Directive 2006/48/EC of the European Parliament and of the council of 14 June 2006 relating to the taking up and pursuit of the business of credit institutions (recast) (Text with EEA relevance) (repealed)

ANNEX III

THE TREATMENT OF COUNTERPARTY CREDIT RISK OF DERIVATIVE INSTRUMENTS, REPURCHASE TRANSACTIONS, SECURITIES ORCOMMODITIES LENDING OR BORROWING TRANSACTIONS, LONG SETTLEMENT TRANSACTIONS AND MARGIN LENDING TRANSACTIONS

PART 6

Internal Model Method

1. Subject to the approval of the competent authorities, a credit institution may use the Internal Model Method (IMM) to calculate the exposure value for the transactions in Part 2, paragraph 2(i), or for the transactions in Part 2, point 2(ii), (iii) and (iv), or for the transactions in Part 2, point 2(i) to (iv). In each of these cases the transactions in Part 2, point 2(v) may be included as well. Notwithstanding Part 2, point 1, second paragraph, credit institutions may choose not to apply this method to exposures that are immaterial in size and risk. To apply the IMM, a credit institution shall meet the requirements set out in this Part.

2. Subject to the approval of the competent authorities, implementation of the IMM may be carried out sequentially across different transaction types, and during this period a credit institution may use the methods set out in Part 3 or Part 5. Notwithstanding the remainder of this Part, credit institutions shall not be required to use a specific type of model.

3. For all OTC derivative transactions and for long settlement transactions for which a credit institution has not received approval to use the IMM, the credit institution shall use the methods set out in Part 3 or Part 5. Combined use of these two methods is permitted on a permanent basis within a group. Combined use of these two methods within a legal entity is only permitted where one of the methods is used for the cases set out in Part 5, point 19.

4. Credit institutions which have obtained permission to use the IMM shall not revert to the use of the methods set out in Part 3 or Part 5 except for demonstrated good cause and subject to approval of the competent authorities. If a credit institution ceases to comply with the requirements set out in this Part, it shall either present to the competent authority a plan for a timely return to compliance or demonstrate that the effect of non#compliance is immaterial.

Exposure value

5. The exposure value shall be measured at the level of the netting set. The model shall specify the forecasting distribution for changes in the market value of the netting set attributable to changes in market variables, such as interest rates, foreign exchange rates. The model shall then compute the exposure value for the netting set at each future date given the changes in the market variables. For margined counterparties, the model may also capture future collateral movements.

6. Credit institutions may include eligible financial collateral as defined in point 11 of Part 1 of Annex VIII to this Directive and point 9 of Annex II to Directive 2006/49/EC in their forecasting distributions for changes in the market value of the netting set, if the quantitative, qualitative and data requirements for the IMM are met for the collateral.

7. The exposure value shall be calculated as the product of α times Effective EPE, as follows:

Exposure value = α × Effective EPE

where:

alpha (α) shall be 1.4, but competent authorities may require a higher α, and Effective EPE shall be computed by estimating expected exposure (EEt) as the average exposure at future date t, where the average is taken across possible future values of relevant market risk factors. The model estimates EE at a series of future dates t1, t2, t3, etc.

8. Effective EE shall be computed recursively as:

Effective EEtk = max(Effective EEtk#1; EEtk)

where:

the current date is denoted as t0 and Effective EEt0 equals current exposure.

9. In this regard, Effective EPE is the average Effective EE during the first year of future exposure. If all contracts in the netting set mature within less than one year, EPE is the average of EE until all contracts in the netting set mature. Effective EPE is computed as a weighted average of Effective EE:

$$EffectiveEPE = \sum_{k=1}^{\min(1\ year;maturity)} EffectiveEE_{tk} * \Delta t_k$$

where:

the weights Δtk = tk — tk#1 allow for the case when future exposure is calculated at dates that are not equally spaced over time.

10. EE or peak exposure measures shall be calculated based on a distribution of exposures that accounts for the possible non#normality of the distribution of exposures.

11. Credit institutions may use a measure that is more conservative than α multiplied by Effective EPE as calculated according to the equation above for every counterparty.

