(ix) *Stress testing*

As a minimum, a bank that adopted the IRB approach for the measurement of the bank's exposure to credit risk shall have in place a stress-testing process in respect of the bank's exposure to credit risk, which stress testing process-

(A) shall include an identification of possible events or future changes in economic conditions that may have an unfavourable effect on the bank's risk exposures and an assessment of the bank's ability to withstand such events or changes, which events or changes may include-

(i) economic or industry downturns;

(ii) market-risk events;

(iii) liquidity constraints;

(iv) mild recession scenarios;

(B) shall in the case of protected exposure subject to the double default approach envisaged in subregulation (12)(g) include an assessment of the impact of-

(i) a deterioration in the credit quality of protection providers, in particular the impact of protection providers falling outside the eligibility criteria specified in subregulation (12)(g) due to rating changes;

(ii) the default of one but not both the obligor and the protection provider,

and the consequent increase in risk exposure and the required amount of capital and reserve funds at the time of the said default;

(C) shall be meaningful, based on the environment in which the bank conducts business;

(D) shall assess the effect of a recession on the bank's PD ratios, LGD ratios and EAD amounts;

(E) shall make provision for an internal ratings migration in respect of at least some of the bank's exposure to credit risk;

(F) shall appropriately evaluate evidence of rating migration in respect of external ratings.

(x) *Validation of internal estimates*

As a minimum, a bank that adopted the IRB approach for the measurement of the bank's exposure to credit risk-

(A) shall have in place a robust system to validate the accuracy and consistency of the bank's rating systems and processes, including all estimates of relevant risk components, which internal assessments shall be based on long data histories, covering a range of economic conditions and ideally one or more complete business cycles;

(B) shall regularly compare realised default rates with estimated PD ratios in respect of each grade and shall demonstrate to the satisfaction of the Registrar that the realised default rates are within the expected range for a particular grade;

(C) shall duly document the data and the methods used to compare realised default rates with estimated PD ratios in respect of each grade, including the periods that were covered and any changes in the data and methods that were used, which analysis and documentation shall be updated at appropriate intervals, but not less frequently than once every year;

(D) shall make use of quantitative validation tools and comparisons with relevant external data sources in order to validate the bank's internal estimates of risk components;

(E) shall demonstrate to the satisfaction of the Registrar that the bank's quantitative testing methods and validation methods do not vary systematically with the economic cycle;

(F) shall have in place sufficiently robust internal standards to deal with situations where realised PD ratios deviate substantially from expected PD ratios provided that when the realised values continue to be higher than expected values the bank shall adjust its estimates of risk components upward in order to reflect the appropriate default and loss experiences.

(xi) *Disclosure*

A bank that obtained the approval of the Registrar to adopt the IRB approach for the measurement of the bank's exposure to credit risk shall disclose in its annual financial statements and other disclosures to the public sufficiently detailed qualitative and quantitative information in accordance with the relevant requirements specified in regulation 43(2).

(xii) Securitisation and/or resecuritisation exposures

A bank that obtained the prior written approval of the Registrar to adopt the IRB approach for the measurement of the bank's exposure to credit risk shall apply the IRB approach for the measurement of the bank's securitisation or resecuritisation exposure, provided that-

(A) the bank shall in addition to such conditions as may be specified in writing by the Registrar comply with the relevant requirements specified in this subparagraph (xii) and the relevant requirements specified in paragraphs (e) to (p) below;

(B) unless the Registrar determines otherwise, a bank that adopted the IRB approach in respect of some underlying exposures and the standardised approach in respect of the remainder of underlying credit exposures shall apply the approach that relates to the predominant part of underlying credit exposures in respect of the bank's exposure to a securitisation scheme or resecuritisation exposure;

(C) when no specific IRB treatment is specified in respect of a particular underlying asset type, a bank that obtained the approval of the Registrar to adopt the IRB approach, which bank-

(i) acts as an originator, shall apply the standardised approach specified in subregulation (6)(h) above to calculate the bank's capital requirement in respect of the relevant securitisation or resecuritisation exposure;

(ii) does not act as an originator in respect of the securitised or resecuritised assets or exposures, but instead invests in an instrument issued in respect of the securitisation or resecuritisation scheme, shall apply the ratings-based approach specified in paragraph (e) below to calculate the bank's capital requirement in respect of the relevant securitisation or resecuritisation exposure.

