ANNEX VII

INTERNAL RATINGS BASED APPROACH

PART 4

Minimum requirements for IRB Approach

1. RATING SYSTEMS

1. A 'rating system' shall comprise all of the methods, processes, controls, data collection and IT systems that support the assessment of credit risk, the assignment of exposures to grades or pools (rating), and the quantification of default and loss estimates for a certain type of exposure.

2. If a credit institution uses multiple rating systems, the rationale for assigning an obligor or a transaction to a rating system shall be documented and applied in a manner that appropriately reflects the level of risk.

3. Assignment criteria and processes shall be periodically reviewed to determine whether they remain appropriate for the current portfolio and external conditions.

1.1. Structure of rating systems

4. Where a credit institution uses direct estimates of risk parameters these may be seen as the outputs of grades on a continuous rating scale.

1.1.1. Exposures to corporates, institutions and central governments and central banks

5. A rating system shall take into account obligor and transaction risk characteristics.

6. A rating system shall have an obligor rating scale which reflects exclusively quantification of the risk of obligor default. The obligor rating scale shall have a minimum of 7 grades for non-defaulted obligors and one for defaulted obligors.

7. An 'obligor grade' shall mean a risk category within a rating system's obligor rating scale, to which obligors are assigned on the basis of a specified and distinct set of rating criteria, from which estimates of PD are derived. A credit institution shall document the relationship between obligor grades in terms of the level of default risk each grade implies and the criteria used to distinguish that level of default risk.

8. Credit institutions with portfolios concentrated in a particular market segment and range of default risk shall have enough obligor grades within that range to avoid undue concentrations of obligors in a particular grade. Significant concentrations within a single grade shall be supported by convincing empirical evidence that the obligor grade covers a reasonably narrow PD band and that the default risk posed by all obligors in the grade falls within that band.

9. To qualify for recognition by the competent authorities of the use for capital requirement calculation of own estimates of LGDs, a rating system shall incorporate a distinct facility rating scale which exclusively reflects LGDrelated transaction characteristics.

10. A 'facility grade' shall mean a risk category within a rating system's facility scale, to which exposures are assigned on the basis of a specified and distinct set of rating criteria from which own estimates of LGDs are derived. The grade definition shall

include both a description of how exposures are assigned to the grade and of the criteria used to distinguish the level of risk across grades.

11. Significant concentrations within a single facility grade shall be supported by convincing empirical evidence that the facility grade covers a reasonably narrow LGD band, respectively, and that the risk posed by all exposures in the grade falls within that band.

12. Credit institutions using the methods set out in Part 1, point 6 for assigning risk weights for specialised lending exposures are exempt from the requirement to have an obligor rating scale which reflects exclusively quantification of the risk of obligor default for these exposures. Notwithstanding point 6, these institutions shall have for these exposures at least 4 grades for non-defaulted obligors and at least one grade for defaulted obligors.

1.1.2. Retail exposures

13. Rating systems shall reflect both obligor and transaction risk, and shall capture all relevant obligor and transaction characteristics.

14. The level of risk differentiation shall ensure that the number of exposures in a given grade or pool is sufficient to allow for meaningful quantification and validation of the loss characteristics at the grade or pool level. The distribution of exposures and obligors across grades or pools shall be such as to avoid excessive concentrations.

15. Credit institutions shall demonstrate that the process of assigning exposures to grades or pools provides for a meaningful differentiation of risk, provides for a grouping of sufficiently homogenous exposures, and allows for accurate and consistent estimation of loss characteristics at grade or pool level. For purchased receivables the grouping shall reflect the seller's underwriting practices and the heterogeneity of its customers.

16. Credit institutions shall consider the following risk drivers when assigning exposures to grades or pools.

(a) Obligor risk characteristics;

(b) Transaction risk characteristics, including product or collateral types or both. Credit institutions shall explicitly address cases where several exposures benefit from the same collateral; and

(c) Delinquency, unless the credit institution demonstrates to its competent authority that delinquency is not a material risk drivers for the exposure;

1.2. Assignment to grades or pools

17. A credit institution shall have specific definitions, processes and criteria for assigning exposures to grades or pools within a rating system.

(a) The grade or pool definitions and criteria shall be sufficiently detailed to allow those charged with assigning ratings to consistently assign obligors or facilities posing similar risk to the same grade or pool. This consistency shall exist across lines of business, departments and geographic locations;

(b) The documentation of the rating process shall allow third parties to understand the assignments of exposures to grades or pools, to replicate grade and pool assignments and to evaluate the appropriateness of the assignments to a grade or a pool; and

(c) The criteria shall also be consistent with the credit institution's internal lending standards and its policies for handling troubled obligors and facilities.

18. A credit institution shall take all relevant information into account in assigning obligors and facilities to grades or pools. Information shall be current and shall enable the credit institution to forecast the future performance of the exposure. The less information a credit institution has, the more conservative shall be its assignments of exposures to obligor and facility grades or pools. If a credit institution uses an external rating as a primary factor determining an internal rating assignment, the credit institution shall ensure that it considers other relevant information.

1.3. Assignment of exposures

1.3.1. Exposures to corporates, institutions and central governments and central banks

19. Each obligor shall be assigned to an obligor grade as Part of the credit approval process.

20. For those credit institutions permitted to use own estimates of LGDs and/or conversion factors, each exposure shall also be assigned to a facility grade as Part of the credit approval process.

21. Credit institutions using the methods set out in Part 1, point 6 for assigning risk weights for specialised lending exposures shall assign each of these exposures to a grade in accordance with point 12.