12. Notwithstanding point 7, competent authorities may permit credit institutions to use their own estimates of α, subject to a floor of 1,2, where α shall equal the ratio of internal capital from a full simulation of CCR exposure across counterparties (numerator) and internal capital based on EPE (denominator). In the denominator, EPE shall be used as if it were a fixed outstanding amount. Credit institutions shall demonstrate that their internal estimates of α capture in the numerator material sources of stochastic dependency of distribution of market values of transactions or of portfolios of transactions across counterparties. Internal estimates of α shall take account of the granularity of portfolios.

13. A credit institution shall ensure that the numerator and denominator of α are computed in a consistent fashion with respect to the modelling methodology, parameter specifications and portfolio composition. The approach used shall be based on the credit institution's internal capital approach, be well documented and be subject to independent validation. In addition, credit institutions shall review their estimates on at least a quarterly basis, and more frequently when the composition of the portfolio varies over time. Credit institutions shall also assess the model risk.

14. Where appropriate, volatilities and correlations of market risk factors used in the joint simulation of market and credit risk should be conditioned on the credit risk factor to reflect potential increases in volatility or correlation in an economic downturn.

15. If the netting set is subject to a margin agreement, credit institutions shall use one of the following EPE measures:

(a) Effective EPE without taking into account the margin agreement;

(b) the threshold, if positive, under the margin agreement plus an add#on that reflects the potential increase in exposure over the margin period of risk. The add#on is computed as the expected increase in the netting set's exposure beginning from a current exposure of zero over the margin period of risk. A floor of five business days for netting sets consisting only of repo#style transactions subject to daily remargining and daily mark# to#market, and ten business days for all other netting sets is imposed on the margin period of risk used for this purpose; or

(c) if the model captures the effects of margining when estimating EE, the model's EE measure may be used directly in the equation in point 8 subject to the approval of the competent authorities.

Minimum requirements for EPE models

16. A credit institution's EPE model shall meet the operational requirements set out in points 17 to 41.

CCR control

17. The credit institution shall have a control unit that is responsible for the design and implementation of its CCR management system, including the initial and on#going validation of the model. This unit shall control input data integrity and produce and analyse reports on the output of the credit institution's risk measurement model, including an evaluation of the relationship between measures of risk exposure and credit and trading limits. This unit shall be independent from units responsible for originating, renewing or trading exposures and free from undue influence; it shall be adequately staffed; it shall report directly to the senior management of the credit institution. The work of this unit shall be closely integrated into the day#to#day credit risk management process of the credit institution. Its output shall, accordingly, be an integral Part of the process of planning, monitoring and controlling the credit institution's credit and overall risk profile.

18. A credit institution shall have CCR management policies, processes and systems that are conceptually sound and implemented with integrity. A sound CCR management framework shall include the identification, measurement, management, approval and internal reporting of CCR.

19. A credit institution's risk management policies shall take account of market, liquidity, and legal and operational risks that can be associated with CCR. The credit institution shall not undertake business with a counterparty without assessing its creditworthiness and shall take due account of settlement and pre#settlement credit risk. These risks shall be managed as comprehensively as practicable at the counterparty level (aggregating CCR exposures with other credit exposures) and at the firm#wide level.

20. A credit institution's board of directors and senior management shall be actively involved in the CCR control process and shall regard this as an essential aspect of the business to which significant resources need to be devoted. Senior management shall

be aware of the limitations and assumptions of the model used and the impact these can have on the reliability of the output. Senior management shall also consider the uncertainties of the market environment and operational issues and be aware of how these are reflected in the model.

21. The daily reports prepared on a credit institution's exposures to CCR shall be reviewed by a level of management with sufficient seniority and authority to enforce both reductions of positions taken by individual credit managers or traders and reductions in the credit institution's overall CCR exposure.

22. A credit institution's CCR management system shall be used in conjunction with internal credit and trading limits. Credit and trading limits shall be related to the credit institution's risk measurement model in a manner that is consistent over time and that is well understood by credit managers, traders and senior management.

23. A credit institution's measurement of CCR shall include measuring daily and intra# day usage of credit lines. The credit institution shall measure current exposure gross and net of collateral. At portfolio and counterparty level, the credit institution shall calculate and monitor peak exposure or PFE at the confidence interval chosen by the credit institution. The credit institution shall take account of large or concentrated positions, including by groups of related counterparties, by industry, by market, etc.

24. A credit institution shall have a routine and rigorous program of stress testing in place as a supplement to the CCR analysis based on the day#to#day output of the credit institution's risk measurement model. The results of this stress testing shall be reviewed periodically by senior management and shall be reflected in the CCR policies and limits set by management and the board of directors. Where stress tests reveal particular vulnerability to a given set of circumstances, prompt steps shall be taken to manage those risks appropriately.

