Finalised guidance

FSA reviews of counterparty credit risk management by central counterparties

January 2012

FSA REVIEWS OF COUNTERPARTY CREDIT RISK MANAGEMENT BY CENTRAL COUNTERPARTIES[1]

Background

The financial crisis has led to a re-evaluation of supervisory approaches and standards, not only in the United Kingdom (UK), but also by other major market regulators and international regulatory bodies. This includes the Committee on Payment and Settlement Systems and Technical Committee of the International Organisation of Securities Commissions (CPSS-IOSCO) and the legislative proposal by the European Commission on derivative transactions and central counterparties (EMIR). To this end the Financial Services Authority (FSA) has previously outlined a more intrusive approach to supervision of entities regulated by the FSA, including Recognised Clearing Houses (RCHs) and Recognised Overseas Clearing Houses (ROCHs).

At the same time, the clearing market is undergoing a period of substantial change. Both market participants and regulators have indicated a desire to increase the scale and scope of financial instruments cleared through central counterparties (CCPs). Further, increased industry competition and consolidation continues to play a fundamental role in defining the shape of the clearing industry.

As a consequence, the FSA continues to receive a substantial number of applications for new clearing services, and notifications of extensions to existing services. In addition, the FSA is undertaking a rolling programme for review of existing CCP services. The FSA assesses both applications and existing services against the UK standards for CCPs in Part 18 of the Financial Services and Markets Act and the Recognition Requirements. These requirements are set out, with accompanying FSA guidance, in Chapter 2 of the FSA specialist handbook, Recognised Investment Exchanges and Recognised Clearing Houses (REC).

On 11 July 2011 the FSA commenced a consultation process on this guidance. The consultation was open for a period of four weeks; interested parties, including Recognised Clearing Houses (RCH), Recognised Overseas Clearing Houses (ROCH), applicants for ROCH status, and other international regulators were made aware of the consultation paper. The FSA received a number of comments, and met with respondents to discuss their views. This guidance has been updated to reflect the views of respondents where appropriate.

[1] Counterparty credit risk is defined as the larger of zero and the market value of a portfolio of derivative positions with a counterparty that would be lost if the counterparty were to default.

Scope
This document is focused on specific aspects of counterparty credit risk management, namely risk models and associated governance, processes and procedures. This specific focus represents both important areas of counterparty credit risk management, as well as areas that a number of stakeholders have asked for additional guidance on. However it is important to note that there remain other aspects related to counterparty credit risk management, for instance, participant entry criteria, which, while viewed by the FSA as equally critical, are being discussed in other regulatory fora.

Application
This guidance is aimed at providing additional context to the review process the FSA undertakes when considering counterparty credit risk management by CCPs. It provides further information as to how the FSA assesses compliance with the Act and the Recognition Requirements and, where relevant, provides examples of the kind of evidence which might support a positive assessment of a proposal against them. While we have outlined the typical approach the FSA takes, it is important to note that any review will necessarily be customised to the specifics of the proposed clearing service.

Although the guidance outlined in this document has been refined over the previous year and half by the FSA, it is designed to be consistent with the CPSS-IOSCO Principles for Financial Market Infrastructure, and may be revised when these principles are finalised. This guidance will also be revised in due course to be consistent with the Technical Standards for CCP Requirements to be defined by the relevant European Supervisory Authorities upon the finalisation of the EU regulation on OTC derivatives, central counterparties and trade repositories which was proposed by the EU Commission in September 2010.

CCPs that are proposing to submit applications for provision of clearing services in the UK are encouraged to contact the Clearing and Settlement supervision team prior to submission.

REVIEW PROCESS UNDERTAKEN BY THE FSA

1. When assessing the counterparty credit risk (CCR) management framework of a RCH, the FSA undertakes a holistic review of the proposed risk management approach. With regards to the risk management review the FSA typically focuses on the following high level areas:

    - Risk management governance and CCR control framework
    - Initial margin models
    - Variation margin calculation
    - Default fund
    - Stress testing
    - Wrong way risk and concentration risk
    - Collateral
    - Validation and backtesting

2. Each of these elements is expanded and outlined more fully in the remainder of the document, followed by a brief summary of the actions following the review process. A broadly similar process is undertaken in relation to ROCHs.