22. Each separate legal entity to which the credit institution is exposed shall be separately rated. A credit institution shall demonstrate to its competent authority that it has acceptable policies regarding the treatment of individual obligor clients and groups of connected clients.

23. Separate exposures to the same obligor shall be assigned to the same obligor grade, irrespective of any differences in the nature of each specific transaction. Exceptions, where separate exposures are allowed to result in multiple grades for the same obligor are:

(a) country transfer risk, this being dependent on whether the exposures are denominated in local or foreign currency;

(b) where the treatment of associated guarantees to an exposure may be reflected in an adjusted assignment to an obligor grade; and

(c) where consumer protection, bank secrecy or other legislation prohibit the exchange of client data.

1.3.2. Retail exposures

24. Each exposure shall be assigned to a grade or a pool as part of the credit approval process.

1.3.3. Overrides

25. For grade and pool assignments credit institutions shall document the situations in which human judgement may override the inputs or outputs of the assignment process and the personnel responsible for approving these overrides. Credit institutions shall document these overrides and the personnel responsible. Credit institutions shall analyse the performance of the exposures whose assignments have been overridden. This analysis shall include assessment of the performance of exposures whose

rating has been overridden by a particular person, accounting for all the responsible personnel.

1.4. Integrity of assignment process

1.4.1. Exposures to corporates, institutions and central governments and central banks

26. Assignments and periodic reviews of assignments shall be completed or approved by an independent party that does not directly benefit from decisions to extend the credit.

27. Credit institutions shall update assignments at least annually. High risk obligors and problem exposures shall be subject to more frequent review. Credit institutions shall undertake a new assignment if material information on the obligor or exposure becomes available.

28. A credit institution shall have an effective process to obtain and update relevant information on obligor characteristics that affect PDs, and on transaction characteristics that affect LGDs and/or conversion factors.

1.4.2. Retail exposures

29. A credit institution shall at least annually update obligor and facility assignments or review the loss characteristics and delinquency status of each identified risk pool, whichever applicable. A credit institution shall also at least annually review in a representative sample the status of individual exposures within each pool as a means of ensuring that exposures continue to be assigned to the correct pool.

1.5. Use of models

30. If a credit institution uses statistical models and other mechanical methods to assign exposures to obligors or facilities grades or pools, then:

(a) the credit institution shall demonstrate to its competent authority that the model has good predictive power and that capital requirements are not distorted as a result of its use. The input variables shall form a reasonable and effective basis for the resulting predictions. The model shall not have material biases;

(b) the credit institution shall have in place a process for vetting data inputs into the model, which includes an assessment of the accuracy, completeness and appropriateness of the data;

(c) the credit institution shall demonstrate that the data used to build the model is representative of the population of the credit institution's actual obligors or exposures;

(d) the credit institution shall have a regular cycle of model validation that includes monitoring of model performance and stability; review of model specification; and testing of model outputs against outcomes; and

(e) the credit institution shall complement the statistical model by human judgement and human oversight to review model-based assignments and to ensure that the models are used appropriately. Review procedures shall aim at finding and limiting errors associated with model weaknesses. Human judgements shall take into account all relevant information not considered by the model. The credit institution shall document how human judgement and model results are to be combined.

1.6. Documentation of rating systems

31. The credit institutions shall document the design and operational details of its rating systems. The documentation shall evidence compliance with the minimum requirements in this part, and address topics including portfolio differentiation, rating criteria, responsibilities of parties that rate obligors and exposures, frequency of assignment reviews, and management oversight of the rating process.

32. The credit institution shall document the rationale for and analysis supporting its choice of rating criteria. A credit institution shall document all major changes in the risk rating process, and such documentation shall support identification of changes made to the risk rating process subsequent to the last review by the competent authorities. The organisation of rating assignment including the rating assignment process and the internal control structure shall also be documented.

33. The credit institutions shall document the specific definitions of default and loss used internally and demonstrate consistency with the definitions set out in this Directive.

34. If the credit institution employs statistical models in the rating process, the credit institution shall document their methodologies. This material shall:

(a) provide a detailed outline of the theory, assumptions and/or mathematical and empirical basis of the assignment of estimates to grades, individual obligors, exposures, or pools, and the data source(s) used to estimate the model;

(b) establish a rigorous statistical process (including out-of-time and out-of-sample performance tests) for validating the model; and

(c) indicate any circumstances under which the model does not work effectively.

35. Use of a model obtained from a third-party vendor that claims proprietary technology is not a justification for exemption from documentation or any other of the requirements for rating systems. The burden is on the credit institution to satisfy competent authorities.

1.7. Data maintenance

36. Credit institutions shall collect and store data on aspects of their internal ratings as required under Articles 145 to 149.

1.7.1. Exposures to corporates, institutions and central governments and central banks

37. Credit institutions shall collect and store:

(a) complete rating histories on obligors and recognised guarantors;

(b) the dates the ratings were assigned;

(c) the key data and methodology used to derive the rating;

(d) the person responsible for the rating assignment;

(e) the identity of obligors and exposures that defaulted;

(f) the date and circumstances of such defaults; and

(g) data on the PDs and realised default rates associated with rating grades and ratings migration;

Credit institutions not using own estimates of LGDs and/or conversion factors shall collect and store data on comparisons of realised LGDs to the values as set out in Part 2, point 8 and realised conversion factors to the values as set out in Part 3, point 9.