25. A credit institution shall have a routine in place for ensuring compliance with a documented set of internal policies, controls and procedures concerning the operation of the CCR management system. The credit institution's CCR management system shall be well documented and shall provide an explanation of the empirical techniques used to measure CCR.

26. A credit institution shall conduct an independent review of its CCR management system regularly through its own internal auditing process. This review shall include both the activities of the business units referred to in point 17 and of the independent CCR control unit. A review of the overall CCR management process shall take place at regular intervals and shall specifically address, at a minimum:

(a) the adequacy of the documentation of the CCR management system and process;

(b) the organisation of the CCR control unit;

(c) the integration of CCR measures into daily risk management;

(d) the approval process for risk pricing models and valuation systems used by front and back#office personnel;

(e) the validation of any significant change in the CCR measurement process;

(f) the scope of CCR captured by the risk measurement model;

(g) the integrity of the management information system;

(h) the accuracy and completeness of CCR data;

(i) the verification of the consistency, timeliness and reliability of data sources used to run models, including the independence of such data sources;

(j) the accuracy and appropriateness of volatility and correlation assumptions;

(k) the accuracy of valuation and risk transformation calculations; and

(l) the verification of the model's accuracy through frequent back#testing.

Use test

27. The distribution of exposures generated by the model used to calculate effective EPE shall be closely integrated into the day#to#day CCR management process of the credit institution. The model's output shall accordingly play an essential role in the credit approval, CCR management, internal capital allocation and corporate governance of the credit institution.

28. A credit institution shall have a track record in the use of models that generate a distribution of exposures to CCR. Thus, the credit institution shall demonstrate that it has been using a model to calculate the distributions of exposures upon which the EPE calculation is based that meets, broadly, the minimum requirements set out in this Part for at least one year prior to approval by the competent authorities.

29. The model used to generate a distribution of exposures to CCR shall be Part of a CCR management framework that includes the identification, measurement, management, approval and internal reporting of CCR. This framework shall include the measurement of usage of credit lines (aggregating CCR exposures with other credit exposures) and internal capital allocation. In addition to EPE, a credit institution shall measure and manage current exposures. Where appropriate, the credit institution shall measure current exposure gross and net of collateral. The use test is satisfied if a credit institution uses other CCR measures, such as peak exposure or (PFE), based on the distribution of exposures generated by the same model to compute EPE.

30. A credit institution shall have the systems capability to estimate EE daily if necessary, unless it demonstrates to its competent authorities that its exposures to CCR warrant less frequent calculation. The credit institution shall compute EE along a time profile of forecasting horizons that adequately reflects the time structure of future cash flows and maturity of the contracts and in a manner that is consistent with the materiality and composition of the exposures.

31. Exposure shall be measured, monitored and controlled over the life of all contracts in the netting set (not just to the one year horizon). The credit institution shall have procedures in place to identify and control the risks for counterparties where the exposure rises beyond the one#year horizon. The forecast increase in exposure shall be an input into the credit institution's internal capital model.

Stress testing

32. A credit institution shall have in place sound stress testing processes for use in the assessment of capital adequacy for CCR. These stress measures shall be compared with the measure of EPE and considered by the credit institution as Part of the process set out in Article 123. Stress testing shall also involve identifying possible events or future changes in economic conditions that could have unfavourable effects on a credit institution's credit exposures and an assessment of the credit institution's ability to withstand such changes.

33. The credit institution shall stress test its CCR exposures, including jointly stressing market and credit risk factors. Stress tests of CCR shall consider concentration risk (to a single counterparty or groups of counterparties), correlation risk across market and credit risk, and the risk that liquidating the counterparty's positions could move the market. Stress tests shall also consider the impact on the credit institution's own positions of such market moves and integrate that impact in its assessment of CCR.

Wrong#Way Risk

34. Credit institutions shall give due consideration to exposures that give rise to a significant degree of General Wrong#Way Risk.

35. Credit institutions shall have procedures in place to identify, monitor and control cases of Specific Wrong#Way Risk, beginning at the inception of a transaction and continuing through the life of the transaction.