Risk management governance and counterparty credit risk control framework

3. As set out in REC 2.5 (systems and controls and conflicts), we give considerable weight to the governance and control functions of regulated entities. This is reflected in the FSA's ARROW risk framework. Within the governance framework the FSA will consider to what extent the appropriate governing body is ultimately responsible for managing risks and for setting the risk appetite. As part of its review of the CCR management governance arrangements the FSA may typically consider aspects of risk management governance highlighted below:

    - Organisational structure of the CCR management function
    - Governance of risk models and policies
    - CCR control framework

Organisational structure of the risk management function

4. In the review of the organisational structure of the risk management function the FSA may typically consider to what extent:

    - it is adequately staffed, independent from functions responsible for the commercial activity of the CCP and free from undue influence, and reports directly to the senior management of the CCP;
    - it has appropriate operations to support the markets for which the CCP provides services; and
    - it has the ability and authority to challenge models and risk practices in all cases, including when the CCP leverages off a centralised risk function of a separate corporate entity.

Governance of risk models and policies

5. In the review of the governance of risk models and policies the FSA may typically consider to what extent:

    - risk models and policies have been specifically agreed by the risk management function and are periodically reviewed annually or more frequently, as needed;
    - the approval process for new models, model changes and risk policies are documented and new models or significant model changes or changes to policies are subject to independent validation and sign-off by an appropriate governing body;
    - the CCP's risk management policies take account of market risk, liquidity risk, and legal and operational risk that can be associated with CCR;
    - the governing body of the CCP is actively involved in the CCR control process and is aware of the limitations and assumptions of the risk models used and the impact these limitations and assumptions can have on the reliability of the output, and how uncertainties of the market environment and operational issues are reflected in the model; and
    - the CCP's CCR management system is documented and provides an explanation of the empirical techniques used to measure CCR.

Counterparty credit risk control framework

6. In the review of the CCR control framework the FSA may typically consider to what extent:
    - the risk management function implements and monitors appropriate thresholds for risk monitoring of clearing members' portfolios (e.g. wrong way risk, concentration risk) on a real time basis, and has adequate processes and procedures to reduce or mitigate risk in response to additional trading activity;
    - the outputs of the risk measurement models are a part of the process of planning, monitoring and controlling the CCP's CCR and overall risk profile;
    - the risk assessments include an assessment of the CCP's ability to liquidate the position upon the default of the counterparty;
    - the risk management function controls model input data integrity;
    - the risk assessment produces and analyses reports based on the output of the risk measurement models, including an evaluation of the relationship between measures of risk exposure and credit limits;
    - the CCP assesses and monitors on an ongoing basis the credit worthiness of the clearing members;
    - the CCP has a routine in place to monitor compliance with a documented set of internal policies;
    - the CCP's independent audit review of the CCR management system includes the following:
        - a determination of whether the risk management function is adequately staffed and has the appropriate expertise in the products cleared;
        - the organisation of the CCR control unit and the integration of CCR measures into daily risk management including the integrity of the system;
        - the approval process for risk pricing models and valuation systems used includes independent validation of any significant changes and verification of the model's accuracy through frequent back-testing;
        - the scope of CCR captured by the risk measurement model;
        - the accuracy, completeness and appropriateness of CCR data including volatility and correlation assumptions, valuation and risk transformation calculations;
        - the verification of the consistency, timeliness and reliability of data sources used to run models, including the independence of such data sources; and
        - the adequacy of the documentation of the CCR management system and process.
    - the CCP measures exposure at product and member level, according to the risk measures chosen including large or concentrated positions, by groups of related counterparties, by industry, by market, etc.;
    - credit exposure is factored into credit limit utilisation and total default fund protection;
    - the CCP aggregates counterparty credit risk to each member clearing account to arrive at a single legal exposure, for each clearing member, across all that clearing member's client and house transactions; and
    - the CCP monitors the legal validity of the aggregation of all transactions included in the netting set of a clearing member under the law of each of the relevant jurisdictions and how netting benefit is recognised if there is not legal validity.

