund provides an additional buffer;
D. If the losses cannot be covered by the collateral provided by the defaulting Clearing Participant, the skin in the game and the aggregate amount of the contributions to the Clearing Fund of all Clearing Participants (the resources listed under A, B and C) the non-defaulting Clearing Participants shall on demand make an additional payment to EuroCCP on a pro rata basis in proportion to the amount of their contributions to cover any such remaining losses (limited to an amount equal to the amount of their original contribution).

Under EMIR, a CCP shall have sufficient financial resources “to withstand the default of at least the two clearing members to which it has the largest exposure under extreme but plausible conditions.” The sufficiency of the financial resources is evaluated on a daily basis through the performance of stress tests. On a daily basis the resulting required contributions are communicated to the Clearing Participants.

The Clearing Fund is sized to make up the difference between the required financial resources and the sum of the margin requirement and the dedicated own resources. The Clearing Fund is adjusted daily. The Regulation Dedicated Own EuroCCP Resources documents the rationale for the dedicated own resources. It follows the standard set by EMIR.

The amount of total financial resources follows from the exposure that the Clearing Participants bring to EuroCCP in the form of positions measured against the stress test scenarios. The positions of the Clearing Participants are determined by their trades and are generally not restricted by concentration limits or position limits, although EuroCCP may charge additional margin for certain positions (Article 6.1.3 of the Clearing Rule Book) and has the authority to impose restrictions under certain adverse circumstances (Article 5.8.1 (d) of the Clearing Rule Book).

A CCP should determine the amount and regularly test the sufficiency of its total financial resources available in the event of a default or multiple defaults in extreme but plausible market conditions through rigorous stress testing. A CCP should have clear procedures to report the results of its stress tests to appropriate decision makers at the CCP and to use these results to evaluate the adequacy of and adjust its total financial resources. Stress tests should be performed daily using standard and predetermined parameters and assumptions. On at least a monthly basis, a CCP should perform a comprehensive and thorough analysis of stress testing scenarios, models, and underlying parameters and assumptions used to ensure they are appropriate for determining the CCP’s required level of default protection in light of current and evolving market conditions. A CCP should perform this analysis of stress testing more frequently when the products cleared or markets served display high volatility, become less liquid, or when the size or concentration of positions held by a CCP’s participants increases significantly. A full validation of a CCP’s risk-management model should be performed at least annually.

On a daily basis EuroCCP performs stress tests to determine the sufficiency of its total financial resources following a documented “Stress Test Policy” and “Stress Test Procedure”. As the scenarios that are tested are fundamental in the process, the documentation also includes the

“Stress Test Scenario Framework” and “Stress Test Scenario Policy” to further define the “extreme but plausible” market conditions.

The stress test results are communicated on a daily basis to the Risk Management department including the Chief Risk Officer. On a monthly basis, the stress test results are reported to the Management Team as part of the Risk Tolerance Statements and to the regulators of EuroCCP as part of the standard reporting. The Risk Committee and the Supervisory Board are also provided with the stress test results.

The stress test programme uses the most recent end of day positions. Price volatility that exceeds volatility seen during the past 30 years may lead to a new historical price scenario whereas volatility in specific sectors/countries may lead to additional hypothetical scenarios. EuroCCP has special scenarios to deal with position concentration, on top off also taking position concentration into account in the margin calculation. The review of the stress test assumptions and parameters is further enhanced through the use of so-called reverse stress-tests.
The risk management model of EuroCCP is validated by a qualified and independent party (Deloitte) on an annual basis in line with EMIR. The validation of stress testing is part of this validation.

In conducting stress testing, a CCP should consider the effect of a wide range of relevant stress scenarios in terms of both defaulters’ positions and possible price changes in liquidation periods. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions.

EuroCCP considers both historical and hypothetical scenarios, thereby covering peak historic price volatilities and a spectrum of forward-looking stress scenarios. Both types of scenarios are further detailed in the documented “Stress Test Scenario Framework” and the “Stress Test Scenario Policy”. EuroCCP sizes its financial resources on the two Clearing Participants to which it has the largest exposure. In this sizing it assumes that the positions of the two Clearing Participants are dealt with on an independent basis (i.e. there is no interaction between the portfolios assumed). This resembles the case in which EuroCCP would have multiple defaults sequentially or over different time horizons.

An FMI should establish explicit rules and procedures that address fully any credit losses it may face as a result of any individual or combined default among its participants with respect to any of their obligations to the FMI. These rules and procedures should address how potentially uncovered credit losses would be allocated, including the repayment of any funds an FMI may borrow from liquidity providers. These rules and procedures should also indicate the FMI’s process to replenish any financial resources that the FMI may employ during a stress event, so that the FMI can continue to operate in a safe and sound manner.

If the losses cannot be covered by the collateral provided by the defaulting Clearing Participant, the skin in the game and the aggregate amount of the contributions to the Clearing Fund of all

Clearing Participants (the resources listed under A, B and C above) the non-defaulting Clearing Participants shall on demand make an additional payment to EuroCCP on a pro rata basis in proportion to the amount of their Contributions to cover any such remaining losses (limited to an amount equal to the amount of their contribution).

During a stress event that includes the default of a Clearing Participant and subsequent credit losses both the Clearing Fund and the Dedicated Own Resources of EuroCCP may be affected. The replenishment of the Dedicated Own Resources (i.e. the shareholders skin in the game) is arranged by a procedure and the replenishment of the Clearing Fund is set out in section 8.6.3 of the Clearing Rule Book.

Publicly Available Resources (on the EuroCCP website):

EuroCCP Risk Management overview, Regulation Clearing Fund, Regulation Dedicated Own EuroCCP Resources, Clearing Rule Book.

3.5 Principle 5: Collateral

An FMI that requires collateral to manage its or its participants' credit exposure should accept collateral with low credit, liquidity, and market risks. An FMI should also set and enforce appropriately conservative haircuts and concentration limits.

Key considerations

An FMI should generally limit the assets it (routinely) accepts as collateral to those with low credit, liquidity, and market risks.

In its Collateral Policy, EuroCCP has documented its policy with regard to the determination of acceptable collateral. In line with EMIR, EuroCCP does not accept types of collateral that are not considered to have low credit, liquidity and markets risks.

EuroCCP charges a haircut on the collateral value and assesses whether it can liquidate the collateral without losing more than the haircut on the collateral. Concentration limits are in place in conformity with the relative procedure. Limits are set for individual issuers and per type of asset on an individual Clearing Participant level and on the level of all Clearing Participants together.

When a Clearing Participant deposits collateral, the Clearing Participant advises the Risk Management department of EuroCCP and requests permission from EuroCCP to deposit the collateral. Before the permission is granted, EuroCCP assesses the advised collateral and ensures that it meets the collateral requirements as set by EuroCCP in the Regulation Collateral.

Once agreed, collateral postings are visible to EuroCCP the moment it is paid in (cash-collateral) or matched in the relevant CSD (collateral in the form of securities). EuroCCP receives SWIFT (MT910/MT517) messages that are uploaded automatically in the collateral system and risk management systems of EuroCCP. There are therefore no specific delays due to settlement conventions for transfers of the asset.

EuroCCP has identified specific wrong-way risk when the issuer of the collateral has (close) links with the Clearing Participant posting the collateral. Furthermore EuroCCP does not accept collateral that is issued by a Clearing Participant (or Co-CCP) or a related entity.

An FMI should establish prudent valuation practices and develop haircuts that are regularly tested and take into account stressed market conditions.

Collateral instruments are valued using prices supplied by Reuters. Collateral instruments for which a price cannot readily be obtained will not be accepted as collateral at EuroCCP. On an intraday basis collateral is priced against the mid point between bid and ask price. These bid and ask prices are requested from Reuters every 5 seconds. The mid point is used as input to the Real Time Risk Monitoring (RTRM) system to value the collateral holdings. Based on the outcome of these calculations EuroCCP has the discretion to call for intraday collateral.

The determination of haircuts on non-cash instruments takes the following characteristics into account:

- the type of collateral instrument, where haircuts should be differentiated to at least general asset classes (government/corporate issuers);
- the time required to liquidate collateral instruments;
- the price volatility and price sensitivity to changes in market circumstances of the collateral instrument;
- a minimum price volatility to cover for less volatile market periods and to establish a buffer for stressed market conditions (hereby limiting procyclicality);
- the downside risk;
- the degree of creditworthiness of the issuing institution;
- the residual maturity of the collateral instrument;
- the foreign exchange risk of the collateral instrument in relation to the main denomination of the cleared exposure;
- bid/ask spread.

The determination of haircuts on cash shall incorporate at least the following characteristics:

- the price volatility of the currency against the reporting currency;
- a minimum price volatility to cover for less volatile market periods and to establish a buffer for stressed market conditions (thereby limiting procyclicality).

To test the sufficiency of the haircuts, a daily back-test is performed. As stressed market conditions for collateral do not occur very often, the testing of the potential decline under these conditions cannot always be performed in a live environment. To this end, EuroCCP has supplemented the back test procedure with tests to check whether the actual market bid prices are in line with the recorded valuations.

In order to reduce the need for procyclical adjustments, an FMI should establish stable and conservative haircuts that are calibrated to include periods of stressed market conditions, to the extent practicable and prudent.

Procyclicality is specifically taken into account when setting the haircut. A minimum price volatility is set to cover for less volatile market periods and to establish a buffer for stressed market conditions (limiting procyclicality). This limit is normally set on the type of collateral but may be set on the level of an individual instrument if deemed necessary.

An FMI should avoid concentrated holdings of certain assets where this would significantly impair the ability to liquidate such assets quickly without significant adverse price effects.

Concentration limits on collateral are in place, whereby limits are set for individual issuers and per type of asset on an individual Clearing Participant level and on the level of all Clearing Participants together. The collateral holdings are monitored on a daily basis against the concentration limits and any breaches are dealt with in accordance with the relative procedure.

An FMI that accepts cross-border collateral should mitigate the risks associated with its use and ensure that the collateral can be used in a timely manner.

EuroCCP accepts collateral cross-border at the following collateral agents: Nordea Bank, Skandinaviska Enskilda Banken AB, VP Securities A/S and Clearstream Banking. EuroCCP has established procedures for each collateral location to minimize operational and market risk, as well as procedures for enforcement events. EuroCCP has access to the GUIs of the various locations to view the collateral in the systems of the collateral agent. Posting of collateral in the account takes place in (near-) real time and market risk is captured through setting a haircut with the inclusion of the FX-risk in the collateral.

The relevant jurisdiction for the pledge agreements is the place where the pledged account is maintained. The pledge agreements have been drafted or reviewed by local counsel.

An FMI should use a collateral management system that is well-designed and operationally flexible.

Collateral is administrated in the EuroCCP operations system. In this system one or more collateral accounts are maintained for each position account, and linked to that position account. On the collateral account, the collateral is posted at the moment it is received. Each movement on the collateral accounts in the operations system is mirrored in the margin system. Within the margin system the collateral is priced and the haircut is updated every minute.

Both the CF system and the margin system are flexible with regard to currencies, collateral locations, type of instruments, instances of types of instruments, pricing of instruments, etc. The staffing of the collateral management system is done by Risk Management department whereby booking of collateral is either automated or done by the Operations department. Both functions are sufficiently staffed, both in normal times and during times of market stress.

EuroCCP does not re-use the collateral that is pledged to EuroCCP. This is, where applicable, specified in the relevant pledge agreements. Copies of the collateral pledge agreements are available on the EuroCCP website.

Publicly Available Resources (on the EuroCCP website)

Regulations Margin and Collateral, Clearing Rule Book, Pledge Agreements

3.6 Principle 6: Margin

A CCP should cover its credit exposures to its participants for all products through an effective margin system that is risk-based and regularly reviewed.

Key considerations

A CCP should have a margin system that establishes margin levels commensurate with the risks and particular attributes of each product, portfolio, and market it serves.

EuroCCP clears only cash equities and as such the attributes of the margin requirements are the same across all products, i.e. EuroCCP has no cross-margining methodology for multiple products. The margin requirement covers two parts: the current exposure (or variation margin) and the potential future exposure (or initial margin). The total margin called by EuroCCP is equal to Max [0;(initial margin – variation margin)]. Variation margin is defined as the (unrealised) profit or loss in the portfolio. The variation margin is not paid out or paid in but rather it is offset against the initial margin.

Initial margin is defined as the potential future exposure of the portfolio i.e. the potential maximum loss in the portfolio over the time till close out of the portfolio under 'normal' circumstances. 'Normal' circumstances are defined by a 99.7% confidence interval over a three day holding period.

The details of the margin methodology are documented and available on the website of EuroCCP. The main driver of the credit exposure is formed by the positions making up the portfolios of the Clearing Participants. The exposure is measured through the (price) volatility in the products in which positions are taken, the size of the positions that are taken and the correlation between the positions.

Additional exposure may stem from the size of the positions in relation to the overall liquidity in the products in which position is taken and the overall outlook of the positions (i.e. a portfolio that consists of positions that are equally long and short has a different exposure than a portfolio that only contains short positions or only long positions).

For the cleared products, the margin increases where the product is more volatile. For portfolios the margin increases in relation to the size and directionality of the portfolio and to the volatility of the products that are in position. Through back-testing EuroCCP assesses daily whether the margin requirements are sufficient for the portfolios that are cleared.

EuroCCP enforces the timelines for margin collections and payments according to the Regulation Margin. Although EuroCCP has Clearing Participants in different time zones (Clearing Participants in the UK run one hour behind CET whereas Clearing Participants in Finland are one hour ahead of CET), these differences are not material for the collection of margin.