38. Credit institutions using own estimates of LGDs and/or conversion factors shall collect and store:

(a) complete histories of data on the facility ratings and LGD and conversion factor estimates associated with each rating scale;

(b) the dates the ratings were assigned and the estimates were done;

(c) the key data and methodology used to derive the facility ratings and LGD and conversion factor estimates;

(d) the person who assigned the facility rating and the person who provided LGD and conversion factor estimates;

(e) data on the estimated and realised LGDs and conversion factors associated with each defaulted exposure;

(f) data on the LGD of the exposure before and after evaluation of the effects of a guarantee/or credit derivative, for those credit institutions that reflect the credit risk mitigating effects of guarantees or credit derivatives through LGD; and

(g) data on the components of loss for each defaulted exposure.

1.7.2. Retail exposures

39. Credit institutions shall collect and store:

(a) data used in the process of allocating exposures to grades or pools;

(b) data on the estimated PDs, LGDs and conversion factors associated with grades or pools of exposures;

(c) the identity of obligors and exposures that defaulted;

(d) for defaulted exposures, data on the grades or pools to which the exposure was assigned over the year prior to default and the realised outcomes on LGD and conversion factor; and

(e) data on loss rates for qualifying revolving retail exposures.

1.8. Stress tests used in assessment of capital adequacy

40. A credit institution shall have in place sound stress testing processes for use in the assessment of its capital adequacy. Stress testing shall involve identifying possible events or future changes in economic conditions that could have unfavourable effects on a credit institution's credit exposures and assessment of the credit institution's ability to withstand such changes.

41. A credit institution shall regularly perform a credit risk stress test to assess the effect of certain specific conditions on its total capital requirements for credit risk. The test shall be one chosen by the credit institution, subject to supervisory review. The test to be employed shall be meaningful and reasonably conservative, considering at least the effect of mild recession scenarios. A credit institution shall assess migration in its ratings under the stress test scenarios. Stressed portfolios shall contain the vast majority of a credit institution's total exposure.

42. Credit institutions using the treatment set out in Part 1, point 4 shall consider as Part of their stress testing framework the impact of a deterioration in the credit quality of protection providers, in particular the impact of protection providers falling outside the eligibility criteria.

2. RISK QUANTIFICATION

43. In determining the risk parameters to be associated with rating grades or pools, credit institutions shall apply the following requirements.

2.1. Definition of default

44. A 'default' shall be considered to have occurred with regard to a particular obligor when either or both of the two following events has taken place:

(a) the credit institution considers that the obligor is unlikely to pay its credit obligations to the credit institution, the parent undertaking or any of its subsidiaries in full, without recourse by the credit institution to actions such as realising security (if held);

(b) the obligor is past due more than 90 days on any material credit obligation to the credit institution, the parent undertaking or any of its subsidiaries.

For overdrafts, days past due commence once an obligor has breached an advised limit, has been advised a limit smaller than current outstandings, or has drawn credit without authorisation and the underlying amount is material.

An 'advised limit' shall mean a limit which has been brought to the knowledge of the obligor.

Days past due for credit cards commence on the minimum payment due date.

In the case of retail exposures and exposures to public sector entities (PSE) the competent authorities shall set a number of days past due as specified in point 48.

In the case of corporate exposures the competent authorities may set a number of days past due as specified in Article 154(7).

In the case of retail exposures credit institutions may apply the definition of default at a facility level.

In all cases, the exposure past due shall be above a threshold defined by the competent authorities and which reflects a reasonable level of risk.

45. Elements to be taken as indications of unlikeliness to pay shall include:

(a) The credit institution puts the credit obligation on non-accrued status,

(b) The credit institution makes a value adjustment resulting from a significant perceived decline in credit quality subsequent to the credit institution taking on the exposure,

(c) The credit institution sells the credit obligation at a material credit-related economic loss,

(d) The credit institution consents to a distressed restructuring of the credit obligation where this is likely to result in a diminished financial obligation caused by the material forgiveness, or postponement, of principal, interest or (where relevant) fees. This includes, in the case of equity exposures assessed under a PD/LGD Approach, distressed restructuring of the equity itself,

(e) The credit institution has filed for the obligor's bankruptcy or a similar order in respect of an obligor's credit obligation to the credit institution, the parent undertaking or any of its subsidiaries, and

(f) The obligor has sought or has been placed in bankruptcy or similar protection where this would avoid or delay repayment of a credit obligation to the credit institution, the parent undertaking or any of its subsidiaries.

46. Credit institutions that use external data that is not itself consistent with the definition of default, shall demonstrate to their competent authorities that appropriate adjustments have been made to achieve broad equivalence with the definition of default.

47. If the credit institution considers that a previously defaulted exposure is such that no trigger of default continues to apply, the credit institution shall rate the obligor or facility as they would for a non-defaulted exposure. Should the definition of default subsequently be triggered, another default would be deemed to have occurred.

48. For retail and PSE exposures, the competent authorities of each Member State shall set the exact number of days past due that all credit institutions in its jurisdiction shall abide by under the definition of default set out in point 44, for exposures to such counterparts situated within this Member State. The specific number shall fall within 90#180 days and may differ across product lines. For exposures to such counterparts situated in the territories of other Member States, the competent authorities shall set a number of days past due which is not higher than the number set by the competent authority of the respective Member State.

2.2. Overall requirements for estimation

49. A credit institution's own estimates of the risk parameters PD, LGD, conversion factor and EL shall incorporate all relevant data, information and methods. The estimates shall be derived using both historical experience and empirical evidence, and not based purely on judgemental considerations. The estimates shall be plausible and intuitive and shall be based on the material drivers of the respective risk parameters. The less data a credit institution has, the more conservative it shall be in its estimation.