Initial margin model

7. The FSA continues to take a strong interest in the risk models used by CCPs. In considering the adequacy of the modelling approach for both new and existing models, the FSA may typically consider the following aspects:

- Structure and properties of the initial margin model
- Diversification benefit
- Margin period of risk
- Margin frequency
- Market data and use of proxies
- Price data and pricing models

Structure and properties of the initial margin model

8. In the review of the structure and properties of the initial margin model the FSA may typically consider to what extent:

- the CCP performs analysis during the development of a new margin model to identify the risk factors relevant for the measurement of exposure;
- the CCP's initial margin model produces a reliable forecast distribution of exposures, and accounts for the possible non-normality of the exposure distribution, at product level and at member level (reliable forecast distributions are those for which events occur with an observed relative frequency that is consistent with the forecast distributions);
- the risk measure chosen (e.g. percentile, expected shortfall) as the target coverage of the margin model is calibrated at member level for client and house account separately or whether the initial margin model target coverage is calibrated in a way such that it would be at least as conservative as calibration at member level[2];
- the calibration of the margin model also considers the potential for margin procyclicality. The margin calibration process should have the ability to incorporate different periods of market volatility, including those outside of the window chosen to calibrate the model, to reduce the potential for procyclicality;
- where portfolio margining is used, exposure is measured over the maximum of the margin period of risk of each product cleared in a portfolio;
- the initial margin model reflects transaction terms and specifications in a complete and conservative fashion. Where contract terms are updated these should be updated in the initial margin model;
- the CCP assesses the conservativeness of non risk-sensitive approaches where such approaches are adopted;
- the transaction terms and specifications are maintained in a database that is subject to formal and periodic audit including the transmission of such terms to the margin model and the formal reconciliation process between the model and source data systems to

[2] Member level calibration refers to the ability of the margin model to measure the total exposure of the clearing member to its house accounts and, separately, each client account, thereby delivering a risk measure from the distribution of exposure appropriately taking into consideration relationship between risk factors.

verify on an ongoing basis that transaction terms and specifications are being reflected correctly or at least conservatively; and
- the CCP justifies and documents the assumptions made regarding the dynamics of the risk factors modelled.

***Diversification benefit*[3]**

9. The FSA considers that appropriate measurement of diversification benefit is one of the key components of the initial margin calculation. In the review of the diversification benefit within the initial margin model the FSA may typically consider to what extent:
   - the initial margin model jointly captures the relationship between risk factors to account for diversification benefit; and
   - the CCP performs analysis to verify the conservativeness of the measurement of the diversification benefit when risk factors are not jointly modelled, including under stressed market conditions.

Margin period of risk

10. In the review of the process around the definition of the margin period of risk the FSA may typically consider to what extent:
    - the definition of the margin period of risk accounts for the specific characteristics of the products cleared, the liquidity, size of the market and the time required to complete the process for the liquidation or transfer of the trades of a defaulted member to non-defaulted members; and
    - the assumptions relative to the margin period of risk are documented and subject to ongoing review.

Margin frequency

11. In the review of the frequency of margin calls the FSA may typically consider to what extent the CCP has the ability and authority to calculate mark-to-market of all positions and call initial margin on a daily basis.

Market data and use of proxies

12. In the review of the use of market data and proxies the FSA may typically consider to what extent:
    - the margin model employs current market data to compute initial margin;
    - the CCP monitors the materiality of market data proxies and with what frequency the materiality analysis is carried out; and
    - the use of proxy market data (including for new products where historical data may not be available) is subject to analysis which is performed to verify that the proxies adopted

[3] Diversification benefit refers to both recognition of natural offset between correlated products as well as offsetting benefit recognised for long / short positions.

provide a conservative representation of the underlying risk under adverse market conditions.

Price data and pricing models

13. In considering the adequacy of price data and pricing models the FSA may typically consider to what extent:
    - the CCP has in place clear procedures to select the source of price data and documented criteria to define the acceptability of a price quote;
    - the CCP may use internally developed pricing models when price data do not meet the acceptability criteria; and
    - internally developed pricing models have been subject to the internal sign-off process.

Variation margin

14. The FSA considers the ability to calculate and promptly call variation margin a key aspect of CCR mitigation. In considering the adequacy of the variation margin process the FSA may typically consider to what extent:
    - the CCP has the operational capacity and authority to call variation margin on an intraday basis; and
    - when a minimum threshold to call variation margin is reached, the materiality of this threshold is compared to the size of the position cleared.

Default fund

15. The FSA considers the default fund one of the key elements of the financial safeguard package available to CCPs. In considering the adequacy of the default fund the FSA may typically consider to what extent:
    - the methodology used to define the size of the default fund and contribution of each member is documented, subject to the internal sign-off and ongoing review process, and linked to the internal risk appetite. Where the default fund is common across clearing services, good practice would be where CCPs clearly identify the contribution of each clearing service to the overall size of the default fund;
    - a predefined set of stress scenarios is used to assess the adequacy of the default fund;
    - the CCP recognises the importance of frequent monitoring of the default fund adequacy and default fund target size; and
    - the frequency with which the default fund size is monitored.