A CCP should have a reliable source of timely price data for its margin system. A CCP should also have procedures and sound valuation models for addressing circumstances in which pricing data are not readily available or reliable.

EuroCCP uses the services of Reuters to access all required prices for both the cleared products, for the collateral and the relevant FX rates. The contract is for both overnight and intraday prices. The intraday prices are received without delay from Reuters (i.e. EuroCCP does not accept the 15 minute or longer delay in price distribution from Reuters in order to pay a lower fee to Reuters).

The price data for the cleared products is taken from the primary market (via Reuters) where the equity is listed. It is therefore not relevant whether the trade was executed on-exchange or OTC as all resulting positions are valued against the price of the primary market.

Through spot-checks, it is tested that the prices delivered from Reuters are correct. Furthermore the prices are checked versus the prices of the last transaction prices of the business day and against the closing price of the previous day. If the closing price of today differs more than a certain percentage (10% versus last trade, 25% versus previous closing price), it is checked whether the captured (new) closing price is correct. If necessary, the price is corrected.

For intraday prices, the timeliness and availability is monitored via the intraday margin system. It is checked that prices are continuously delivered to the system and in case of large deviations, the price changes are checked for correctness.

If a price is not available due to a Reuters malfunction, the previous closing price is taken by the margin systems since that price is transparent to all Clearing Participants. EuroCCP does not use models to estimate prices where market prices are not available.

A CCP should adopt initial margin models and parameters that are risk-based and generate margin requirements sufficient to cover its potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default. Initial margin should meet an established single-tailed confidence level of at least 99 percent with respect to the estimated distribution of future exposure. For a CCP that calculates margin at the portfolio level, this requirement applies to each portfolio's distribution of future exposure. For a CCP that calculates margin at more-granular levels, such as at the sub portfolio level or by product, the requirement must be met for the corresponding distributions of future exposure. The model should (a) use a conservative estimate of the time horizons for the effective hedging or close out of the particular types of products cleared by the CCP (including in stressed market conditions), (b) have an appropriate method for measuring credit exposure that accounts for relevant product risk factors and portfolio effects across products, and (c) to the extent practicable and prudent, limit the need for destabilising, procyclical changes.

The initial margin model is designed to capture the theoretical loss in the portfolio based on a coverage level of 99.7% and a liquidation period of three days. As EuroCCP only clears cash equities, all positions are seen as part of one portfolio and may offset each other if there is sufficient correlation among the positions.

To calculate the initial margin of the portfolio, EuroCCP first estimates the potential movement of each product until the end of the liquidation period. This calculation is based on the closing prices of the past 250 days. For this period for each product in position the EWMA (exponentially weighted moving average) volatility is calculated. If this EWMA volatility is below a certain threshold, the minimum volatility is used. In this way procyclicality is reduced. Also EuroCCP may use the implied volatility of options associated with the product if this is available and leads to a higher volatility. If no, or not enough, historical prices are available, a 'default' volatility is set at a fixed percentage equal to a 10% movement range.

Having estimated the potential movements for all products, the estimation of the potential movement of the portfolio is made. This estimation is performed by using Principal Component Analysis (PCA). Through the use of PCA, EuroCCP can map the potential movement of each position in the portfolio into the potential movement of the portfolio as a whole. This mapping is not performed with the classical VaR approach but rather it is assumed that the correlation between the individual product and the portfolio as a whole is described by an interval and not a single number. The EuroCCP approach to the estimation of the potential loss in the portfolio is conservative since it does not set a priori fixed correlations between the products but rather it sets a potential interval in which the correlation moves. This interval is larger when the correlation is smaller. Once all potential movements for the portfolio are calculated, the worst case scenario is chosen (for each product within its calculated interval) as the initial margin for the portfolio with a cap of 80% of the reduction that is achieved by taking full portfolio diversification into account.

The main assumption of the margin model is that the log returns of the prices can be used as the base to estimate the margin per product and to derive the correlations between the products. It is also assumed that the portfolio can be liquidated within the liquidation period but here a mitigating measure is taken by adding margin through the liquidity add-on in case the position in a product is large in comparison to overall market volume in the product.

The margin requirement is set to cover the liquidation of the portfolio in the case of a defaulting Clearing Participant within a set confidence interval, so the logical liquidation period to set is the time it will take to close out a portfolio after a default. This period can be broken up in three sub-periods:

- The longest period between the last collection of margin up to the declaration of default. It is considered that this period can be up to 24 hours.
- The (estimated) period needed to design and decide on the strategy for the management of the default. EuroCCP uses a 'playbook' that lists the various approaches to the handling of a default.
- The period needed to cover the counterparty risk to which EuroCCP is exposed. Depending on the choice of strategy for the handling of the default, this period may take one day or more. If EuroCCP chooses for an auction, the auction will take place before the opening of the markets the day after a default declaration meaning that it will take one additional day at most. If EuroCCP chooses for settling the outstanding transactions as normally, the risk is contained and it will decrease over the next days according to the settlement schedule. The same holds for liquidation of the portfolio via a broker.

The liquidation period is then the sum of these periods, two days, one day for default declaration and design/execution of strategy and one day for actual implementation. To be on the safe side, EuroCCP uses a liquidation period of three days.

If positions are concentrated to the extent that they may have an effect on the liquidation period, this effect is taken into account through the so-called liquidity add-on. If a position is large in comparison to the median traded volume over the last 30 days, the liquidation period is effectively extended by increasing the margin percentage for the product in which the position is taken.

The portfolios cleared by EuroCCP are quite fluid in the sense that they settle on a T+2 basis. In order to take into account both the current market circumstances and a longer period -to include stress events- EuroCCP takes a history of 250 days as the sample period for historical data and weighs the more recent observations heavier. If the available historical data has less than 250 data points, a ‘default’ volatility may be set, otherwise the normal minimum volatility is used. When there are sufficient data points (around 100), the volatility is calculated using the available data points.

Wrong-way risk as defined under EMIR will not occur at EuroCCP since it does not accept collateral issued by any Clearing Participant of its affiliates. Specific wrong-way risk could arise when a Clearing Participant cleared long positions through EuroCCP in stocks on their own name or on the names of their legal affiliates. EuroCCP automatically increases the margin for such situations (by specifying the Clearing Participant - stock combinations).

A CCP should mark participant positions to market and collect variation margin at least daily to limit the build-up of current exposures. A CCP should have the authority and operational capacity to make intraday margin calls and payments, both scheduled and unscheduled, to participants.

EuroCCP does not separately collect variation margin but rather it is one of the components of the overall margin that EuroCCP collects each morning. The variation margin is defined as the (unrealised) profit or loss in the portfolio (or the current exposure as defined by CPMI-IOSCO). The variation margin is calculated using the position, trade prices and the current or closing prices as inputs.

The positions and (average) trade prices are provided to EuroCCP as part of trade feed for novation process and are therefore available at all times. The current price / closing price of products and currencies are available through EuroCCP’s data vendor (see above). During the day, the variation margin is continuously updated upon arrival of new price information or position information.

EuroCCP usually makes a single margin call that covers both the initial and variation margin. The authority to make intraday margin calls is provided in the Clearing Rule Book under section 6.1.2 and further detailed in the Regulation Margin sections 3 and 4. EuroCCP has the operational capacity to make and complete intraday margin calls.

In calculating margin requirements, a CCP may allow offsets or reductions in required margin across products that it clears or between products that it and another CCP clear, if the risk of one product is significantly and reliably correlated with the risk of the other product. Where two or more CCPs are authorised to offer cross-margining, they must have appropriate safeguards and harmonised overall risk-management systems.

EuroCCP clears only cash equities and as such the attributes of the margin requirements are the same across all products, i.e. EuroCCP has no cross-margining methodology for multiple products. EuroCCP calculates the margin at the portfolio level and allows offsets/reduction in the margin required by a model that viewed each and every individual stock as a stand alone portfolio. In doing so, EuroCCP relies on the empirical result that the risks in the various equities are correlated with each other; depending on the actual correlation more or less offset is given within the portfolio.

A CCP should analyse and monitor its model performance and overall margin coverage by conducting rigorous daily back testing – and at least monthly, and more frequent where appropriate, sensitivity analysis. A CCP should regularly conduct an assessment of the theoretical and empirical properties of its margin model for all products it clears. In conducting sensitivity analysis of the model's coverage, a CCP should take into account a wide range of parameters and assumptions that reflect possible market conditions, including the most volatile periods that have been experienced by the markets it serves and extreme changes in the correlations between prices.

EuroCCP's Back Testing Policy and Back Testing Procedure describe the back testing process. EuroCCP targets a confidence level of 99.7% but in practice this figure is normally still higher (around 99.9%).

EuroCCP back tests complete portfolios thereby taking portfolio effects completely into account. As EuroCCP does not clear multiple asset classes, there are no portfolio effects across asset classes. EuroCCP's Sensitivity Testing Policy and Sensitivity Testing Procedure form the basis of the sensitivity testing. EuroCCP rapidly addresses any shortcomings identified by the back-testing and sensitivity analysis.

The results are reported within EuroCCP to the Management Team, Risk Committee and Supervisory Board as part of the report on the Risk Tolerance Statements. The results are reported on a monthly basis to the regulators of EuroCCP and (where requested) to the Clearing Participants. A high level report on the back-test results is available on the website of EuroCCP as well.

A CCP should regularly review and validate its margin system.

Through the back-tests and the sensitivity tests the margin system is regularly reviewed through a quick daily review and a more elaborate review as part of the monthly reporting. Furthermore an annual model validation is performed by a qualified and independent party. The most recent model validation report was finalised in June 2017.

Publicly Available Resources (on the EuroCCP website):

Regulations, EuroCCP risk management overview, EuroCCP COH user manual, Breach of Rule Book and Default Handling procedures.

3.7 Principle 7: Liquidity risk

An FMI should effectively measure, monitor, and manage its liquidity risk. An FMI should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.

Key considerations

An FMI should have a robust framework to manage its liquidity risks from its participants, settlement banks, nostro agents, custodian banks, liquidity providers, and other entities.

EuroCCP has a Liquidity Risk Management Framework, which is approved by the EuroCCP Management Board and reviewed by the Risk Committee. This framework is designed to deliver the appropriate term and structure of liquidity consistent with the Liquidity Risk Tolerance Statement approved by the Management Board and Supervisory Board, with advice from the Risk Committee. The Liquidity Risk Management Framework is part of the general Risk Management Framework of EuroCCP.

The framework includes a range of tools to monitor liquidity needs and ensure fulfilment of liquidity needs at all times pursuant to the EuroCCP Liquidity Plan. Both the Liquidity Plan and the Liquidity Risk Tolerance Statement form part of this framework. The framework covers how variations in liquidity needs would be managed, including requiring more margin to be placed in the balance sheet of EuroCCP and reverse repo of securities for liquidity purposes.

EuroCCP has improved its control over liquidity by reducing the use of settlement agents, through the implementation of the T2S strategy of EuroCCP, which is to become a Directly Connected Party (DCP) to the extent possible with liquidity provision via the TARGET2 account of EuroCCP with DNB.

EuroCCP has a Liquidity Plan describing the procedures for managing and monitoring, on a daily basis, EuroCCP's liquidity needs for the various settlement markets, including a range of market scenarios influencing liquidity needs, and the timescales over which the CCP's liquid financial resources should be available. The plan distinguishes the use of the different types of liquid resources, and includes a description of sources of liquidity risk due to unavailability of resources. The Liquidity Plan is reviewed by the Risk Committee.

The Plan includes the daily assessment and valuation of the liquid assets available to the CCP. The liquidity needs are around euro 500 million, and the liquidity resources exceed euro 600 million. The nature of the liquidity needs stems largely from the settlement of Open Positions. The main sources of liquidity stress would be failure to bring liquidity to start the settlement process, and failure to monitor the settlement cycles, which can cause overnight long positions which require to be funded. This core process is the same for all currencies. The Liquidity Plan shows the solutions in place for each settlement venue / currency.

Clearing Participants of EuroCCP can act as settlement agent and/or liquidity provider. EuroCCP is directly connected to most CSDs and has substantially reduced the reliance on settlement agents. EuroCCP manages the risk by monitoring the concentration limit with respect to credit lines (or similar arrangements), whereby no single Clearing Participant can provide more than 25% of the total liquidity requirements of EuroCCP, as prescribed by EMIR.

An FMI should have effective operational and analytical tools to identify, measure, and monitor its settlement and funding flows on an ongoing and timely basis, including its use of intraday liquidity.

The main operational tools are described in the procedures and process flows for funding the various markets, which supplement the Liquidity Plan. The progress of settlement and associated liquidity needs are monitored continually by staff members during the day on the basis of settlement confirmations received. Towards the end of the day, larger long positions will then be split into smaller quantities to the extent possible to minimise long positions remaining overnight, in accordance with local market procedures for partialling.

A CCP should maintain sufficient liquid resources in all relevant currencies to settle securities-related payments, make required variation margin payments, and meet other payment obligations on time with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should consider maintaining additional liquidity resources sufficient to cover a wider range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions.

EuroCCP does not pay out variation margin but takes into account price fluctuations of all unsettled positions to determine the margin call. As a result there is never an outgoing margin payment.

The daily liquidity needs are compared to the available resources to determine if the liquidity position is adequate. EuroCCP will also stress the liquidity position on a daily basis by taking the funding needs and adding the two highest observed peaks since the start of monitoring in 2012. This stressed need is compared to the available resources. The available resources should cover at least the stressed liquidity need. EuroCCP performs stress tests on the liquidity position by assuming the default of the two Clearing Participants to which EuroCCP has the largest exposures.