50. The credit institution shall be able to provide a breakdown of its loss experience in terms of default frequency, LGD, conversion factor, or loss where EL estimates are used, by the factors it sees as the drivers of the respective risk parameters. The credit institution shall demonstrate that its estimates are representative of long run experience.

51. Any changes in lending practice or the process for pursuing recoveries over the observation periods referred to in points 66, 71, 82, 86, 93 and 95 shall be taken into account. A credit institution's estimates shall reflect the implications of technical advances and new data and other information, as it becomes available. Credit institutions shall review their estimates when new information comes to light but at least on an annual basis.

52. The population of exposures represented in the data used for estimation, the lending standards used when the data was generated and other relevant characteristics shall be comparable with those of the credit institution's exposures and standards. The credit institution shall also demonstrate that the economic or market conditions that underlie the data are relevant to current and foreseeable conditions. The number of exposures in the sample and the data period used for quantification shall be sufficient to provide the credit institution with confidence in the accuracy and robustness of its estimates.

53. For purchased receivables the estimates shall reflect all relevant information available to the purchasing credit institution regarding the quality of the underlying receivables, including data for similar pools provided by the seller, by the purchasing credit institution, or by external sources. The purchasing credit institution shall evaluate any data relied upon which is provided by the seller.

54. A credit institution shall add to its estimates a margin of conservatism that is related to the expected range of estimation errors. Where methods and data are less satisfactory and the expected range of errors is larger, the margin of conservatism shall be larger.

55. If credit institutions use different estimates for the calculation of risk weights and for internal purposes, it shall be documented and their reasonableness shall be demonstrated to the competent authority.

56. If credit institutions can demonstrate to their competent authorities that for data that have been collected prior to the date of implementation of this Directive appropriate adjustments have been made to achieve broad equivalence with the definitions of default or loss, competent authorities may allow the credit institutions some flexibility in the application of the required standards for data.

57. If a credit institution uses data that is pooled across credit institutions it shall demonstrate that:

(a) the rating systems and criteria of other credit institutions in the pool are similar with its own;

(b) the pool is representative of the portfolio for which the pooled data is used; and

(c) the pooled data is used consistently over time by the credit institution for its estimates.

58. If a credit institution uses data that is pooled across credit institutions, it shall remain responsible for the integrity of its rating systems. The credit institution shall demonstrate to the competent authority that it has sufficient in-house understanding of its rating systems, including effective ability to monitor and audit the rating process.

2.2.1. Requirements specific to PD estimation
Exposures to corporates, institutions and central governments and central banks

59. Credit institutions shall estimate PDs by obligor grade from long run averages of one-year default rates.

60. For purchased corporate receivables credit institutions may estimate ELs by obligor grade from long run averages of one-year realised default rates.

61. If a credit institution derives long run average estimates of PDs and LGDs for purchased corporate receivables from an estimate of EL, and an appropriate estimate of PD or LGD, the process for estimating total losses shall meet the overall standards for estimation of PD and LGD set out in this part, and the outcome shall be consistent with the concept of LGD as set out in point 73.

62. Credit institutions shall use PD estimation techniques only with supporting analysis. Credit institutions shall recognise the importance of judgmental considerations in combining results of techniques and in making adjustments for limitations of techniques and information.

63. To the extent that a credit institution uses data on internal default experience for the estimation of PDs, it shall demonstrate in its analysis that the estimates are reflective

of underwriting standards and of any differences in the rating system that generated the data and the current rating system. Where underwriting standards or rating systems have changed, the credit institution shall add a greater margin of conservatism in its estimate of PD.

64. To the extent that a credit institution associates or maps its internal grades to the scale used by an ECAI or similar organisations and then attributes the default rate observed for the external organisation's grades to the credit institution's grades, mappings shall be based on a comparison of internal rating criteria to the criteria used by the external organisation and on a comparison of the internal and external ratings of any common obligors. Biases or inconsistencies in the mapping approach or underlying data shall be avoided. The external organisation's criteria underlying the data used for quantification shall be oriented to default risk only and not reflect transaction characteristics. The credit institution's analysis shall include a comparison of the default definitions used, subject to the requirements in points 44 to 48. The credit institution shall document the basis for the mapping.

65. To the extent that a credit institution uses statistical default prediction models it is allowed to estimate PDs as the simple average of default-probability estimates for individual obligors in a given grade. The credit institution's use of default probability models for this purpose shall meet the standards specified in point 30.

66. Irrespective of whether a credit institution is using external, internal, or pooled data sources, or a combination of the three, for its PD estimation, the length of the underlying historical observation period used shall be at least five years for at least one source. If the available observation period spans a longer period for any source, and this data is relevant, this longer period shall be used. This point also applies to the PD/LGD Approach to equity. Member States may allow credit institutions which are not permitted to use own estimates of LGDs or conversion factors to have, when they implement the IRB Approach, relevant data covering a period of two years. The period to be covered shall increase by one year each year until relevant data cover a period of five years.

Retail exposures

67. Credit institutions shall estimate PDs by obligor grade or pool from long run averages of one-year default rates.

68. Notwithstanding point 67, PD estimates may also be derived from realised losses and appropriate estimates of LGDs.

69. Credit institutions shall regard internal data for assigning exposures to grades or pools as the primary source of information for estimating loss characteristics. Credit institutions are permitted to use external data (including pooled data) or statistical models for quantification provided a strong link can be demonstrated between:

(a) the credit institution's process of assigning exposures to grades or pools and the process used by the external data source; and

(b) the credit institution's internal risk profile and the composition of the external data.