Stress testing

16. The FSA considers stress testing to be a key tool to assess the potential impact of tail risks and risks which may not be captured by the initial margin model. In considering the adequacy of the stress testing approach of CCPs the FSA may consider the following key aspects:
    - stress testing governance; and
    - stress testing methodology.

Stress testing governance

17. In its review of the stress testing governance the FSA may typically consider to what extent:

- the CCP has a documented stress testing policy in place which highlights:
  - the risk appetite around stressed exposure and the process for dealing with breaches of that risk appetite; and
  - the use of stress testing within the context of the risk management of the CCP;
- the CCP looks at the appropriateness, accuracy, reliability and resilience of their models and methodologies through its stress testing;
- the CCP has a documented stress testing process which details the roles and responsibilities of functional units that perform the stress testing;
- the CCP reviews stress testing analysis with an appropriate frequency.
  The FSA observes good practice in those CCPs that perform stress testing analysis on a daily basis;
- portfolios cleared are included in the stress testing analysis.
  The FSA observes good practice in those CCPs that perform stress testing analysis on all portfolios cleared;
- scenarios are subject to senior management sign-off and the ongoing review process of the CCP; and
- the robustness of the stress framework and its ability to adequately reflect market movements is subject to audit review.

Stress testing methodology

18. In the review of the methodology adopted for stress testing the FSA may typically consider to what extent:

- the CCP uses both historical and hypothetical scenarios for the assessment of stress testing impact;
- the CCP performs analysis to verify that its stress testing captures the sensitivity of their exposures to the relative direction and magnitudes of market and credit factors; and
- the stress testing scenarios capture correlation risk across market and credit risk and the risk that liquidating the counterparty's positions could move the market.

Wrong way risk and concentration risk[4]

19. The FSA considers the ability of a CCP to measure and monitor wrong way risk (WWR) and concentration risk a key element to manage CCR. In its review of the wrong way risk and concentration risk framework the FSA may typically consider the governance arrangements as well as the measurement and monitoring of these risks.

[4] WWR is the risk incurred by the CCP when the credit worthiness of one of its members is adversely correlated with the exposure on the product cleared or collateral lodged. There are two cases of wrong way risk:
General WWR: where the exposure to a counterparty is likely to increase when the creditworthiness of that counterparty is deteriorating.
Specific WWR: where there is a legal connection between the clearing member and the value of the product cleared or collateral lodged (e.g. a clearing member selling protection on itself).

Governance

20. In its review of the governance of WWR and concentration risk the FSA may typically consider, for each of these risks, to what extent:

    - the CCP has a documented risk appetite framework which is subject to the internal sign-off and ongoing review process;
    - the CCP has a documented policy which identifies the actions that should be taken if a CCP's risk appetite is breached;
    - the CCP has specific management information reports to highlight trades which give rise to these risks; and
    - the methodology adopted to mitigate these risks is subject to independent validation and an internal sign-off process.

General wrong way risk management

21. In its review of the general WWR framework the FSA may typically consider to what extent the CCP monitors general WWR on an ongoing basis.

Specific wrong way risk management

22. In its review of the specific WWR framework the FSA may typically consider to what extent the CCP has the operational capacity to identify and call appropriate additional initial margin or to take other risk-mitigating action (for instance, requiring a clearing member to reduce its positions) for trades which give rise to specific WWR.

Concentration risk

23. In its review of the concentration risk framework the FSA may typically consider to what extent the CCP mitigates concentration risk by calling additional margin or taking other risk-mitigating action.

Collateral

24. The FSA considers the governance, monitoring and measurement of credit, market and liquidity risk of the collateral accepted from clearing members a key element in the mitigation of CCR. In its review of the collateral framework the FSA may typically consider to what extent:

    - the CCP has clearly documented policies, processes and procedures to determine both initial and ongoing eligibility of collateral which aims for minimal credit, market and liquidity risk;
    - the CCP's collateral policy identifies the collateral types which should be used for margin and default fund contributions;
    - the CCP has the ability to monitor collateral concentration at member level;
    - the CCP has a quantitative methodology for the estimation of haircuts applied to the collateral accepted;
    - the CCP subjects the haircuts to internal sign-off and an ongoing review process;
    - the methodology adopted for the estimation of haircuts is subject to the internal sign-off and ongoing review process;