EuroCCP has a number of other liquidity resources (such as credit facilities) next to the available collateral. For the stress test of the liquid financial resources EuroCCP tests that the largest of these other resources will not be available. Furthermore the provision of credit to EuroCCP is also analysed on a daily basis to ensure that no more than 25% of the liquidity is provided by any entity which is also a Clearing Participant. The EuroCCP Liquidity Plan also identifies a set of different, more exceptional risks to which EuroCCP might be exposed and sets out actions to prevent a liquidity shortfall if such a risk materializes.

The liquidity need if there is Clearing Participant default will depend on the way the position is closed. EuroCCP will have access to the waterfall assets to cover this loss, and the waterfall will also provide liquidity to bridge timing gaps.

EuroCCP only clears cash-equity instruments that have by definition a linear pay-off. Accordingly EuroCCP does not believe that the CCP's activities have a “more complex” risk profile. EuroCCP is considered systemically important in multiple jurisdictions.

For the purpose of meeting its minimum liquid resource requirement, an FMI's qualifying liquid resources in each currency include cash at the central bank of issue and at creditworthy commercial banks, committed lines of credit, committed foreign exchange swaps, and committed repos, as well as highly marketable collateral held in custody and investments that are readily available and convertible into cash with prearranged and highly reliable funding arrangements, even in extreme but plausible market conditions. If an FMI has access to routine credit at the central bank of issue, the FMI may count such access as part of the minimum requirement to the extent it has collateral that is eligible for pledging to (or for conducting other appropriate forms of transactions with) the relevant central bank. All such resources should be available when needed.

The liquid resources available to EuroCCP consist of credit lines made available by liquidity providers, settlement agents and settlement venues. The core working capital is provided by the Clearing Participants, which must deposit a percentage (currently 70%) of their required collateral directly with EuroCCP either in cash or in securities under a title transfer agreement. The cash is invested under the REIP, and the collateral in the form of securities received for the cash placement, together with the securities provided under title transfer, is available to support the working capital to EuroCCP. In this way, EuroCCP can provide collateral to the parties providing cash liquidity, including DNB. For this reason, these securities are considered to form part of the qualifying liquid resources.

EuroCCP consistently has ample resources in place to meet its payment obligations, as evidenced by the daily operations under the Liquidity Plan.

An FMI may supplement its qualifying liquid resources with other forms of liquid resources. If the FMI does so, then these liquid resources should be in the form of assets that are likely to be saleable or acceptable as collateral for lines of credit, swaps, or repos on an ad hoc basis following a default, even if this cannot be reliably prearranged or guaranteed in extreme market conditions. Even if an FMI does not have access to routine central bank credit, it should still take account of what collateral is typically accepted by the relevant central bank, as such assets may be more likely to be liquid in stressed circumstances. An FMI should not assume the availability of emergency central bank credit as a part of its liquidity plan.

EuroCCP has not supplemented its qualifying liquid resources described above with other forms of liquid resources.

An FMI should obtain a high degree of confidence, through rigorous due diligence, that each provider of its minimum required qualifying liquid resources, whether a participant of the FMI or an external party, has sufficient information to understand and to manage its associated liquidity risks, and that it has the capacity to perform as required under its

commitment. Where relevant to assessing a liquidity provider's performance reliability with respect to a particular currency, a liquidity provider's potential access to credit from the central bank of issue may be taken into account. An FMI should regularly test its procedures for accessing its liquid resources at a liquidity provider.

EuroCCP holds ample qualifying resources held in highly marketable collateral provided to it directly or via the REIP placements. This collateral can be readily converted into cash through reverse repos.

EuroCCP uses liquidity providers. Liquidity is provided by commercial banks and by central banks on a collateralised basis only. EuroCCP performs due diligence on the eligible banks listed in the REIP. The liquidity providers of EuroCCP have access to central bank monetary instruments. The successful daily execution of settlement operations using the associated liquidity arrangements as documented in the EuroCCP Liquidity Plan demonstrates the timeliness and reliability of these arrangements.

An FMI with access to central bank accounts, payment services, or securities services should use these services, where practical, to enhance its management of liquidity risk.

EuroCCP, designated as an Ancillary System under TARGET2 rules, has access to intraday central bank liquidity as standard, which is used as working capital for its settlement operations. The borrowing capacity is determined by the available eligible collateral. For overnight liquidity EuroCCP relies on commercial bank credit facilities.

EuroCCP has direct access to central bank payment services for the cash legs of DVP/RVP settlements in all T2S markets and Denmark, Sweden, Finland, Switzerland and Norway. Long positions at the close of the processing window will be funded making use of commercial bank credit facilities for all of these markets. The services are used for the cash legs of DVP/RVP settlements in accordance with the Liquidity Plan. In Euroclear UK & Ireland, EuroCCP is directly connected to CREST-System and uses a CREST Settlement Bank to provide liquidity using the CREST "debit cap".

The provision of liquidity has improved through direct access to a CSD with central bank money. EuroCCP has an established policy for direct access under T2S. This includes the mandated use of Powers of Attorney (PoA), for which Clearing Rule Book changes were implemented in September 2015. Through the use of these PoAs and direct T2S connectivity, settlement efficiency has improved and overnight holdings and associated liquidity needs have decreased.

An FMI should determine the amount and regularly test the sufficiency of its liquid resources through rigorous stress testing. An FMI should have clear procedures to report the results of its stress tests to appropriate decision makers at the FMI and to use these results to evaluate the adequacy of and adjust its liquidity risk-management framework. In conducting stress testing, an FMI should consider a wide range of relevant scenarios. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions. Scenarios should also take into account the design and operation of the FMI, include all entities that might pose material liquidity risks to the FMI (such as

settlement banks, nostro agents, custodian banks, liquidity providers, and linked FMIs), and where appropriate, cover a multiday period. In all cases, an FMI should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount and form of total liquid resources it maintains.

Daily liquidity management includes liquidity stress testing. The stress testing identifies the two Clearing Participants with the largest collateral holdings, which are thus the largest contributors to the collateral liquidity pool. The worksheet identifies if there is sufficient liquidity without these two Clearing Participants.

Pursuant to the Stress Test Policy, daily liquidity needs are compared to the available resources to determine if the liquidity position is adequate. EuroCCP will also stress the liquidity position on a daily basis by taking the funding needs and add the two highest observed peaks since the start of the monitoring in 2012. This stressed need is compared to the available resources. The available resources should cover at least the stressed liquidity need. The worksheet is provided to and checked by the Risk Management department.

The liquidity framework is designed to provide an adequate level of funding at all times. As described above, this framework includes the tools to increase resources.

Various events can compromise the liquidity position of EuroCCP. If such events occur appropriate action is needed to ensure that the liquidity level is brought back to an acceptable level. EuroCCP distinguishes sources of liquidity risk and has the mitigating measures set out below:

Lower than expected Clearing Participant collateral balances or liquidity needs may increase faster than expected: Clearing Participants are required to deposit 70% of their margin requirement with EuroCCP. This can be either cash or securities which fulfil the EuroCCP eligible collateral criteria (see Regulation Collateral). Since the start of this mandatory requirement the total deposits made by the Clearing Participants have always been more than adequate to cover funding needs. The surplus is spread over a fair number of CPs giving no rise to concerns regarding concentration. EuroCCP is able to increase the mandatory collateral percentage (if need be on short notice), which is determined in such a way that it ensures that the mandatory collateral covers normal funding needs.

Whenever Clearing Participants are not able to fulfil their settlement obligations to take delivery in a timely manner EuroCCP faces the risk of having to fund the long position pending delivery versus payment, potentially until a sell-out takes place. During the fail period EuroCCP will use additional liquidity from the credit facilities in order to keep the settlement process moving, if necessary.

EuroCCP must meet the liquidity needs in each currency and maintain high-quality liquid assets in each currency consistent with the distribution of the liquidity needs by currency. EuroCCP Treasury reports to the Management Team and Risk Management department on the liquidity needs and resources per currency. This allows EuroCCP to track potential mismatches upon which appropriate action can be taken. Note that under current normal conditions EuroCCP is able to collateralise GBP, CHF, DKK, SEK, NOK and USD exposures with Euro denominated instruments or cash.

EuroCCP faces the risk that the securities received as collateral are recalled and new collateral is received. EuroCCP minimises increased liquidity needs resulting from these collateral swaps, since EuroCCP transforms cash into bonds through collateralisation of cash deposits, and vice versa.

EuroCCP's main liquidity exposure is to liquidity providers. In the last few years, EuroCCP has reduced concentration of risk with liquidity providers by increasing the number of banks from whom EuroCCP obtains liquidity on a secured basis. EuroCCP has reduced reliance on settlement agents by obtaining direct access to as many CSDs as possible.

An FMI should establish explicit rules and procedures that enable the FMI to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations on time following any individual or combined default among its participants. These rules and procedures should address unforeseen and potentially uncovered liquidity shortfalls and should aim to avoid unwinding, revoking, or delaying the same-day settlement of payment obligations. These rules and procedures should also indicate the FMI's process to replenish any liquidity resources it may employ during a stress event, so that it can continue to operate in a safe and sound manner.

EuroCCP stress tests the liquidity position by assuming the default of the two Clearing Participants to which EuroCCP has the largest exposures. As part of the default arrangements, EuroCCP has the possibility to tender the position, which means that for such default handling liquidity is needed, just as for regular settlement. The liquidity resources employed during a stress event will start with the financial resources provided by the defaulting Clearing Participant.

Publicly Available Resources (on the EuroCCP website):

Regulation EuroCCP Investment Policy, Clearing Rule Book.

3.8 Principle 8: Settlement finality

An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time.

Key considerations

An FMI's rules and procedures should clearly define the point at which settlement is final.

A Completed Posting qualifies as the entry into the final system, which is operated by EuroCCP. This is the relevant point in time for the derogation of the retroactive effect of a bankruptcy. A "Completed Posting" means the receipt of an Electronic Message containing the details of a Posting by EuroCCP. The electronic message is the message referred to in the Regulation Trade Refusal. This Regulation states the grounds for refusal of trades. If a trade meets the requirements, the Posting (which is the message containing the trade details) becomes a Completed Posting and is final.

The Completed Postings lead to the creation of trade legs. The trade legs in turn create or change the Open Positions, the net aggregated balance of the trade legs of a Clearing Participant, per ISIN code, per Position Account, per CSD account, per currency and per Settlement Date. The Open Positions lead to settlement obligations. The discharge of the settlement obligations takes place in the CSDs.

EuroCCP has been duly designated as final system as evidenced by publication in the Dutch official Gazette (most recently in the "Staatscourant" 17 December 2014, confirming the name change of the former EMCF) and the ESMA website.

Under interoperability, each CCP becomes a "special" member of the other. Individual contracts arise between the CCPs pursuant to the terms of the Master Clearing Link Agreements (MCLA) rather than the rules of either CCP. The MCLAs set out the contract formation between the CCPs and form the basis for collateral provision and CCP default handling. In the agreed set-up, the creation of a contract between two CCPs is an automatic and immediate consequence of both underlying member trade legs being validly registered in accordance with the rules of the two CCPs. This is the moment of contract formation between the CCPs. The contract formation between EuroCCP and a Clearing Participant (through novation or open offer) remains the Completed Posting, but these contracts remain subject to rejection in some specific cases which the MCLA allows for.

An FMI should complete final settlement no later than the end of the value date, and preferably intraday or in real time, to reduce settlement risk. An LVPS or SSS should consider adopting RTGS or multiple-batch processing during the settlement day.

The Clearing Rules and the processing of trades are clear in respect of the moment of finality. This takes place during the processing day, in accordance with the Regulation Clearing Hours. Participants can be informed if they so choose of finality in real-time by EuroCCP by means of standard reporting.

The final settlement of the Open Positions takes place in the CSDs, which agrees with the infrastructural division of tasks between a CCP and a CSD. The finality rules of the CSD concerned will apply to the settlements.

An FMI should clearly define the point after which unsettled payments, transfer instructions, or other obligations may not be revoked by a participant.

The receipt of trade data, from the trade venue and from the Clearing Participants (via service providers) for OTC trades, respectively, is the instruction which results in the assumption or discharge of a payment obligation and qualifies as transfer order under the SFD. The rules of EuroCCP do not allow for any cancellation or alteration of trades (including OTC trades) by the Clearing Participant.

Publicly Available Resources:

Dutch official Gazette (Staatscourant 17 december 2014), ESMA website, Clearing Rule Book, Regulation Trade Refusal, Regulation Clearing Hours.

3.9 Principle 9: Money settlements

An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimise and strictly control the credit and liquidity risk arising from the use of commercial bank money.

Key considerations

An FMI should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks.

EuroCCP considers that money settlements occur in respect of the cash legs of settlements of Open Positions, the provision of margin collateral in cash, the (re)payments of cash contributions to the Clearing Fund and the (re)payments of cash deposits in the interoperability fund.

The settlements of Open Positions takes place in accordance with the Regulation Settlement. This regulation contains the settlement addresses, account numbers, BIC codes and timelines for effecting settlement, as well as market specific arrangements for the cleared markets. EuroCCP always settles Open Positions through DVP/RVP in the CSD. The rules of the CSD determine the settlement addresses for the cash legs of the DVP/RVP settlements. Cash settlement typically occurs in central bank money. EuroCCP has deliberately chosen to take the role of DCP in T2S with a view to improving efficiency and safety. T2S brings together the securities held with the CSDs and central bank money in euro on a single technological platform. The advantage of such an integrated system is that it enables the simultaneous exchange of moneys and securities, creating a more integrated DVP/RVP.