For purchased retail receivables, credit institutions may use external and internal reference data. Credit institutions shall use all relevant data sources as points of comparison.

70. If a credit institution derives long run average estimates of PD and LGD for retail from an estimate of total losses and an appropriate estimate of PD or LGD, the process for estimating total losses shall meet the overall standards for estimation of PD and LGD

set out in this part, and the outcome shall be consistent with the concept of LGD as set out in point 73.

71. Irrespective of whether a credit institution is using external, internal or pooled data sources or a combination of the three, for their estimation of loss characteristics, the length of the underlying historical observation period used shall be at least five years for at least one source. If the available observation spans a longer period for any source, and these data are relevant, this longer period shall be used. A credit institution need not give equal importance to historic data if it can convince its competent authority that more recent data is a better predictor of loss rates. Member States may allow credit institutions to have, when they implement the IRB Approach, relevant data covering a period of two years. The period to be covered shall increase by one year each year until relevant data cover a period of five years.

72. Credit institutions shall identify and analyse expected changes of risk parameters over the life of credit exposures (seasoning effects).

2.2.2. Requirements specific to own-LGD estimates

73. Credit institutions shall estimate LGDs by facility grade or pool on the basis of the average realised LGDs by facility grade or pool using all observed defaults within the data sources (default weighted average).

74. Credit institutions shall use LGD estimates that are appropriate for an economic downturn if those are more conservative than the long-run average. To the extent a rating system is expected to deliver realised LGDs at a constant level by grade or pool over time, credit institutions shall make adjustments to their estimates of risk parameters by grade or pool to limit the capital impact of an economic downturn.

75. A credit institution shall consider the extent of any dependence between the risk of the obligor with that of the collateral or collateral provider. Cases where there is a significant degree of dependence shall be addressed in a conservative manner.

76. Currency mismatches between the underlying obligation and the collateral shall be treated conservatively in the credit institution's assessment of LGD.

77. To the extent that LGD estimates take into account the existence of collateral, these estimates shall not solely be based on the collateral's estimated market value. LGD estimates shall take into account the effect of the potential inability of credit institutions to expeditiously gain control of their collateral and liquidate it.

78. To the extent that LGD estimates take into account the existence of collateral, credit institutions must establish internal requirements for collateral management, legal certainty and risk management that are generally consistent with those set out in Annex VIII, Part 2.

79. To the extent that a credit institution recognises collateral for determining the exposure value for counterparty credit risk according to Annex III, Part 5 or 6, any amount expected to be recovered from the collateral shall not be taken into account in the LGD estimates.

80. For the specific case of exposures already in default, the credit institution shall use the sum of its best estimate of expected loss for each exposure given current economic circumstances and exposure status and the possibility of additional unexpected losses during the recovery period.

81. To the extent that unpaid late fees have been capitalised in the credit institution's income statement, they shall be added to the credit institution's measure of exposure and loss.

Exposures to corporates, institutions and central governments and central banks

82. Estimates of LGD shall be based on data over a minimum of five years, increasing by one year each year after implementation until a minimum of seven years is reached, for at least one data source. If the available observation period spans a longer period for any source, and the data is relevant, this longer period shall be used.

Retail exposures

83. Notwithstanding point 73, LGD estimates may be derived from realised losses and appropriate estimates of PDs.

84. Notwithstanding point 89, credit institutions may reflect future drawings either in their conversion factors or in their LGD estimates.

85. For purchased retail receivables credit institutions may use external and internal reference data to estimate LGDs.

86. Estimates of LGD shall be based on data over a minimum of five years. Notwithstanding point 73, a credit institution needs not give equal importance to historic data if it can demonstrate to its competent authority that more recent data is a better predictor of loss rates. Member States may allow credit institutions to have, when they implement the IRB Approach, relevant data covering a period of two years. The period to be covered shall increase by one year each year until relevant data cover a period of five years.

2.2.3. Requirements specific to own-conversion factor estimates

87. Credit institutions shall estimate conversion factors by facility grade or pool on the basis of the average realised conversion factors by facility grade or pool using all observed defaults within the data sources (default weighted average).

88. Credit institutions shall use conversion factor estimates that are appropriate for an economic downturn if those are more conservative than the long-run average. To the extent a rating system is expected to deliver realised conversion factors at a constant level by grade or pool over time, credit institutions shall make adjustments to their estimates of risk parameters by grade or pool to limit the capital impact of an economic downturn.

89. Credit institutions' estimates of conversion factors shall reflect the possibility of additional drawings by the obligor up to and after the time a default event is triggered.

The conversion factor estimate shall incorporate a larger margin of conservatism where a stronger positive correlation can reasonably be expected between the default frequency and the magnitude of conversion factor.

90. In arriving at estimates of conversion factors credit institutions shall consider their specific policies and strategies adopted in respect of account monitoring and payment processing. Credit institutions shall also consider their ability and willingness to prevent further drawings in circumstances short of payment default, such as covenant violations or other technical default events.

91. Credit institutions shall have adequate systems and procedures in place to monitor facility amounts, current outstandings against committed lines and changes in

outstandings per obligor and per grade. The credit institution shall be able to monitor outstanding balances on a daily basis.

92. If credit institutions use different estimates of conversion factors for the calculation of risk weighted exposure amounts and internal purposes it shall be documented and their reasonableness shall be demonstrated to the competent authority.