- the CCP performs specific analysis to verify that the credit quality of the obligor and the value of the collateral do not have a material positive correlation and securities issued by the obligor, or any related group entity of the obligor, are not eligible collateral;
- the CCP conducts a legal review to confirm the enforceability of the collateral arrangements in all relevant jurisdictions and on an ongoing basis as necessary to ensure continuing enforceability; and
- the CCP employs robust procedures and processes to control risks arising from the use of collateral – including risks of failed or reduced credit protection, valuation risks, risks associated with the termination of the credit protection, concentration risk arising from the use of collateral and the interaction with the CCP's overall risk profile.

Validation and backtesting

25. The FSA considers independent validation and backtesting important components in a CCP's risk management framework. Independent validation should provide appropriate independent review and challenge to the risk management methodology of the CCP. Backtesting should similarly be constructed to provide assurances that a risk management model performs as expected and is fit-for-purpose. In its review of the validation and backtesting framework the FSA may typically consider the following key aspects:

    - Initial and ongoing validation framework
    - Backtesting of risk models

Initial and ongoing validation framework

26. In its review of the initial validation framework the FSA may typically consider to what extent:

    - the CCP performs initial validation of all new risk management methodologies or existing methodologies which are subject to significant changes;
    - the risk methodologies adopted by CCPs are subject to ongoing validation;
    - the CCP ensures that the validation is independent. When a team that is independent from the one that developed the methodologies is not available internally, the FSA observes good practice in those CCPs that outsource the independent validation to an external organisation;
    - the validation process is documented in a validation policy which highlights the criteria (including but not limited to successful backtesting results) by which a risk methodology can be considered appropriate for the purpose it has been developed, including the kind of testing needed to ensure model integrity and successful validation;
    - the validation reviews:
        - the assumptions made in the development of the model
        - theoretical properties of the methodology developed
        - the adequacy of the methodology for the product and market which it will be applied to
    - the validation process identifies conditions under which assumptions are violated and may result in an understatement of risk and how, in these circumstances, the issues are rectified;
    - the validation process includes a review of the comprehensiveness of the risk methodology;

- the initial validation analysis includes rigorous backtesting over an appropriate observation window; and
- the CCP ensures that all risk factors modelled, and most common portfolio strategies, are included in the scope of the review of the initial validation.

Backtesting of risk models

27. In its review of the backtesting framework the FSA may typically consider to what extent:

- the backtesting analysis is performed with an adequate frequency.
  The FSA observes good practice in those CCPs that perform some backtesting analysis on a daily basis on all portfolios of all clearing members, including at least comparing initial margin to changes in mark-to-market values of portfolios cleared;
- the CCP has a documented backtesting policy which describes the tests used to asses the performance of risk methodologies;
- the operational model[5] is part of the backtesting process, e.g. if a CCP is using a specific percentile of the distribution of exposure to estimate its target coverage, that this percentile is included in the backtesting analysis;
- the CCP has a documented process for:
  - calling additional financial resources in response to poor performance of the initial margin model
  - identifying the conditions under which the poor performance of the initial margin model was remediated and the additional financial resources are no longer required
- the backtesting analysis performed by the CCP includes the initial margin model and the models that input into the initial margin models;
- the CCP uses static, historical backtesting on representative member portfolios chosen based on their sensitivity to the material risk factors and correlations to which the CCP is exposed;
- the backtesting framework tests the key assumptions of the initial margin model e.g. the modelled relationship between tenors of the same risk factor, and the modelled relationships between risk factors; and
- the CCP includes in its backtesting analysis the assessment of the performance of its models at a range of risk measures (e.g. percentile, expected shortfall) over the forecast distributions produced by the initial margin models and the models that input into the initial margin model.

[5] Operational model: the initial margin model used to calculate exposure over the margin period of risk excluding all additional charge which may be called by a CCP for non-modelled risks such as concentration risk, wrong way risk, etc.

CONCLUSION OF THE REVIEW PROCESS

28. For existing clearing services, at the conclusion of the review process, the FSA will form views on the appropriateness of the CCR framework within the CCP. Where there are areas for improvement, the FSA will work with the entity to make improvements within the standard supervisory framework.

29. Where a new clearing service is proposed (either by a new CCP or existing CCP), the FSA anticipates that any improvement areas for the CCR framework would be addressed prior to launch.