(D) when-

(i) a securitisation or resecuritisation exposure is rated or a rating can be inferred as envisaged in paragraphs (e) and (f) below, the bank shall apply the ratings-based approach specified in paragraph (e) below to the relevant securitisation or resecuritisation exposure;

(ii) an external or inferred rating is not available in respect of a securitisation or resecuritisation exposure, the bank shall apply the internal assessment approach or standard formula approach respectively specified in paragraphs (g) and (i) below, provided that the internal assessment approach shall be applied only to exposures that relate to an asset-backed commercial-paper programme, which exposures shall comply with the relevant requirements specified in paragraph (g) below;

(iii) the bank or another institution within the banking group of which such a bank is a member, acting as a servicing agent, a repackager, a sponsor in respect of a securitisation scheme other than an asset-backed commercial paper programme or a sponsor in respect of an asset-backed commercial paper programme provides a liquidity facility in respect of such a securitisation scheme, which liquidity facility complies with the relevant conditions specified in paragraph 7 of the exemption notice relating to securitisation schemes, the said bank or institution shall in the case of-

(aa) a rated liquidity facility apply-

(i) the ratings-based approach specified in paragraph (e) below;

(ii) a credit-conversion factor of 100 per cent to the relevant rated liquidity facility;

(bb) an unrated facility in respect of which an inferred rating is not available apply-

(i) the internal assessment approach specified in paragraph (g) below, provided that the bank shall comply with the relevant requirements specified in paragraphs (g) and (h) below, or

(ii) the standard formula approach specified in paragraph (i) below;

(cc) an eligible liquidity facility that may only be drawn in the event of a general market disruption apply a 100 per cent credit-conversion factor in terms of the ratings-based approach when the facility is externally rated;

(dd) a facility in respect of which neither the bottom-up approach nor the top-down approach can be applied to calculate the K_{IRB} amount specified in paragraph (k) below, apply the highest risk weight assigned in terms of the standardised approach to any of the underlying individual exposures covered by the liquidity facility and a credit-conversion factor of 100 per cent;

(ee) all liquidity facilities other than the liquidity facilities envisaged above, deduct from the bank's capital and reserve funds the notional amount of the said liquidity facility,

Provided that a bank that acts as an originator shall in no case provide any liquidity facility in respect of the securitisation scheme in respect of which that bank acts as such an originator.

(iv) the bank or another institution within the banking group of which such a bank is a member, acting as a servicing agent, provides an eligible servicer cash advance facility in respect of a securitisation scheme, that is, a facility that, amongst other things, complies with the relevant conditions specified in paragraphs 7 and 9 of the exemption notice relating to securitisation schemes, the said bank or institution may in the case of any undrawn servicer cash advance facility that is unconditionally cancellable by the said bank or institution without prior notice, apply a credit-conversion factor of nil per cent in respect of the said undrawn facility, provided that-

(aa) the said facility shall duly state that the servicing agent is under no obligation to advance funds to investors or the special-purpose institution in terms of the servicer cash advance facility;

(bb) any cash advance made by the servicing agent shall be at the servicing agent's sole discretion and solely to cover an unexpected temporary shortfall that arose from delayed payments;

(cc) the servicing agent's rights for reimbursement in terms of the said cash advance facility shall be senior to any other claim on cash flows arising from underlying exposures or collateral held in respect of the securitisation scheme;

(dd) a bank that acts as an originator shall in no case provide any servicer cash advance facility in respect of the securitisation scheme in respect of which that bank acts as such an originator.

(v) none of the approaches specified in sub-items (i) or (ii) above can be applied to a securitisation exposure other than a liquidity facility, the bank shall deduct from its capital and reserve funds the relevant exposure amount.