Exposures to corporates, institutions and central governments and central banks

93. Estimates of conversion factors shall be based on data over a minimum of five years, increasing by one year each year after implementation until a minimum of seven years is reached, for at least one data source. If the available observation period spans a longer period for any source, and the data is relevant, this longer period shall be used.

Retail exposures

94. Notwithstanding point 89, credit institutions may reflect future drawings either in their conversion factors or in their LGD estimates.

95. Estimates of conversion factors shall be based on data over a minimum of five years. Notwithstanding point 87, a credit institution need not give equal importance to historic data if it can demonstrate to its competent authority that more recent data is a better predictor of draw downs. Member States may allow credit institutions to have, when they implement the IRB Approach, relevant data covering a period of two years. The period to be covered shall increase by one year each year until relevant data cover a period of five years.

2.2.4. Minimum requirements for assessing the effect of guarantees and credit derivatives

Exposures to corporates, institutions and central governments and central banks where own estimates of LGD are used and retail exposures

96. The requirements in points 97 to 104 shall not apply for guarantees provided by institutions and central governments and central banks if the credit institution has received approval to apply the rules of Articles 78 to 83 for exposures to such entities. In this case the requirements of Articles 90 to 93 shall apply.

97. For retail guarantees, these requirements also apply to the assignment of exposures to grades or pools, and the estimation of PD.

Eligible guarantors and guarantees

98. Credit institutions shall have clearly specified criteria for the types of guarantors they recognise for the calculation of risk weighted exposure amounts.

99. For recognised guarantors the same rules as for obligors as set out in points 17 to 29 shall apply.

100. The guarantee shall be evidenced in writing, non-cancellable on the part of the guarantor, in force until the obligation is satisfied in full (to the extent of the amount and tenor of the guarantee) and legally enforceable against the guarantor in a jurisdiction where the guarantor has assets to attach and enforce a judgement. Guarantees prescribing conditions under which the guarantor may not be obliged to perform (conditional guarantees) may be recognised subject to approval of competent authorities. The credit institution shall demonstrate that the assignment criteria adequately address any potential reduction in the risk mitigation effect.

Adjustment criteria

101. A credit institution shall have clearly specified criteria for adjusting grades, pools or LGD estimates, and, in the case of retail and eligible purchased receivables, the process

of allocating exposures to grades or pools, to reflect the impact of guarantees for the calculation of risk weighted exposure amounts. These criteria shall comply with the minimum requirements set out in points 17 to 29.

102. The criteria shall be plausible and intuitive. They shall address the guarantor's ability and willingness to perform under the guarantee, the likely timing of any payments from the guarantor, the degree to which the guarantor's ability to perform under the guarantee is correlated with the obligor's ability to repay, and the extent to which residual risk to the obligor remains.

Credit derivatives

103. The minimum requirements for guarantees in this part shall apply also for single#name credit derivatives. In relation to a mismatch between the underlying obligation and the reference obligation of the credit derivative or the obligation used for determining whether a credit event has occurred, the requirements set out under Annex VIII Part 2, point 21 shall apply. For retail exposures and eligible purchased receivables, this point applies to the process of allocating exposures to grades or pools.

104. The criteria shall address the payout structure of the credit derivative and conservatively assess the impact this has on the level and timing of recoveries. The credit institution shall consider the extent to which other forms of residual risk remain.

2.2.5. Minimum requirements for purchased receivables

Legal certainty

105. The structure of the facility shall ensure that under all foreseeable circumstances the credit institution has effective ownership and control of all cash remittances from the receivables. When the obligor makes payments directly to a seller or servicer, the credit institution shall verify regularly that payments are forwarded completely and within the contractually agreed terms. ‘Servicer’ shall mean an entity that manages a pool of purchased receivables or the underlying credit exposures on a day-to-day basis. Credit institutions shall have procedures to ensure that ownership over the receivables and cash receipts is protected against bankruptcy stays or legal challenges that could materially delay the lender's ability to liquidate or assign the receivables or retain control over cash receipts.

Effectiveness of monitoring systems

106. The credit institution shall monitor both the quality of the purchased receivables and the financial condition of the seller and servicer. In particular:

(a) the credit institution shall assess the correlation among the quality of the purchased receivables and the financial condition of both the seller and servicer, and have in place internal policies and procedures that provide adequate safeguards to protect against any contingencies, including the assignment of an internal risk rating for each seller and servicer;

(b) the credit institution shall have clear and effective policies and procedures for determining seller and servicer eligibility. The credit institution or its agent shall conduct periodic reviews of sellers and servicers in order to verify the accuracy of reports from the seller or servicer, detect fraud or operational weaknesses, and verify the quality of the seller's credit policies and servicer's collection policies and procedures. The findings of these reviews shall be documented;

(c) the credit institution shall assess the characteristics of the purchased receivables pools, including over-advances; history of the seller's arrears, bad debts, and bad debt allowances; payment terms, and potential contra accounts;

(d) the credit institution shall have effective policies and procedures for monitoring on an aggregate basis single-obligor concentrations both within and across purchased receivables pools; and

(e) the credit institution shall ensure that it receives from the servicer timely and sufficiently detailed reports of receivables ageings and dilutions to ensure compliance with the credit institution's eligibility criteria and advancing policies governing purchased receivables, and provide an effective means with which to monitor and confirm the seller's terms of sale and dilution.

Effectiveness of work-out systems

107. The credit institution shall have systems and procedures for detecting deteriorations in the seller's financial condition and purchased receivables quality at an early stage, and for addressing emerging problems pro-actively. In particular, the credit institution shall have clear and effective policies, procedures, and information systems to monitor covenant violations, and clear and effective policies and procedures for initiating legal actions and dealing with problem purchased receivables.