For smaller markets EuroCCP uses a settlement agent. EuroCCP has obtained direct access to most CSDs and will continue to pursue this strategy.

For money settlements related to collateral, the Clearing Participants are required to use the collateral addresses listed in the Regulation Collateral. Cash collateral can be provided in CHF, EUR, DKK, GBP, NOK, SEK, and USD. The cash collateral agents have been chosen in consultation with the Clearing Participants.

70% of all collateral must be posted in the balance sheet of EuroCCP in the form of cash or securities. To this end EuroCCP provides cash collateral accounts to the Clearing Participants. The use of these accounts is governed by the Regulation Cash Collateral Account. Clearing Participants may provide their cash in the following currencies: CHF, EUR, DKK, GBP, NOK and SEK. The cash so maintained on the liability side of the EuroCCP balance sheet is held on a pooled basis on the asset side in accordance with the Regulation EuroCCP Investment Fund (REIP).

Contributions to the EuroCCP Clearing Fund can be made in cash in accordance with the Regulation Clearing Fund in GBP, EUR, DKK, NOK, SEK, CHF and USD. The cash is held in accordance with the REIP. EuroCCP has access to central bank deposit facilities for maintaining cash and therefore cash contributions denominated in EUR are held at DNB.

Deposits to the EuroCCP interoperability fund can be made in cash in accordance with the Regulation Interoperability Fund in GBP and EUR. This cash must be deposited in the Interoperability Fund Account held in Clearstream Luxembourg. Withdrawals must be requested in accordance with the regulation and the cash movements are processed by Clearstream Luxembourg.

If central bank money is not used, an FMI should conduct its money settlements using a settlement asset with little or no credit or liquidity risk.

Cash settlement for the CSD DVP/RVP settlements typically occurs in central bank money, which means that the cash leg of a securities transaction is paid from/received on an account held by the CSD Clearing Participant at a central bank. The movements of securities and cash is technically linked in such a way that one cannot occur without the other.

To the extent that EuroCCP uses a settlement agent, an individual subaccount in the CSD is maintained to ensure that only securities which have been delivered to EuroCCP can be used to make onward delivery. During the settlement cycle receipts will always come before deliveries, and no short security positions can occur. At the end of the settlement cycle EuroCCP can only be flat or long in stock and short in cash. In view of this, EuroCCP will not be exposed to credit and liquidity risk resulting from long cash balances in commercial bank money.

The collateral agents are banks of good repute. Credit and liquidity risk is principally borne by the Clearing Participants which have selected the agent. Credit and liquidity risk for EuroCCP in the context of using collateral agents for cash can only materialise in the case of simultaneous Clearing Participant and collateral agent default under the Clearing Participant Agreement, and the pledge agreement, respectively.

EuroCCP is not exposed to the credit risk associated with maintaining cash with Clearstream Banking Luxembourg. This risk is with the Clearing Participants, pursuant to the Clearing Rule Book provisions on the Interoperability Fund.

If an FMI settles in commercial bank money, it should monitor, manage, and limit its credit and liquidity risks arising from the commercial settlement banks. In particular, an FMI should establish and monitor adherence to strict criteria for its settlement banks that take account of, among other things, their regulation and supervision, creditworthiness, capitalisation, access to liquidity, and operational reliability. An FMI should also monitor and manage the concentration of credit and liquidity exposures to its commercial settlement banks.

EuroCCP carefully selects its service providers. Once the agreement with the service provider is concluded, the operational arrangements are incorporated in the SLA with the service provider. The SLA provides for review clauses, thereby allowing EuroCCP to monitor settlement banks' adherence to the selection criteria.

The liquidity risks associated with taking credit from the commercial settlement banks are addressed in the EuroCCP Liquidity Risk Management Framework and Liquidity Plan. Please see above, under Principle 7.

Failure of a settlement bank should not lead to credit losses in respect of cash balances, because EuroCCP will be flat in, or short of, cash. Long stock positions should not be included in the bankrupt estate as a matter of standard under each jurisdiction's applicable securities law. Under MiFID, a firm has a duty when holding financial instruments belonging to a client to safeguard the client's ownership rights, especially in the event of the firm's insolvency.

If an FMI conducts money settlements on its own books, it should minimise and strictly control its credit and liquidity risks.

EuroCCP requires that 70% of the margin collateral is deposited in its balance sheet in order to have the working capital at its disposal, which is required for its settlement operations. The risk associated with holding the cash is carefully managed through the strict application of the REIP. The liquidity risk EuroCCP faces is that cash collateral or clearing fund contributions can be withdrawn if the margin or contribution requirements decrease, or can be substituted by securities which could create a shortage of liquidity. This risk is addressed in the assessment under Principle 7.

Credit risk is mitigated through the REIP provisions, which requires high quality counterparties and collateralisation.

An FMI's legal agreements with any settlement banks should state clearly when transfers on the books of individual settlement banks are expected to occur, that transfers are to be final when effected, and that funds received should be transferable as soon as possible, at a minimum by the end of the day and ideally intraday, in order to enable the FMI and its participants to manage credit and liquidity risks.

EuroCCP has reduced reliance on settlement agents by gaining direct access to CSDs. The legal agreements in place between EuroCCP and the settlement banks are maintained by the EuroCCP network management function. The agreements and SLAs define the service levels and determine the treatment of finality and of reversals, if any. EuroCCP considers that the settlement banks are not market infrastructures, and that the finality rules of the final systems designated under the Settlement Finality Directive which are employed to effect payment will apply to the actual transfers.

Publicly Available Resources (on the EuroCCP website):

Clearing Rule Book, Regulation Settlement, Regulation Collateral, Regulation Cash Collateral Account, Regulation Clearing Fund, Regulation Interoperability Fund, Regulation EuroCCP Investment Policy.

3.10 Principle 10: Physical deliveries

An FMI should clearly state its obligations with respect to the delivery of physical instruments or commodities and should identify, monitor, and manage the risks associated with such physical deliveries.

EuroCCP does not prepare a self-assessment for this Principle 10 because all cleared products are transferable securities which settle in electronic form and which are dematerialised / uncertificated. These are settled through links to CSDs. The arrangements which EuroCCP has in place for DVP / RVP settlement are briefly referred to in our assessment under principle 12 “Exchange-of-value settlement systems”.

3.12 Principle 12: Exchange-of-value settlement systems

If an FMI settles transactions that involve the settlement of two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other.

Key considerations

An FMI that is an exchange-of-value settlement system should eliminate principal risk by ensuring that the final settlement of one obligation occurs if and only if the final settlement of the linked obligation also occurs, regardless of whether the FMI settles on a gross or net basis and when finality occurs.

EuroCCP calculates an Open Position per Clearing Participant per Position Account, per ISIN code, per CSD account, per currency and per Settlement Date on the basis of the registered trade legs. The Open Positions lead to settlement obligations on T+2. The discharge of the settlement obligations takes place in the CSDs. The Clearing Rules provide that each Clearing Participant shall arrange that the requisite delivery or payment instructions to the relevant settlement venues are timely. Each Clearing Participant shall ensure that the requisite funds and the requisite Securities will be available for settlement at the latest during the last settlement window of the Settlement Date.

The Regulation Settlement gives details of the timeframe in which such delivery and payment instructions are to be sent to the relevant Settlement Addresses and the conditions for Settlement (including partial Settlement). EuroCCP always settles Open Positions through DVP/RVP in the CSD. The rules and procedures of the CSD determine the settlement addresses for the cash legs of the DVP/RVP settlements and caters for the way in which principal risk is eliminated by ensuring that the final settlement of one obligation occurs if and only if the final settlement of the linked obligation also occurs, regardless of whether the CSD settles on a gross or net basis and when finality occurs.

The CSDs employed (directly or indirectly) by EuroCCP will validate and match the delivery and receipt instructions, the results of which are brought forward to settlement, which is the actual posting in custodial records and the corresponding (central bank) cash postings. The CSDs vertically linked with EuroCCP have their own finality rules, which will apply to the settlement lifecycle.

EuroCCP relies to the fullest extent on the CSDs in which the Open Positions are settled. Information on these CSDs can be found in the assessment under Principle 9, and in particular in the Regulation Settlement. The linkage of the final settlement of securities and cash is determined by the rules and procedures of the CSD (and central bank, if involved).

Publicly Available Resources (on the EuroCCP website):

Clearing Rule Book, Regulation Settlement.

3.13 Principle 13: Participant-default rules and procedures

An FMI should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations.

Key considerations

An FMI should have default rules and procedures that enable the FMI to continue to meet its obligations in the event of a participant default and that address the replenishment of resources following a default.

EuroCCP has detailed procedures in place to be followed where a Clearing Participant does not perform under its rules. These procedures cover both the situation in which non-compliance leads to a notice of default, as the situation in which non-compliance does not lead to a default notice to a Clearing Participant. EuroCCP has implemented this requirement in its Clearing Rules and in the EuroCCP Breach of Rulebook procedure and the EuroCCP Default Handling procedure.

The events that can lead EuroCCP to declare that a Clearing Participant is in Breach of the Rulebook are described in article 9.1.2 of the Clearing Rule Book. The triggers include failure to pay or provide margin within the stipulated time limits, winding up, critical solvency level and bankruptcy or similar proceedings. The Legal & Compliance and Risk Management departments will advise the Management Board whether or not to declare an event of default. Immediately after serving the Notice of Default, EuroCCP can take a number of measures which are laid down in the Clearing Rule Book. These measures include suspension or termination, ceasing further trading activity, trigger procedures for portability, buying, borrowing or selling securities for the account of the defaulter, enforcing collateral (the issuance of a declaration of default is an enforcement event under the pledge and title transfer agreements) and finally close out netting.

EuroCCP’s Default Handling procedure provides that a default is handled by the Breach and Default Management Team (BDMT). The BDMT covers all the relevant departments and functions which are involved in default handling. The role of the BDMT is described in EuroCCP’s Breach of Rule Book procedure. As provided by EMIR, the EuroCCP regulators receive a notification ahead of the issuance of a default notice.

If porting of positions is not an option, auction of positions will be undertaken where the positions are not suitable for trading out via a broker. This might be the case for larger or more complex portfolios. Below a certain size, positions can be traded out at a lower cost through a broker, which allows for more flexibility in the timing of the transactions compared to auctioning the whole portfolio at once.

In case of the default of a Clearing Participant, the following financial resources are applied to cover any losses in the order presented below (assuming the default will lead to a loss):

A. Collateral of the defaulting Clearing Participant (including Interoperability Fund Deposit and Clearing Fund Contribution of the Clearing Participant);

B. Skin in the game; EuroCCP will use its Dedicated Own Resources before using the Clearing Fund contributions of non-defaulting Clearing Participants. The dedicated own resources are calculated following the Regulation Dedicated Own EuroCCP Resources;
C. Clearing Fund; if A and B are not sufficient to cover the liquidation of the portfolio of the defaulting Clearing Participant, the Clearing Fund provides an additional buffer;
D. If the losses caused cannot be covered by the collateral provided by the defaulting Clearing Participant, the skin in the game and the aggregate amount of the contributions to the Clearing Fund of all Clearing Participants (the resources listed under A, B and C) the non-defaulting Clearing Participants shall on demand make an additional payment to EuroCCP on a pro rate basis in proportion to the amount of their contributions to cover any such remaining losses (limited to an amount equal to the amount of their contribution).

The Clearing Rule Book provides that Clearing Participants shall pay top-ups to replenish the Clearing Fund. In respect of the replenishment of the skin in the game, the Default Handling procedure provides the check whether the “skin in the game” needs to be (partly) reinstated. If so, the procedure “Maintenance own resources default waterfall” is to be initiated.

An FMI should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules.

EuroCCP’s Default Handling procedure includes communication requirements, including informing regulators, the Supervisory Board, Clearing Participants and other stakeholders throughout the default management process. Various communication channels will be used, such as e-mail, telephones and newsflashes. EuroCCP’s Default Handling procedure was first issued in May 2013 by the Risk Management department and approved by the Management Team following advice by the Risk Committee. The Chief Risk Officer is the owner of the policy, which is reviewed on a quarterly basis.

An FMI should publicly disclose key aspects of its default rules and procedures.

EuroCCP’s Clearing Rules are publicly available on the website. Default rules and procedures are described in article 9 of the Clearing Rule Book. They provide for a definition of a Breach (article 9.1) and specify that Clearing Participants may be declared in default upon the occurrence of a breach. They also provide for the measures EuroCCP shall take in case of a declaration of a default (article 9.4 Clearing Rule Book). Furthermore the Breach of Rule Book procedure and the Default Handling procedure are available on the website.

An FMI should involve its participants and other stakeholders in the testing and review of the FMI’s default procedures, including any close-out procedures. Such testing and review should be conducted at least annually or following material changes to the rules and procedures to ensure that they are practical and effective.

EuroCCP frequently tests and reviews its default procedures to ensure that the procedures remain up to date and also that the involved parties are aware of their role in the default process. As part of the testing, a simulation exercise is performed at least once a year in order to test the procedures in a controlled but live environment. The Breach of Rule Book procedure and the default handling procedure are tested on a quarterly basis by the Risk Management department. This department presents the test (and simulation) results to EuroCCP’s Breach and Default Management Team, as well as proposals to amend the procedures, where relevant. The tests aim to cover all sorts of potential Clearing Participant default scenarios and procedures.