Integrity of the modelling process

36. The model shall reflect transaction terms and specifications in a timely, complete, and conservative fashion. Such terms shall include at least contract notional amounts, maturity, reference assets, margining arrangements, netting arrangements. The terms and specifications shall be maintained in a database that is subject to formal and periodic audit. The process for recognising netting arrangements shall require signoff by legal staff to verify the legal enforceability of netting and be input into the database by an independent unit. The transmission of transaction terms and specifications data to the model shall also be subject to internal audit and formal reconciliation processes shall be in place between the model and source data systems to verify on an ongoing basis that transaction terms and specifications are being reflected in EPE correctly or at least conservatively.

37. The model shall employ current market data to compute current exposures. When using historical data to estimate volatility and correlations, at least three years of historical data shall be used and shall be updated quarterly or more frequently if market conditions warrant. The data shall cover a full range of economic conditions, such as a full business cycle. A unit independent from the business unit shall validate the price supplied by the business unit. The data shall be acquired independently of the lines of business, fed into the model in a timely and complete fashion, and maintained in a database subject to formal and periodic audit. A credit institution shall also have a well#developed data integrity process to clean the data of erroneous and/or anomalous observations. To the extent that the model relies on proxy market data, including, for new products, where three years of historical data may not be available, internal policies shall identify suitable proxies and the credit institution shall demonstrate empirically that the proxy provides a conservative representation of the underlying risk under adverse market conditions. If the model includes the effect of collateral on changes in the market value of the netting set, the credit institution shall have adequate historical data to model the volatility of the collateral.

38. The model shall be subject to a validation process. The process shall be clearly articulated in credit institutions' policies and procedures. The validation process shall specify the kind of testing needed to ensure model integrity and identify conditions under which assumptions are violated and may result in an understatement of EPE. The validation process shall include a review of the comprehensiveness of the model.

39. A credit institution shall monitor the appropriate risks and have processes in place to adjust its estimation of EPE when those risks become significant. This includes the following:

(a) the credit institution shall identify and manage its exposures to specific wrong#way risk;

(b) for exposures with a rising risk profile after one year, the credit institution shall compare on a regular basis the estimate of EPE over one year with EPE over the life of the exposure; and

(c) for exposures with a residual maturity below one year, the credit institution shall compare on a regular basis the replacement cost (current exposure) and the realised exposure profile, and/or store data that would allow such a comparison.

40. A credit institution shall have internal procedures to verify that, prior to including a transaction in a netting set, the transaction is covered by a legally enforceable netting contract that meets the requirements set out in Part 7.

41. A credit institution that makes use of collateral to mitigate its CCR shall have internal procedures to verify that, prior to recognising the effect of collateral in its calculations, the collateral meets the legal certainty standards set out in Annex VIII.

Validation requirements for EPE models

42. A credit institution's EPE model shall meet the following validation requirements:

(a) the qualitative validation requirements set out in Annex V to Directive 2006/49/EC;

(b) interest rates, foreign exchange rates, equity prices, commodities, and other market risk factors shall be forecast over long time horizons for measuring CCR exposure. The performance of the forecasting model for market risk factors shall be validated over a long time horizon;

(c) the pricing models used to calculate CCR exposure for a given scenario of future shocks to market risk factors shall be tested as Part of the model validation process. Pricing models for options shall account for the nonlinearity of option value with respect to market risk factors;

(d) the EPE model shall capture transaction-specific information in order to aggregate exposures at the level of the netting set. A credit institution shall verify that transactions are assigned to the appropriate netting set within the model;

(e) the EPE model shall also include transaction-specific information to capture the effects of margining. It shall take into account both the current amount of margin and margin that would be passed between counterparties in the future. Such a model shall account for the nature of margin agreements (unilateral or bilateral), the frequency of margin calls, the margin period of risk, the minimum threshold of unmargined exposure the credit institution is willing to accept, and the minimum transfer amount. Such a model shall either model the mark-to-market change in the value of collateral posted or apply the rules set out in Annex VIII; and

(f) static, historical back-testing on representative counterparty portfolios shall be Part of the model validation process. At regular intervals, a credit institution shall conduct such back-testing on a number of representative counterparty portfolios (actual or hypothetical). These representative portfolios shall be chosen based on their sensitivity to the material risk factors and correlations to which the credit institution is exposed.

If back-testing indicates that the model is not sufficiently accurate, the competent authorities shall revoke the model approval or impose appropriate measures to ensure that the model is improved promptly. They may also require additional own funds to be held by credit institutions pursuant to Article 136.