Effectiveness of systems for controlling collateral, credit availability, and cash

108. The credit institution shall have clear and effective policies and procedures governing the control of purchased receivables, credit, and cash. In particular, written internal policies shall specify all material elements of the receivables purchase programme, including the advancing rates, eligible collateral, necessary documentation, concentration limits, and the way cash receipts are to be handled. These elements shall take appropriate account of all relevant and material factors, including the seller and servicer's financial condition, risk concentrations, and trends in the quality of the purchased receivables and the seller's customer base, and internal systems shall ensure that funds are advanced only against specified supporting collateral and documentation.

Compliance with the credit institution's internal policies and procedures

109. The credit institution shall have an effective internal process for assessing compliance with all internal policies and procedures. The process shall include regular audits of all critical phases of the credit institution's receivables purchase programme, verification of the separation of duties between firstly the assessment of the seller and servicer and the assessment of the obligor and secondly between the assessment of the seller and servicer and the field audit of the seller and servicer, and evaluations of back office operations, with particular focus on qualifications, experience, staffing levels, and supporting automation systems.

3. VALIDATION OF INTERNAL ESTIMATES

110. Credit institutions shall have robust systems in place to validate the accuracy and consistency of rating systems, processes, and the estimation of all relevant risk parameters. A credit institution shall demonstrate to its competent authority that the internal validation process enables it to assess the performance of internal rating and risk estimation systems consistently and meaningfully.

111. Credit institutions shall regularly compare realised default rates with estimated PDs for each grade and, where realised default rates are outside the expected range for that grade, credit institutions shall specifically analyse the reasons for the deviation. Credit institutions using own estimates of LGDs and/or conversion factors shall also perform analogous analysis for these estimates. Such comparisons shall make use of historical data that cover as long a period as possible. The credit institution shall document the

methods and data used in such comparisons. This analysis and documentation shall be updated at least annually.

112. Credit institutions shall also use other quantitative validation tools and comparisons with relevant external data sources. The analysis shall be based on data that are appropriate to the portfolio, are updated regularly, and cover a relevant observation period. Credit institutions' internal assessments of the performance of their rating systems shall be based on as long a period as possible.

113. The methods and data used for quantitative validation shall be consistent through time. Changes in estimation and validation methods and data (both data sources and periods covered) shall be documented.

114. Credit institutions shall have sound internal standards for situations where deviations in realised PDs, LGDs, conversion factors and total losses, where EL is used, from expectations, become significant enough to call the validity of the estimates into question. These standards shall take account of business cycles and similar systematic variability in default experience. Where realised values continue to be higher than expected values, credit institutions shall revise estimates upward to reflect their default and loss experience.

4. CALCULATION OF RISK WEIGHTED EXPOSURE AMOUNTS FOR EQUITY EXPOSURES UNDER THE INTERNAL MODELS APPROACH

4.1. Capital requirement and risk quantification

115. For the purpose of calculating capital requirements credit institutions shall meet the following standards:

(a) the estimate of potential loss shall be robust to adverse market movements relevant to the long-term risk profile of the credit institution's specific holdings. The data used to represent return distributions shall reflect the longest sample period for which data is available and meaningful in representing the risk profile of the credit institution's specific equity exposures. The data used shall be sufficient to provide conservative, statistically reliable and robust loss estimates that are not based purely on subjective or judgmental considerations. Credit institutions shall demonstrate to competent authorities that the shock employed provides a conservative estimate of potential losses over a relevant long-term market or business cycle. The credit institution shall combine empirical analysis of available data with adjustments based on a variety of factors in order to attain model outputs that achieve appropriate realism and conservatism. In constructing Value at Risk (VaR) models estimating potential quarterly losses, credit institutions may use quarterly data or convert shorter horizon period data to a quarterly equivalent using an analytically appropriate method supported by empirical evidence and through a well-developed and documented thought process and analysis. Such an approach shall be applied conservatively and consistently over time. Where only limited relevant data is available the credit institution shall add appropriate margins of conservatism;

(b) the models used shall be able to capture adequately all of the material risks embodied in equity returns including both the general market risk and specific risk exposure of the credit institution's equity portfolio. The internal models shall adequately explain historical price variation, capture both the magnitude and changes in the composition of potential concentrations, and be robust to adverse market environments. The population of risk exposures represented in the data used for estimation shall be closely matched to or at least comparable with those of the credit institution's equity exposures;

(c) the internal model shall be appropriate for the risk profile and complexity of a credit institution's equity portfolio. Where a credit institution has material holdings with values that are highly non-linear in nature the internal models shall be designed to capture appropriately the risks associated with such instruments;

(d) mapping of individual positions to proxies, market indices, and risk factors shall be plausible, intuitive, and conceptually sound;

(e) credit institutions shall demonstrate through empirical analyses the appropriateness of risk factors, including their ability to cover both general and specific risk;

(f) the estimates of the return volatility of equity exposures shall incorporate relevant and available data, information, and methods. Independently reviewed internal data or data from external sources (including pooled data) shall be used; and

(g) a rigorous and comprehensive stress-testing programme shall be in place;

4.2. Risk management process and controls

116. With regard to the development and use of internal models for capital requirement purposes, credit institutions shall establish policies, procedures, and controls to ensure the integrity of the model and modelling process. These policies, procedures, and controls shall include the following:

(a) full integration of the internal model into the overall management information systems of the credit institution and in the management of the non-trading book equity portfolio. Internal models shall be fully integrated into the credit institution's risk management infrastructure if they are particularly used inmeasuring and assessing equity portfolio performance (including the risk#adjusted performance), allocating economic capital to equity exposures and evaluating overall capital adequacy and the investment management process;

(b) established management systems, procedures, and control functions for ensuring the periodic and independent review of all elements of the internal modelling process, including approval of model revisions, vetting of model inputs, and review of model results, such as direct verification of risk computations. These reviews shall assess the accuracy, completeness, and appropriateness of model inputs and results and focus on both finding and limiting potential errors associated with known weaknesses and identifying unknown model weaknesses. Such reviews may be conducted by an internal independent unit, or by an independent external third party;

(c) adequate systems and procedures for monitoring investment limits and the risk exposures of equity exposures;

(d) the units responsible for the design and application of the model shall be functionally independent from the units responsible for managing individual investments; and

(e) parties responsible for any aspect of the modelling process shall be adequately qualified. Management shall allocate sufficient skilled and competent resources to the modelling function.

4.3. Validation and documentation

117. Credit institutions shall have a robust system in place to validate the accuracy and consistency of their internal models and modelling processes. All material elements of the internal models and the modelling process and validation shall be documented.

118. Credit institutions shall use the internal validation process to assess the performance of its internal models and processes in a consistent and meaningful way.

119. The methods and data used for quantitative validation shall be consistent through time. Changes in estimation and validation methods and data (both data sources and periods covered) shall be documented.

120. Credit institutions shall regularly compare actual equity returns (computed using realised and unrealised gains and losses) with modelled estimates. Such comparisons shall make use of historical data that cover as long a period as possible. The credit institution shall document the methods and data used in such comparisons. This analysis and documentation shall be updated at least annually.

121. Credit institutions shall make use of other quantitative validation tools and comparisons with external data sources. The analysis shall be based on data that are appropriate to the portfolio, are updated regularly, and cover a relevant observation period. Credit institutions' internal assessments of the performance of their models shall be based on as long a period as possible.

122. Credit institutions shall have sound internal standards for situations where comparison of actual equity returns with the models estimates calls the validity of the estimates or of the models as such into question. These standards shall take account of business cycles and similar systematic variability in equity returns. All adjustments made to internal models in response to model reviews shall be documented and consistent with the credit institution's model review standards.

123. The internal model and the modelling process shall be documented, including the responsibilities of parties involved in the modelling, and the model approval and model review processes.

5. CORPORATE GOVERNANCE AND OVERSIGHT

5.1. Corporate Governance

124. All material aspects of the rating and estimation processes shall be approved by the credit institution's management body described in Article 11 or a designated committee thereof and senior management. These parties shall possess a general understanding of the credit institution's rating systems and detailed comprehension of its associated management reports.

125. Senior management shall provide notice to the management body described in Article 11 or a designated committee thereof of material changes or exceptions from established policies that will materially impact the operations of the credit institution's rating systems.

126. Senior management shall have a good understanding of the rating systems designs and operations. Senior management shall ensure, on an ongoing basis that the rating systems are operating properly. Senior management shall be regularly informed by the credit risk control units about the performance of the rating process, areas needing improvement, and the status of efforts to improve previously identified deficiencies.

127. Internal ratings-based analysis of the credit institution's credit risk profile shall be an essential part of the management reporting to these parties. Reporting shall include at least risk profile by grade, migration across grades, estimation of the relevant parameters per grade, and comparison of realised default rates, and to the extent that own estimates are used of realised LGDs and realised conversion factors against expectations and stress-test results. Reporting frequencies shall depend on the significance and type of information and the level of the recipient.

5.2. Credit risk control

128. The credit risk control unit shall be independent from the personnel and management functions responsible for originating or renewing exposures and report directly to senior management. The unit shall be responsible for the design or selection, implementation, oversight and performance of the rating systems. It shall regularly produce and analyse reports on the output of the rating systems.

129. The areas of responsibility for the credit risk control unit(s) shall include:

(a) testing and monitoring grades and pools;

(b) production and analysis of summary reports from the credit institution's rating systems;

(c) implementing procedures to verify that grade and pool definitions are consistently applied across departments and geographic areas;

(d) reviewing and documenting any changes to the rating process, including the reasons for the changes;

(e) reviewing the rating criteria to evaluate if they remain predictive of risk. Changes to the rating process, criteria or individual rating parameters shall be documented and retained;

(f) active participation in the design or selection, implementation and validation of models used in the rating process;

(g) oversight and supervision of models used in the rating process; and

(h) ongoing review and alterations to models used in the rating process.

130. Notwithstanding point 129, credit institutions using pooled data according to points 57 and 58 may outsource the following tasks:

(a) production of information relevant to testing and monitoring grades and pools;

(b) production of summary reports from the credit institution's rating systems;

(c) production of information relevant to review of the rating criteria to evaluate if they remain predictive of risk;

(d) documentation of changes to the rating process, criteria or individual rating parameters; and

(e) production of information relevant to ongoing review and alterations to models used in the rating process.

Credit institutions making use of this point shall ensure that the competent authorities have access to all relevant information from the third party that is necessary for examining compliance with the minimum requirements and that the competent authorities may perform on-site examinations to the same extent as within the credit institution.

5.3. Internal Audit

131. Internal audit or another comparable independent auditing unit shall review at least annually the credit institution's rating systems and its operations, including the operations of the credit function and the estimation of PDs, LGDs, ELs and conversion factors. Areas of review shall include adherence to all applicable minimum requirements.