Publicly Available Resources (on the EuroCCP website)

Clearing Rule Book, Breach of Rule Book procedure, Default Handling procedure, Regulation Dedicated Own EuroCCP Resources.

3.14 Principle 14: Segregation and portability

A CCP should have rules and procedures that enable the segregation and portability of positions of a participant's customers and the collateral provided to the CCP with respect to those positions.

Key considerations

A CCP should, at a minimum, have segregation and portability arrangements that effectively protect a participant's customers' positions and related collateral from the default or insolvency of that participant. If the CCP additionally offers protection of such customer positions and collateral against the concurrent default of the participant and a fellow customer, the CCP should take steps to ensure that such protection is effective.

The segregation arrangements of EuroCCP are designed to meet the requirements of EMIR. EuroCCP maintains principal to principal relationship with its Clearing Participants. The Clearing Rules do not create a contractual relationship between EuroCCP and the clients of the Clearing Participant. In consequence, the account structure options by themselves will not protect the positions and collateral of clients of a Clearing Participant from losses which may occur as a result of insolvency or default of that Clearing Participant.

The (client) account segregation options are listed in the Clearing Rule Book, offering a choice of omnibus client, individual client and house position accounts. The necessary collateral accounts for each of the position accounts within the account structure of the Clearing Participant are foreseen in the Clearing Rules. The account segregation options at the disposal of our Clearing Participants can be used for the segregation of positions and collateral held for clients which meet the EMIR definition as well as for other clients. EuroCCP considers that a trading participant for which a General Clearing Participant has issued one or more statements of authority qualifies as a client under the EMIR definition.

EuroCCP keeps distinct and separate accounts for each Clearing Participant. For each Clearing Participant its accounts in the EuroCCP system are segregated from those of other Clearing Participants. All accounts have their specific Bank Identifier Code(BIC) registered in the EuroCCP systems, in order to route the trades to the right account.

The EuroCCP portability arrangements provide that clients can request porting in the framework of default handling. Portability is limited to position accounts and cash collateral accounts in the books of EuroCCP, and securities transferred to EuroCCP under the title transfer agreement designated as covering client positions. Portability of collateral held with third parties cannot be effected by EuroCCP.

The conditions for porting of positions and collateral held under individual or omnibus client segregation are laid down in the Regulation Segregation and Portability. Potential friction between EMIR and insolvency law is the reason why our portability offering provides that the Clearing Participant must procure a legal opinion for the benefit of EuroCCP as part of the legal requirements. No ex-ante contractual arrangements as foreseen in the EuroCCP Regulation Segregation and Portability are in place at present.

Because the EMIR client definition refers to the contractual relationship between client and the Clearing Participant, it is not possible for EuroCCP to determine which clients of its Clearing Participants (may) qualify as “EMIR client”. Additionally, the character and content of the contractual arrangements in place between the Clearing Participant and its client are relevant in the case where the Clearing Participant is declared insolvent. In consequence, the legal implications of the different levels of segregation and protection are largely determined by the contractual arrangements in place between the Clearing Participant and its client, firstly to determine whether the client fulfils the criteria of the EMIR definition, and secondly to determine the consequences of the insolvency of the Clearing Participant.

A CCP should employ an account structure that enables it readily to identify positions of a participant's customers and to segregate related collateral. A CCP should maintain customer positions and collateral in individual customer accounts or in omnibus customer accounts.

EuroCCP calculates the margin requirement for each position account, and one or more dedicated collateral accounts are linked to each position account. The collateral received as margin is posted in these linked collateral accounts. The account segregation options at the disposal of our Clearing Participants can be used for the segregation of positions and collateral held for clients.

EuroCCP registers the Trade Legs in the Position Account indicated by the information available in the electronic posting, i.e. the information received in the trade feed details. This means that this information determines in which position account trade legs are posted. The content of this information is determined at the level of trade matching. In this way, EuroCCP relies on the Clearing Participants to arrange their trading flows in such a way that the correct postings are made in the account structure maintained for that Clearing Participant by EuroCCP.

A CCP should structure its portability arrangements in a way that makes it highly likely that the positions and collateral of a defaulting participant's customers will be transferred to one or more other participants.

The portability arrangements in place at EuroCCP offer the best possible likelihood of porting, but EuroCCP would not describe successful porting as highly likely. EuroCCP sees numerous challenges in respect of porting, including uncertainty as to whether EMIR indeed overrides (Dutch) insolvency law: the EMIR client definition and the availability of a back-up Clearing Participant and settlements in progress which may not allow to establish the Open Positions with sufficient precision. Where a Clearing Participant enters into insolvency proceedings, the response of various settlement locations may differ, and the response may differ between direct and indirect CSD access of the Clearing Participant involved. EuroCCP has communicated to its Clearing Participants that it considers successful porting unlikely in the present environment.

A CCP should disclose its rules, policies, and procedures relating to the segregation and portability of a participant's customers' positions and related collateral. In particular, the CCP should disclose whether customer collateral is protected on an individual or omnibus basis. In addition, a CCP should disclose any constraints, such as legal or operational constraints, that may impair its ability to segregate or port a participant's customers' positions and related collateral.

EuroCCP has a dedicated page on its website relating to the changes made to its Clearing Rules in the framework of the authorisation under EMIR including a brochure and a Q&A on segregation and portability.

Publicly Available Resources (on the EuroCCP website):

Regulation Segregation and Portability, Clearing Rule Book, EMIR implementation page on EuroCCP's website.

3.15 Principle 15: General business risk

An FMI should identify, monitor, and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialise. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services.

Key considerations

An FMI should have robust management and control systems to identify, monitor, and manage general business risks, including losses from poor execution of business strategy, negative cash flows, or unexpected and excessively large operating expenses.

Business risk refers to the risk EuroCCP assumes due to potential changes in general business conditions which can impair its financial position as a consequence of decline in its revenues or an increase in its expenses.

EuroCCP measures and monitors general business risk by adopting and tracking progress towards the business strategy and annual goals and by tracking the net operating result against the annual budget. Furthermore the actual calculated capital versus the capital requirements is monitored. If the measurements lead to significant differences between intentions and reality, additional measures will be contemplated and, if required, taken by the Management Board.

EuroCCP sets its goals and priorities annually. These are approved by the Supervisory Board. The Management Team uses the corporate goals as its standing agenda for its biweekly meetings. Progress is discussed and measures are taken as appropriate. Progress on projects is discussed on a monthly basis within the Management Board. Corporate risk assessments are performed on a yearly basis.

The financial consequences of business risk have been assessed by EuroCCP by using the following scenarios:

- the largest 4 Trading Participants stop trading;
- the largest 2 Clearing Participants stop clearing;
- a market volume decrease of 25%;
- revenue changes resulting from the choice of clearing through interoperability.

In each of these scenarios the amount involved falls below the 25% or 3 months of annual gross operational expenses which is the minimum capital charge for a CCP for business risk under EMIR.

An FMI should hold liquid net assets funded by equity (such as common stock, disclosed reserves, or other retained earnings) so that it can continue operations and services as a going concern if it incurs general business losses. The amount of liquid net assets funded by equity an FMI should hold should be determined by its general business risk profile and the length of time required to achieve a recovery or orderly wind-down, as appropriate, of its critical operations and services if such action is taken.

The cash held of EuroCCP's own capital is invested in accordance with the Regulation EuroCCP Investment Policy (REIP). The cash investments and collateral received under the REIP is highly liquid. (The liquidity risk is elaborated upon under the assessment for Principle 7.)

The amount of capital earmarked to cover business risk forms part of the required regulatory capital maintained by EuroCCP. Even if losses are charged to capital, EuroCCP can continue its operations and services in view of the fact that ample headroom in capital is available.

The time span for winding down or restructuring commences with the external communication of the decision to do so. If this would ever occur, such a decision will likely be prompted by economic considerations, when EuroCCP can no longer operate as a going concern, or regulatory considerations. EuroCCP only clears cash equity contracts which means that the Open Positions of Clearing Participants can be settled out within days, and that the main issue for a wind down is to terminate the operational relationship with the trading venues and Clearing Participants.

The winding down scenario uses as assumptions that the termination event of the post trade services contracts with the trading venues will take most time. The time span for a trading venue to move from one CCP to another CCP, is approximately 3 months. Participants can switch between CCPs in a matter of several weeks or months.

For the purpose of this wind down projection the estimate for the switch of trade feeds to other CCPs is set at a maximum of 4 months after external communication of the decision to wind down and the consequent termination of the Post Trade Services Agreements. The notice period for termination of the contracts with the trading venues varies between venues, with the longest term being 6 months. This requires EuroCCP to take into account a maximum time span of 7 months for an orderly wind down and to maintain a capital allocation for wind down equal to seven months of expenses. The time span for a Clearing Participant to move from one CCP to another is approx. 2 months as from the communication of the EuroCCP decision to discontinue operations, meaning that Clearing Participants will be able to have timely access to the alternative CCP services in place or contracted by the trading venues.

An FMI should maintain a viable recovery or orderly wind-down plan and should hold sufficient liquid net assets funded by equity to implement this plan. At a minimum, an FMI should hold liquid net assets funded by equity equal to at least six months of current operating expenses. These assets are in addition to resources held to cover participant defaults or other risks covered under the financial resources principles. However, equity held under international risk-based capital standards can be included where relevant and appropriate to avoid duplicate capital requirements.

The high level plan of approach for an orderly wind down is described above. EuroCCP maintains 7 months of expenses as capital charge for an orderly wind down in its regulatory capital calculations and the amount held earmarked in EuroCCP's capital requirement calculation to cover business risk is separated in the general ledger of EuroCCP.

Assets held to cover general business risk should be of high quality and sufficiently liquid in order to allow the FMI to meet its current and projected operating expenses under a range of scenarios, including in adverse market conditions.

The cash held of EuroCCP's own capital is invested in accordance with the Regulation EuroCCP Investment Policy (REIP).

An FMI should maintain a viable plan for raising additional equity should its equity fall close to or below the amount needed. This plan should be approved by the board of directors and updated regularly.

Given the highly regulated operations of EuroCCP and the existing headroom in actual versus required capital under EMIR, raising additional equity is more likely to be linked to the development of new business with support of the shareholders. The general approach to business strategy will always include significant business decisions taking the consequences for capital, cash flow and profit into account.

The Shareholders Agreement entered into by the shareholders of EuroCCP contains provisions on additional financing required by the company. EuroCCP will follow the steps set out in the Shareholders Agreement if additional capital is needed. It must be noted that this agreement and the execution of its provisions on new financing are in the domain of the EuroCCP shareholders, and the EuroCCP's management has only indirect influence in this respect. The Supervisory Board members, who are appointed pursuant to nomination by the shareholders, will align the goals and objectives of EuroCCP with the shareholders' interests. The Supervisory Board as a whole will take the public and clients' interests into account.

Publicly Available Resources (on the EuroCCP website):

Regulation EuroCCP Investment Policy.

3.16 Principle 16: Custody and investment risks

An FMI should safeguard its own and its participants' assets and minimise the risk of loss on and delay in access to these assets. An FMI's investments should be in instruments with minimal credit, market, and liquidity risks.

Key considerations

An FMI should hold its own and its participants' assets at supervised and regulated entities that have robust accounting practices, safekeeping procedures, and internal controls that fully protect these assets.

EuroCCP uses custodians to:

1. hold securities transferred to it pursuant to the title transfer security agreement, which securities serve as collateral;
2. hold securities transferred to it as collateral pursuant to the placements of cash under the Regulation EuroCCP Investment Policy;
3. hold long positions resulting from failed settlements in the daily settlement process of Open Positions.

For holdings under (1) and (2) the custodians as listed in the Regulation EuroCCP Investment Policy (REIP) are used. The REIP restrictions are that custodians must be regulated CSDs domiciled in one of the European Economic Area countries and Switzerland; the ICSDs Euroclear Bank Brussels and Clearstream Banking Luxemburg; central banks in the countries belonging to the European Economic Area and Switzerland; or credit institutions listed in Annex 2 of the REIP.

In order to be admitted to the list of approved credit institutions, EuroCCP is required to perform due diligence on a credit institution which has requested to be included on the list of approved credit institutions. EuroCCP's Management Board, after consultation with the EuroCCP Risk and Compliance functions needs to formally approve an addition or removal of a credit institution to the list of approved credit institutions.

For long positions resulting from failed settlements in the daily settlement process of Open Positions the CSD and agent network described in the assessment of Principle 9 is used. EuroCCP has a procedure for the selection, contracting and monitoring of these service providers as mentioned in the assessment of Principle 9. The agreements with the REIP custodians are listed in the Annex 3 of the REIP.

FMI should evaluate and understand its exposures to its custodian banks, taking into account the full scope of its relationships with each.

The exposures arising from the custodial services are well managed, as explained above. In relation to concentration risk it must be noted that the banks capable of processing large volumes as required for the settlements of EuroCCP are often also providing securities clearing services, meaning that roles can cumulate. Some banks are both Clearing Participants and service providers. EuroCCP is aware of this element of concentration and this is taken into account in respect of business strategy, in particular the decision to gain direct access to CSDs and to become a DCP in T2S which reduces dependency on settlement agents.

An FMI's investment strategy should be consistent with its overall risk-management strategy and fully disclosed to its participants, and investments should be secured by, or be claims on, high-quality obligors. These investments should allow for quick liquidation with little, if any, adverse price effect.

Investments made by EuroCCP under the REIP, are strictly monitored and controlled. The primary assurance is provided by the daily procedures governing valuation of collateral within the treasury function, and the reconciliation processes for the daily operational routines. The Risk Management department is in charge of business control checks. The REIP is reviewed on an annual basis by the Risk Committee.

Direct investment in securities entailing a price risk to EuroCCP is restricted under the REIP to the acquisition through an outright purchase of government securities issued by the countries in the currencies listed in Annex 1 of the REIP, being Austria, Belgium, Denmark, Finland, France, Germany, Netherlands, Norway and Sweden. These securities may have a (remaining) tenor of up to 12 months. No such investments have ever been made by EuroCCP, and this provision forms part of the REIP to allow for further diversification of investments, should the circumstances so warrant.

EuroCCP is required to instruct an external auditor to provide a report on compliance with the REIP at least once every calendar year. The engagement letter and the report are both provided to the Risk Committee and the Supervisory Board.

Publicly Available Resources (on the EuroCCP website):

Regulation EuroCCP Investment Policy

3.17 Principle 17: Operational risk

An FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfilment of the FMI's obligations, including in the event of a wide-scale or major disruption.

Key considerations

An FMI should establish a robust operational risk-management framework with appropriate systems, policies, procedures, and controls to identify, monitor, and manage operational risks.

Operational risk is monitored and controlled by the Risk Management department. It initiates and coordinates the implementation of risk-reducing, mitigating actions, as directed by the Management Board. Key risk indicators are used to monitor this process, in the context of the Supervisory Board's Risk Tolerance Statements.

The Risk Tolerance Statements are owned by the Risk Management department. The Risk Tolerance Statements are approved by the Supervisory Board following advice from the EuroCCP Risk Committee.

The Statements set the high level framework for the management of (operational) risk. This includes standards for identifying, assessing, and managing operational risk within the risk tolerance and risk management capabilities (in terms of people, tools and processes).

Within the Risk Tolerance Statements, operational risk comprises processing risk (including business continuity), financial reporting & control risk, information technology and security risk and regulatory and compliance risk.

Processing Risk is defined as the risk of financial or reputational loss resulting from inadequate or failed internal processes and systems, human error or external events. Where single points of failure have been identified internally additional back-ups and controls have been implemented. The remaining identified single points of failure are key external parties on which EuroCCP relies (e.g. SWIFT, TARGET2, T2S, CSDs, agent banks, interoperable CCPs).

EuroCCP has a "Control Framework Management System (CFMS) document" in place, which includes the Business Continuity Management System (BCMS). CFMS is considered proportionate and fit for purpose for EuroCCP. This document refers to the Basel II standard list of risk events as a guidance to define external and internal factors that create the uncertainty that gives rise to risk. The operational risks identified in the Risk Tolerance Statements are monitored through the risk tolerance metrics reporting.

EuroCCP relies on a three lines of defence system. This framework places responsibility for operational risk on the business departments (as the first line of defence). Operational risk is also monitored and controlled by the Risk Management department, the second line of defence. This department initiates and coordinates the implementation of risk-reducing, mitigating actions, as directed by the Management Board. Key risk indicators and Risk Tolerance

Statements are used to monitor this process. The Internal Audit function, as third line of defence, is in charge of checking compliance with internal policies and procedures, suggesting improvements and providing assurance on compliance.

EuroCCP has identified the following international, national and industry-level operational risk management standards as relevant:

- Basel Committee on Banking Supervision, Principles for the Sound Management of Operational Risk;
- ISO 22301:2012 Societal security – Business continuity management systems – Requirements;
- ISO/IEC 27001/2 - Information security management.

An FMI's board of directors should clearly define the roles and responsibilities for addressing operational risk and should endorse the FMI's operational risk-management framework. Systems, operational policies, procedures, and controls should be reviewed, audited, and tested periodically and after significant changes.

The Supervisory Board determines the risk tolerance by adopting the Risk Tolerance Statements. The risk tolerance metrics check that the outcomes are within the risk tolerance (and report if it is not). The Risk Tolerance Statements are reviewed for content, coherence and coverage on an annual basis. The reporting of metrics is prepared monthly and reviewed by the Management Board and the Risk Committee. The overall operational Risk Management Framework is subject to audits.

An FMI should have clearly defined operational reliability objectives and should have policies in place that are designed to achieve those objectives.

The Risk Tolerance Statements also contain risk tolerances with respect to operational reliability objectives such as processing risk, information technology and security risk, financial reporting and control risk, people risk and reputational risk. A high degree of operational reliability is primarily ensured by the recovery time objective of two hours in combination with a high settlement efficiency. The other Risk Tolerance Statements in this area support these two main objectives.

An FMI should ensure that it has scalable capacity adequate to handle increasing stress volumes and to achieve its service-level objectives.

EuroCCP ensures that sufficient information technology capacity is available and that EuroCCP business applications are built to process extreme market volumes while meet the target service levels. EuroCCP applications must support an application throughput of at least 1.5 times the historical peak volumes and at least 3 times the average daily volume. If a new production peak is experienced new capacity tests are run. If such test cannot be completed successfully, EuroCCP will identify the necessary measures to re-create the headroom of capacity, through adding technical processing capability (hardware) or changing the processing (software) or job scheduling (IT operations). EuroCCP processed over 16 million trade sides in June 2016. This is the most recent peak in processing. System capacity tests have shown that 25 million trade sides can be processed on a day without delay.

An FMI should have comprehensive physical and information security policies that address all potential vulnerabilities and threats.

EuroCCP equipment is sited, protected and used in different locations (in Amsterdam, Hilversum and London). EuroCCP production equipment is located in secured datacentres and EuroCCP is using fully outsourced services for office automation running on dedicated terminal servers in two KPN datacentres. The controls in place for ensuring security and restricted access, uninterrupted power, temperature management and fire extinguishing are an integral part of the services delivered to EuroCCP and of the agreements that are in place with the providers. EuroCCP has a cyber and information security strategy and framework in place which includes threats and vulnerability management and security assurance of outsourced services.

All equipment supported EuroCCP’s primary business functions are sited in the above mentioned secured datacentres. In the Amsterdam WTC and London branch office locations thin client computers and Citrix sessions are used to connect to the user's desktops and systems in the datacentres. The local server rooms are situated in the office buildings on the same floor. The server rooms have UPS power protection system, fire alarms and extinguisher systems.

EuroCCP has based its cyber and information security strategy and framework on the NIST Cybersecurity framework, the CPMI-IOSCO Guidance on cyber resilience for financial market infrastructures and ISO 27001/2. The cyber and information security management system is fully integrated into EuroCCP’s corporate risk management governance and management system.

An FMI should have a business continuity plan that addresses events posing a significant risk of disrupting operations, including events that could cause a wide-scale or major disruption. The plan should incorporate the use of a secondary site and should be designed to ensure that critical information technology (IT) systems can resume operations within two hours following disruptive events. The plan should be designed to enable the FMI to complete settlement by the end of the day of the disruption, even in case of extreme circumstances. The FMI should regularly test these arrangements.

EuroCCP has implemented a Business Continuity Management System (BCMS) in accordance with ISO 22301:2012 and has achieved the ISO 22301:2012 certification. The business continuity plan forms a part of the BCMS and consists of the Crisis Management and Crisis Communications Plan, the Incident management and Business Recovery Plan NL, the Incident Management and Business Recovery Plan UK and the Incident management and IT Recovery Plan.

The Crisis Management Methodology has been set up to be scenario independent and covers the management of any possible incident including and not limited to wide-scale or major disruptions. For a number of scenarios detailed runbooks have been created for evacuation, power outage, etc.

The Incident Management and IT Recovery Plan contains a recovery timeline that validates that EuroCCP is capable of failing over from the primary data centre to the secondary data centre within two hours of a disruption. This allows EuroCCP to recover the critical business processes within the recovery time objectives, ensuring that all critical business processes have been completed by the end of the day of the disruption.

As part of the BCMS EuroCCP has defined its Training and Exercising Methodology and Requirements for the Business as well as IT Disaster Recovery Testing Methodology and Requirements. IT DR Testing (role swapping of IT clusters in different data centres) takes place on a quarterly basis.

EuroCCP's Business Continuity Plan has been designed to manage any kind of disruption, including and not limited to wide-scale or major disruptions. Timely resumption of the critical operations is ensured by the activation of the Business Recovery Plans. These have been designed to enable IT to recover all critical IT systems to resume operations within two hours following disruptive events. EuroCCP's critical business processes will be recovered within the recovery time objectives to enable complete settlement by end of day even in extreme circumstances.

A key contingency measure is that all transaction data is sent to both datacentres thereby minimizing the chance of data loss. Furthermore there is the back up plan via end of day files in case the intraday trade feed is disrupted in both datacentres. As a further control, each day a reconciliation of the trade count takes place between EuroCCP and each cleared platform.

The functionality of the secondary site is validated through quarterly role swap tests of IT clusters. Through role swapping of the primary and the secondary site (where the secondary site becomes the production site for the duration of the test period (i.e. one week), the proper functioning of the secondary site is proven and the resources, capabilities, functionalities and staffing arrangements are evidenced.

The second data centre is located more than 30 kilometres away from the primary data centre (Amsterdam vs Hilversum in the Netherlands). The location of the secondary site is chosen to create different risk profiles between the data centres (i.e. different vendors, different parts of the electricity grid, different flooding risks).

Management review of the complete Business Continuity Management System takes place on a quarterly basis with top management involved. Annually a test and training plan and calendar for the Business Recovery related tests and the IT recovery related tests are being agreed. The involvement of EuroCCP's Value Chain Partners and Suppliers forms part of the plans.

An FMI should identify, monitor, and manage the risks that key participants, other FMIs, and service and utility providers might pose to its operations. In addition, an FMI should identify, monitor, and manage the risks its operations might pose to other FMIs.

EuroCCP acknowledges that it incurs operational, financial, credit, market, and legal risks arising from its key Clearing Participants, other FMIs and service and utility providers. For Clearing Participants, the Risk Management Framework is addressed under Principle 4. Details on how EuroCCP addresses its risks in relation to other FMIs can be found in the assessment under Principle 20.

For service and market utility providers, EuroCCP specifies that the contractual and legal arrangements with a supplier must protect its interests and reduce the risk of doing business to an acceptable level. Such measures are described in the assessment under Principles 9 and 12 in respect of the settlement venues.

Outsourcing is governed by the EuroCCP Outsourcing Policy. This policy stipulates the stringent requirements for outsourcing, which include strict demands in respect of continuity, access, business continuity and on site access. The policy also requires that all outsourcing must be governed by a formal written agreement. Currently the outsourced activities are the Office Automation services.

Publicly Available Resources (on the EuroCCP website):

BSI Certificate of Registration Business Continuity Management System - ISO 22301:2012.

3.18 Principle 18: Access and participation requirements

An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.

Key considerations

An FMI should allow for fair and open access to its services, including by direct and, where relevant, indirect participants and other FMIs, based on reasonable risk-related participation requirements.

The following entities are eligible to become a Clearing Participant:
(a) Credit Institutions and banks established in a jurisdiction that is a direct or indirect member of the Financial Action Task Force (FATF);
(b) Investment Firms established in a jurisdiction that is a member of the FATF;
(c) legal entities established in a jurisdiction that is a direct or indirect member of the FATF whose members or shareholders have unlimited joint and several liability for their debts and obligations, provided that such members or shareholders are institutions or firms mentioned under (a) and/or (b) above; and
(d) legal entities in a jurisdiction that is a member of the FATF and whose principal or sole object is the clearing of financial instruments.

An applicant must satisfy the following conditions:
(a) be validly incorporated;
(b) accept the Clearing Rules by executing the Clearing Participant Agreement;
(c) meet the financial requirements as determined by EuroCCP from time to time and specified in article 5.3 of the Clearing Rule Book, and also meet any further requirements as to liquidity and/or solvency as may be set by EuroCCP;
(d) provide a list with the persons competent to take decisions;
(e) submit details of the relevant Settlement Addresses.

Furthermore, when the applicant is incorporated outside the EEA, it must satisfy EuroCCP, by providing a legal opinion from a local counsel of good repute, that its domestic law system will not inhibit the ability of EuroCCP to act effectively under the Clearing Rules. EuroCCP can request an update of such legal opinion. (EuroCCP can request the same legal opinion from any applicant which is incorporated inside the EEA.)

The financial requirements in order to become and remain a direct Clearing Participant are: the higher of EUR 7,5 million Capital or 20% of 30-day average Aggregate Margin requirement or 20% of 250-day average Aggregate Margin requirement.

The financial requirements in order to become and remain a general Clearing Participant are: the higher of EUR 25 million Capital or 20% of 30-day average Aggregate Margin requirement or 20% of 250-day average Aggregate Margin requirement.

A Clearing Participant must commence operations within six months following recognition. The ongoing obligations of the Clearing Participant are to have contracts with and issue statements of authority for trading Clearing Participants as applicable, to inform EuroCCP of withdrawals and suspensions of such statements of authority, to have staff with decision making authority available on each clearing day, to allow inspections and to keep records, to inform EuroCCP of changes in share capital greater than 10%, of any new shareholders holding more than 10% of the capital, to inform EuroCCP of relevant sanctions and injunctions, and to inform EuroCCP of any circumstance which makes (it likely) that the Clearing Participant no longer complies with any requirement of EuroCCP.

The procedure of an application for Clearing Participants details the steps to be followed and the documents to be provided by the applicant, which include a certificate of incorporation and the articles of association, a certificate of incumbency or a trade register extract, a group organisational chart, a recent audited annual report, proof of regulatory status, a list of key management, a list of authorised signatures, and a list of staff and managers engaged in the clearing business. The Clearing Participant Information & Application Form, including the list of necessary annexes, can be downloaded from EuroCCP's website.

After the Clearing Participant has completed and sent in the forms, EuroCCP checks whether all documents have been received. EuroCCP then performs an in depth file check to establish whether the potential Clearing Participant has sufficient financial resources, sufficient expertise, the necessary legal powers and business practices. To establish operational capacity EuroCCP relies on three pillars. Firstly, EuroCCP performs on site checks by visiting the potential Clearing Participant premises. Secondly, EuroCCP relies on the existing regulatory supervision on these Clearing Participants (mostly banks). Finally, EuroCCP establishes the operational capacity of the potential Clearing Participant during the test phase prior to actually becoming a Clearing Participant.

An FMI's participation requirements should be justified in terms of the safety and efficiency of the FMI and the markets it serves, be tailored to and commensurate with the FMI's specific risks, and be publicly disclosed. Subject to maintaining acceptable risk control standards, an FMI should endeavour to set requirements that have the least-restrictive impact on access that circumstances permit.

The legal criteria relating to EEA country incorporation (and the provision of the legal opinion if the applicant is domiciled outside of the EEA) are justified by the position of EuroCCP as designated final system under the Settlement Finality Directive. EuroCCP needs to ensure that it can benefit from the protection afforded by (the implementation of) this Directive or similar legislation in non EEA jurisdictions. The legal criteria relating to FATF country incorporation are justified by the position of EuroCCP as supervised entity for the purpose of supervised entity under Dutch AML.

The operational criteria are necessary for the performance of the obligations under the EuroCCP rules, such as settlement and provision of collateral. The capital requirements allow a broad range of Clearing Participants to use the services provided by EuroCCP, from smaller Nordic Clearing Participants to leading global investment banks. EuroCCP is conscious of the capital requirements of its peers and EuroCCP considers its capital criteria in line with those of other comparable CCPs.

EuroCCP makes a distinction between Direct and General Clearing Participants. General Clearing Participants can offer access to the clearing services provided by EuroCCP to Trading Participants. The difference in the admission criteria can be found above.

The admission criteria are publicly disclosed on the EuroCCP website. The criteria are reviewed yearly by the Risk Committee and the EuroCCP Management Board.

An FMI should monitor compliance with its participation requirements on an ongoing basis and have clearly defined and publicly disclosed procedures for facilitating the suspension and orderly exit of a participant that breaches, or no longer meets, the participation requirements.

Ongoing compliance is monitored through the daily operational interaction in respect of settlements and risk management, including collateral movements. In addition, the Clearing Participants must disclose any events which may affect their adherence to the rules and their ability to perform under the rules. There is a yearly monitoring of ongoing compliance by the Clearing Participants with the key participation requirements through Clearing Participant file reviews, which are cross checked by the Compliance function.

In case of a deterioration in the creditworthiness of a Clearing Participant, EuroCCP has the power to demand additional collateral on the basis of the Clearing Rule Book. Enhanced surveillance of, or imposing additional controls on, a Clearing Participant whose risk profile deteriorates will be organised on an ad-hoc basis. The exit of a Clearing Participant no longer meeting the criteria and the ongoing obligation will follow the Breach of Rule Book procedure and/or the default handling procedure. Both are elaborated upon in the assessment under Principle 13.

The list of all Clearing Participants can be found on the EuroCCP website in the English language.

Publicly Available Resources (on the EuroCCP website):

Clearing Rule Book, list of Clearing Participants, Clearing Participant Information & Application Form.

3.19 Principle 19: Tiered participation arrangements

An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements.

Key considerations

An FMI should ensure that its rules, procedures, and agreements allow it to gather basic information about indirect participation in order to identify, monitor, and manage any material risks to the FMI arising from such tiered participation arrangements.

The EuroCCP definition of "Trading Participant" is "any Person which has been and is admitted by an Exchange as a Clearing Participant of that Exchange as a broker and/or dealer". Trading Participants are considered to be agents of the Clearing Participants of EuroCCP, which can validly create trade legs in the name of the Clearing Participant with EuroCCP. No admission criteria for Trading Participants exist, and the Clearing Participant must act under its rights and obligations vis-à-vis EuroCCP as principal. The EuroCCP Trading Participants are indirect Clearing Participants under the Principles[1] that are not bound by the rules of EuroCCP, but whose transactions are cleared, settled, or recorded by it.

The information collected in respect of the Trading Participants is of an operational nature. The arrangements between EuroCCP and the trading venues usually provide that information on the Statements of Authority granted by Clearing Participants allowing the Trading Participants to trade is kept synchronized through exchange and reconciliation of Clearing Participant files, so that the postings in the accounts at EuroCCP are correctly made. This is a daily process.

EuroCCP maintains a principal to principal relationship with each Clearing Participant and therefore considers that the risk associated with the Trading Participants is largely limited to business risk and that credit, liquidity and operational risk come under the principal to principal relationship.

An FMI should identify material dependencies between direct and indirect participants that might affect the FMI.

Some dependencies resulting from the links between clearing services providers and trading member firms can affect EuroCCP through the dynamics of the clearing and settlement marketplace. Market participants can change their priorities and focus in this market and can change from general clearing services suppliers. EuroCCP does not consider that this presents a risk to the smooth functioning of its clearing system as a whole.

[1] In relation to EMIR and the RTS, EuroCCP considers that it does not offer EMIR defined indirect clearing arrangements, and has no "EMIR indirect clients", because the relative EMIR and RTS on indirect clearing provisions are restricted to the clearing of OTC derivatives

An FMI should identify indirect participants responsible for a significant proportion of transactions processed by the FMI and indirect participants whose transaction volumes or values are large relative to the capacity of the direct participants through which they access the FMI in order to manage the risks arising from these transactions.

EuroCCP services 149 trading firms as per 31 December 2017 and keeps statistics of business volumes at the Trading Participant level. Their trading activity creates business risk which is further elaborated upon in the assessment under Principle 15.

The overall relationship between the Clearing Participants and Trading Participants typically creates credit and liquidity exposures between the two. The Clearing Participant would typically provide services for clearing services for more markets and products than the platforms and products cleared by EuroCCP. The management of these exposures between the Trading and the Clearing Participants is the responsibility of the Clearing Participants, which are regulated entities. EuroCCP does not have a full view of these exposures, and only sees the exposures from the cash equity business which it clears. EuroCCP may request the Clearing Participant for information to a reasonable extent about the criteria and arrangements it adopts to allow its clients to access the services of EuroCCP, but there is no legal relationship and no credit exposure between EuroCCP and the Trading Participants.

EuroCCP Clearing Participants may also use the (risk management) tool TRACE. TRACE is a read only system available over the internet allowing the Clearing Participant to follow his own positions, P&L and margin requirement. Also warning limits can be set based on the P&L and margin requirement. All reports and TRACE are available to Clearing Participants and, where relevant, to their customers as well.

An FMI should regularly review risks arising from tiered participation arrangements and should take mitigating action when appropriate.

EuroCCP aims at ensuring that it understands the business conducted by the key Trading Participants. To this end visits to these indirect Clearing Participants are made, the EuroCCP services are explained, and the business drivers of the trading firms are understood. Discussing the possibility of direct participation forms part of this interaction. Reporting takes place to the Management Team as part of overall commercial business intelligence.

Publicly Available Resources (on the EuroCCP website):

Clearing Rule Book, TRACE documentation.

3.20 Principle 20: FMI links

An FMI that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks.

Key considerations

Before entering into a link arrangement and on an ongoing basis once the link is established, an FMI should identify, monitor, and manage all potential sources of risk arising from the link arrangement. Link arrangements should be designed such that each FMI is able to observe the other principles in this report.

For links with CSDs, EuroCCP considers that these pose mainly operational and custody risks. When establishing a vertical direct CSD link, EuroCCP eliminates the intermediary settlement agent, which it considers in line with EMIR and the Principles. Direct links exist with the T2S CSDs and CSDs in Denmark, Finland, Norway, Switzerland, Sweden United Kingdom and Ireland.

EuroCCP has established peer to peer links with two other CCPs, LCH.Clearnet Ltd and SIX x-clear. The associated risks have been assessed against the ESCB/CESR recommendations, the oversight framework prevailing at the time of the first assessments in 2010/2011. Since then, the interoperability arrangements have been assessed against the PMFIs and EMIR. EuroCCP has no peer to peer links with other CCPs.

The risks associated with the vertical CSD are managed as described under the assessment of Principle 9, through the due diligence and reviews of the EuroCCP Network Management function, and as described under the assessment under Principle 7 for liquidity risk.

EuroCCP considers that the Co-CCP links entail legal, operational, credit, and liquidity risks. In respect of legal risk, EuroCCP relies on external legal counsel of good repute to opine on and/or draft the documentation. In respect of operational risk, the CCPs pose such risk to each other in particular through inter-CCP settlements. EuroCCP measures the settlement efficiency with its Co-CCPs on a regular basis. The inter-CCP procedures are regularly discussed between the Co-CCPs and amended as required by market changes and business evolution.

For credit risk, each interoperable CCP incurs the risk that a CCP with which it interoperates fails on its obligations. This could leave the non-failing CCP exposed to the (net) position of the failing CCP in its books. To mitigate this risk, each CCP requires collateral from Co-CCPs to cover margin obligations, as provided for in the Master Clearing Link Agreements (MCLAs). The collateral provided by one CCP to another as required under the MCLAs or in the Inter CCP Procedures is cover for the margin in accordance with the receiving party’s default rules. EuroCCP applies the same risk management methodology and tools used for the margining of positions of its Clearing Participants, for the margin calculation for linked CCPs.

The interoperable CCPs do not contribute to each other's Clearing Funds. In this way, the interoperable CCPs are not exposed to the risks on the Clearing Participants of the Co-CCPs, which reduces the risk of contagion. EuroCCP has an add-on for the margin calculation for Co-CCPs in place to ensure that the financial resources available for Co-CCP default are not lower than for regular members, designated as the “Co-CCP Equivalent Clearing Fund Add-On” (CECFA). This add-on is calculated in the same way in which the Contribution to the Clearing

Fund per Clearing Participant is determined and is added to the margin required from the Co-CCPs.

A separate Buffer Margin Component (BMC) is agreed between the Co-CCPs. The BMC is a mitigating measure in respect of the intraday margin provision between the CCPs. The functions of the early provision of collateral are to smooth collateral jumps and to reduce the operational risk.

In turn, EuroCCP provides margin (and add-ons, as applicable) to the Co-CCPs. This collateral is provided by the EuroCCP Clearing Participants pursuant to the Clearing Rule Book and the Regulation Interoperability Fund. The risk managers of the Co-CCPs have quarterly meetings to ensure an ongoing understanding of the risk management methodology and tools used in the interoperable risk management and margin calculation.

The liquidity risks exist in respect of the settlements (and are addressed in the assessments under Principles 9 and 12).

The CCP interoperability arrangements are designed to function bilaterally and autonomously of the risk management arrangements in place between EuroCCP and the regular Clearing Participants. The design of the inter-CCP collateral arrangements, which are based on dedicated resources funded by the Clearing Participants in isolation of Clearing Participant margin, and the CECFA, are key to this. Thus, the interoperability arrangements do not interfere with the compliance with any of the other Principles.

A link should have a well-founded legal basis, in all relevant jurisdictions, that supports its design and provides adequate protection to the FMIs involved in the link.

Access conditions and the rights and obligation of each EuroCCP and the CSD concerned are laid down in the admission agreements and the rules and terms of the respective CSDs which are always governed by the laws of the jurisdiction of incorporation of the operator of the CSD.

The legal documentation of the CCP links consists of:

- the Master Clearing Link Agreements (MCLAs) with the Co-CCP, which set our the contract formation between the CCPs, the basis for collateral provision and the default handling. Both MCLAs are governed by the laws of England and Wales;
- the inter CCP Procedures, which cater for the operational arrangements;
- the schedules to the MCLAs for each interoperable trading venue and OTC trades, and;
- the pledge agreements creating the rights of pledge over accounts held by the CCPs for the provision of inter CCP margin collateral in Clearstream Banking Luxembourg.

The pledge agreements have been opined on by outside counsel, commissioned by the Co-CCPs. The collateral arrangements provide that collateral is held in accounts in the name of the pledgor CCP, which reduces the risk of assets being (temporarily) frozen in case of insolvency of the pledgee CCP. The MCLAs have also been drafted by outside counsel. Under the MCLAs, the Co-CCPs are accepted as “special members” in the respective systems, as further elaborated upon in each CCP’s rules. The MCLAs in place between the interoperating CCPs are governed by the laws of England and Wales. EuroCCP’s Clearing Rules allocate the credit risk associated with collateral holdings on Clearstream to its Clearing Participants.

Before entering into a link with another CCP, a CCP should identify and manage the potential spill-over effects from the default of the linked CCP. If a link has three or more CCPs, each CCP should identify, assess, and manage the risks of the collective link arrangement.

EuroCCP will only enter into a link with other CCPs which are recognised by their local regulators / EMIR NCA and observe the Principles via their respective regulatory regimes. New interoperable links and expansion into other markets for existing CCP links will only be accepted following internal approval and regulatory prior approval. All interoperable arrangements have to meet established EuroCCP risk standards and EMIR provisions. The NCAs will observe the ESMA Interoperability Guidelines when assessing prior approval requests.

The self assessments made for such requests address potential spillover effects. The CCP interoperability arrangements are designed to function bilaterally, and autonomously of the risk management arrangements in place between EuroCCP and the regular Clearing Participants and other Co-CCPs. In this way, the indirect risks stemming from the collective nature of the three way interoperability between EuroCCP, LCH.Clearnet and SIX x-clear are managed.

Each CCP in a CCP link arrangement should be able to cover, at least on a daily basis, its current and potential future exposures to the linked CCP and its participants, if any, fully with a high degree of confidence without reducing the CCP's ability to fulfil its obligations to its own participants at any time.

EuroCCP applies the same risk management methodology and tools used for the margining of positions of its Clearing Participants, for the margin calculation for linked CCPs. These processes are described in the assessment under Principles 4, 5 and 6. In addition, the CECFA and BMC provisions are applied. EuroCCP does not consider itself exposed to the members of any Co-CCP in any direct sense.

Publicly Available Resources (on the EuroCCP website):

Clearing Rule Book, EuroCCP Risk Management Overview.

3.21 Principle 21: Efficiency and effectiveness

An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.

Key considerations

An FMI should be designed to meet the needs of its participants and the markets it serves, in particular, with regard to choice of a clearing and settlement arrangement; operating structure; scope of products cleared, settled, or recorded; and use of technology and procedures.

EuroCCP works closely together with its Clearing Participants and the trading venues through the governance arrangements elaborated upon in the assessment under Principle 2. The key governance bodies are the Risk Committee, the Platform Advisory Council, the Advisory Board and the Nordic Advisory Council. The key features of EuroCCP's clearing and settlement arrangement, the stock universe and markets cleared, expansion of interoperability arrangements, any potential product expansion and the use of technology (e.g. T2S) are discussed with the stakeholders in an open dialogue. In addition, the EuroCCP Relationship Management team maintains one on one contacts with the Clearing Participants. The EuroCCP Risk Committee includes user, client and independent representation. EuroCCP also actively engages as market Clearing Participant, aiming at thought leadership on an industry-wide basis.

This interaction with the stakeholders ensures continued focus of EuroCCP on all its arrangements. In addition EuroCCP undertakes annual client surveys, for the first time in 2014, which evidences the level of client satisfaction.

In respect of interoperability, EuroCCP's experiences strong client support when engaging with trading venues for access to trade feeds. This is done by individual Clearing Participants as well as by industry bodies such as AFME. This evidences the alignment of the objectives of EuroCCP with the requirements of its Clearing Participants.

An FMI should have clearly defined goals and objectives that are measurable and achievable, such as in the areas of minimum service levels, risk-management expectations, and business priorities.

The key goals of EuroCCP in respect of the effectiveness of its operations include initiatives to improve settlement efficiency and reduce third-party fail costs. Another example is the T2S strategy of EuroCCP. EuroCCP is a DCP in all eight CSDs where is settles securities in T2S currently. EuroCCP intends to become DCP when a CSD where it settles securities migrates its settlement to T2S.

In 2015, EuroCCP achieved expansion in respect of interoperability. Following the London Stock Exchange, Nasdaq introduced a choice of CCP. SIX Swiss Exchange included EuroCCP as a clearing provider in the first quarter of 2016. 70% of the European market (looking at trade sides) is currently interoperable and accessible for the 3 interoperable CCPs. This data is for the entire year 2017. Including markets which offer user choice (trading venues in the Euronext group), EuroCCP has access to 83% of trades executed on organised trading venues in Europe.

An FMI should have established mechanisms for the regular review of its efficiency and effectiveness.

EuroCCP measures its efficiency metrics on a monthly basis, including settlement efficiency, netting and trade compression ratios, timeliness of collateral provision and operational incidents. Key operational and service metrics are maintained and reviewed on a monthly basis. These are published in business reports which are provided to and discussed in the EuroCCP Supervisory Board and other governance bodies. The EuroCCP governance bodies convene throughout the year. In particular, the Audit Committee of the Supervisory Board monitors the operational efficiency and effectiveness through reporting, including Internal Audit.

Publicly Available Resources (on the EuroCCP website):

Annual Reports

3.22 Principle 22: Communication procedures and standards

An FMI should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement, and recording.

Key considerations

An FMI should use, or at a minimum accommodate, internationally accepted communication procedures and standards.

EuroCCP uses the following industry communication data formats:

- SWIFT for communication with CSDs and settlement agents;
- WebSphere MQ. This is a messaging solution, which allows independent and potentially non-concurrent applications on a distributed system to securely communicate with each other which allows independent and potentially non-concurrent applications on a distributed system to securely communicate with each other using messages (M) and queues (Q). MQ is used for communication with Euroclear Sweden and SIX SIS;
- Secure File Transfer Protocol (SFTP) is a network protocol that provides file access, file transfer, and file management over the internet or over a dedicated line. EuroCCP communicates with the smaller trading venues via SFTP;
- Financial Information eXchange, FIX. The FIX Protocol language is comprised of a series of messaging specifications used in trade communications. EuroCCP uses FIX for the communication with trading venues, most importantly as the format used in the trade feeds.

EuroCCP uses the following data carriers:

- SWIFT for communication with CSDs and settlement agents;
- Colt Technology Services provides a range of data connectivity products and services. Colt is used for communication with a large Clearing Participant;
- Virtual private network (VPN) which extends a private network across a public network, such as the Internet. EuroCCP uses VPN for communication with Clearing Participants and smaller trading venues;
- BT Radianz, a business-to-business e-commerce company that provides IP networking and scalable connectivity to the global financial community. BT Radianz is used for the communication with trading venues, as the carrier for the trade feeds and product and Clearing Participant files and for the communication with some Clearing Participants.

For the securities identification EuroCCP uses ISINs. An ISIN uniquely identifies each security. Its structure is defined in ISO 6166 and the code is a 12-character alphanumeric code that does not contain information characterising the instrument, but serves as a uniform identification of a security at trading and settlement.

Through the use of the above formats and carriers, EuroCCP's information technology communication is based on internationally recognised technical standards and industry best practices, as required under RTS (EU) 153/2013 on CCP Requirements Article 9(2).

Publicly Available Resources (on the EuroCCP website):

Technology and file specifications.

3.23 Principle 23: Disclosure of rules, key procedures, and market data

An FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed.

Key considerations

An FMI should adopt clear and comprehensive rules and procedures that are fully disclosed to participants. Relevant rules and key procedures should also be publicly disclosed.

The rules of EuroCCP comprise the Clearing Rule Book and the Regulations, together the "Clearing Rules". The Regulations implement and give interpretation to the Clearing Rule Book. There are 18 such Regulations. The Clearing Rule Book and the Regulations are published on the EuroCCP website. In addition EuroCCP publishes procedures and service descriptions on its website. These include the EuroCCP Service Overview, the brochure on Segregation and Portability, the memo on computation of QCCP Information disclosure on CRR, a memo on the risks associated with participation, the governance procedure for rule changes and information on business continuity.

Information about EuroCCP's governance structure and corporate objectives is available upon request and free of charge. This concerns the organisation chart of EuroCCP and the key objectives and strategies.

The Clearing Rules are determined by EuroCCP in consultation with the Clearing Participants. The Clearing Rule Book provides the change management procedures, including the obligation for EuroCCP to describe the changes and their effects, to organise consultations and to provide feedback of the consultations to the Clearing Participants. Past experience shows that relevant rule changes, such as the implementation of changes to the collateral structure and the implementation of EMIR related rule changes attract broad attention from the membership, which contributes to the understanding of the EuroCCP rules.

An FMI should disclose clear descriptions of the system's design and operations, as well as the FMI's and participants' rights and obligations, so that participants can assess the risks they would incur by participating in the FMI.

General information about EuroCCP's governance, service overview, membership requirements, risk management framework and global description of the communication protocols and reporting is provided in the document EuroCCP Service Overview. More detailed information on these topics can be found on the website in the Regulations, the Clearing Rule Book, the file descriptions and procedure documents. The general principles underlying the EuroCCP risk models and their methodologies can be found in the documents "EuroCCP risk management overview" and "EuroCCP COH user manual". The key aspects of the default procedures can be found in the Breach of Rule Book procedure and the Default Handling procedure.

The degree of discretion of EuroCCP when making decisions is laid down in the Clearing Rules. The most important rules with discretionary powers are:

Clearing Rule Book 6.1.3: EuroCCP shall at all times have the right to impose upon a Clearing Participant an additional Margin as it reasonably deems useful or necessary. This can be done either on an individual basis based on specific information relating to that Clearing Participant or based on the nature of the Securities to which the relevant Open Positions relate.

Clearing Rule Book 3.7.6: EuroCCP is not under the obligation to consult the Clearing Participants as set out in article 3.7.5 and 3.7.3 when the change is needed as a matter of urgency to protect the interest of the Clearing System, EuroCCP or the Clearing Participants or due to changes in laws or regulations or regulatory requirements. However EuroCCP shall make best efforts to notify or consult the Clearing Participants to the extent permitted by the circumstances.

Clearing Rule Book 3.5.1: In the interests of the proper functioning of the Clearing System, EuroCCP may take any measure it reasonably deems necessary in relation to the organisation and the operation of the Clearing System, whether or not these measures are set out in the Clearing Rules. In particular, EuroCCP can suspend settlements in such situations (3.5.2).

The Clearing Participant Agreement, published on the EuroCCP website, states the rights and obligations of the (applying) Clearing Participant. A dedicated document on risks incurred as a result of participation is published on the EuroCCP website: “Disclosure Statement on the risks associated with using the services of European Central Counterparty N.V.”

An FMI should provide all necessary and appropriate documentation and training to facilitate participants’ understanding of the FMI’s rules and procedures and the risks they face from participating in the FMI.

New Clearing Participants are provided with testing facilities and conformance testing prior to being allowed to commence as a Clearing Participant. In addition, potential new Clearing Participants undergo a vetting process following the submission of an application. This process includes a site visit, collection of SSIs and lists of the applicant’s staff members authorised to take decisions. The applicant must disclose other CCP memberships in the framework of the application. At an operational level, Clearing Participants are provided with the documentation through the website.

All changes to the clearing rules and key procedures are discussed in the Clearing Participant and platform governance bodies of EuroCCP, and these are communicated through newsflashes, consultations, and client visits. The EuroCCP membership includes the key Clearing Participants in the European securities industry. The daily interaction with all Clearing Participants in particular in the areas of settlement and risk management demonstrates that there is ample understanding of the rules, procedures and risks of EuroCCP.

An FMI should publicly disclose its fees at the level of individual services it offers as well as its policies on any available discounts. The FMI should provide clear descriptions of priced services for comparability purposes.

All information on fees and discounts is published in the EuroCCP Regulation Fees and Penalties, which is publicly available on the website, pursuant to section 2.2. of the Clearing Rule Book (“Clearing Participants shall pay to EuroCCP Fees as set out in the Regulation Fees and Penalties”). All changes to the clearing services and rules as well as key procedures are discussed in the Clearing Participant and platform governance bodies of EuroCCP, and these are communicated through newsflashes, consultations, and client visits. Fee changes are discussed in the Advisory Board. The Clearing Participant Agreement provides that EuroCCP may adjust the Fees from time to time with at least thirty Clearing Days prior notice of each such change to the Fees in accordance with the Clearing Rules.

EuroCCP provides the file lay out of the output on the EuroCCP website. The IT and communication standards and carriers are described in the assessment under Principle 22.

An FMI should complete regularly and disclose publicly responses to the CPSS-IOSCO disclosure framework for financial market infrastructures. An FMI also should, at a minimum, disclose basic data on transaction volumes and values.

This self assessment on compliance with the CPMI-IOSCO PFMI Principles is the first self assessment performed by EuroCCP following its EMIR authorisation. The last grading by DNB against the 15 ECSB/CESR Recommendations for Central Counterparties, published in 2014, showed 3 ratings of broadly observed (Custody risks, Settlement assets, Physical deliveries) and all others as observed.

EuroCCP disclosed quantitative data - in conformity with the CPMI IOSCO Public quantitative disclosure standards for central counterparties - for the first time in December 2015 on its website.

Publicly Available Resources:

CPMI-IOSCO Quantitative disclosure, DNB Assessment, Clearing Rule Book, Regulations, Procedure changes to Regulations, Clearing Participant Agreement, Disclosure Statement on the risks associated with membership, Annual reports

A. Key Terms and Abbreviations

BIC	Bank Identifier Code
CESR	Committee of European Securities Regulators
CSA	Clearing Services Agreement
CSD	Central Securities Depository
DCP	Directly Connected Party (in TARGET2-Securities)
DVP	Delivery versus payment
EEA	European Economic Area
ESCB	European System of Central Banks
EuroCCP	European Central Counterparty N.V.
EU	European Union
EMIR	European Markets Infrastructure Regulation (EU) 648/2012
FINMA	Swiss Financial Market Supervisory Authority
FMI(s)	Financial Market Infrastructure(s)
GCP	General Clearing Participant
ICSD	International Central Securities Depository
IOSCO	International Organization of Securities Commissions
MCLA	Master Clearing Link Agreement
NCA	National Competent Authority (under EMIR)
OTC	Over-The-Counter
PFMI(s)	Principle(s) for Financial Market Infrastructures
PTSA	Post Trade Services Agreement
REIP	Regulation EuroCCP Investment Policy
RTS	Regulatory Technical Standards
SFD	Settlement Finality Directive 98/26/EC
SLA	Service Level Agreement