(E) in all relevant cases in respect of which a bank applies the standard formula approach, a floor risk weight of-

(i) 7 per cent shall apply in respect of a securitisation exposure;

(ii) 20 per cent shall apply in respect of a resecuritisation exposure;

(F) the bank shall treat any exposures that overlap in accordance with the relevant requirements specified in subregulation (6)(h) above;

(G) the bank shall treat any exposure relating to a securitisation scheme that contains an early amortisation mechanism in accordance with the relevant requirements specified in paragraph (p) below;

(H) the bank shall comply with the relevant requirements specified in subregulation (12) when the bank obtains any protection in respect of a securitisation exposure;

(I) the maximum amount of capital to be maintained by a bank that adopted the IRB approach for the measurement of the bank's exposures relating to a securitisation scheme shall be equal to the amount of capital that the bank would have been required to maintain in respect of the underlying credit exposures had the exposures not been securitised, which amount shall be calculated in accordance with the relevant requirements specified in subregulations (10), (11) and (12), read with the relevant provisions of subregulations (21) and (22), provided that the bank shall deduct from its capital and reserve funds the entire amount included in the bank's capital and reserve funds in respect of any gain-on-sale or credit-enhancing interest-only strips that arose from the securitisation transaction.

(c) *Categorisation of exposures*

A bank that adopted the IRB approach for the measurement of the bank's exposure to credit risk shall categorise its banking book exposures into one and apply the IRB approach in respect of all material asset categories specified below.

(i) Corporate exposure

When a bank is engaged in specialised lending activities the bank shall subdivide any corporate exposure resulting from such specialised lending activities into one of the categories specified below.

(A) Project finance

Normally project finance relates to the provision of funds to a special-purpose institution for the acquisition or construction of large and complex installations such as power plants, mines or chemical processing plants, the repayment of which funds is based solely or almost exclusively on the funds generated by the relevant project and the collateral value of the project's assets, that is, the borrower of the funds has no or little independent capacity to repay the obligations arising from the borrowed funds, and in respect of which specialised lending agreement the reporting bank has a substantial degree of control over the said asset and the income produced by that asset.

(B) Object finance

Normally object finance relates to the provision of funds to a special-purpose institution for the acquisition of physical assets such as ships or aircrafts, the repayment of which funds is based solely or almost exclusively on the cash flows generated by the relevant asset and which assets are usually pledged as security to the lending bank, that is, the borrower of the funds has no or little independent capacity to repay the obligations arising from the borrowed funds, and in respect of which specialised lending agreement the reporting bank has a substantial degree of control over the said asset and the income produced by that asset.

(C) Commodity finance

Normally commodity finance relates to the provision of funds in respect of structured short-term lending in order to finance, for example, inventories or receivables from exchange-traded commodities such as crude oil, metals or crops, the repayment of which funds is based solely or almost exclusively on the proceeds derived from the sale of the commodity, that is, the borrower of the funds has no or little independent capacity to repay the obligations arising from the borrowed funds and the exposure's rating reflects its self-liquidating nature.

(D) Income-producing real estate

Normally income-producing real estate relates to the provision of funds for real estate such as office buildings to let, multifamily residential buildings, industrial or warehouse space and hotels, the repayment of which funds is based solely or almost exclusively on the cash flows generated by the asset, such as lease or rental payments, or the sale of the asset, that is, there is a strong positive correlation between the prospects for the repayment of the exposure and the prospects for the recovery in the event of default, with both events being materially dependent upon the cash flows generated by the relevant property.

(E) High-volatility commercial real estate

For the purposes of these Regulations, a bank shall classify any funding provided in respect of commercial real estate that exhibits higher loss rate volatility, that is, higher asset correlation, than other types of specialised lending as a high-volatility commercial real estate exposure, including-

(i) exposures in respect of commercial real estate in respect of which the sources of repayment are uncertain on the date of origination of the exposure, such as the future uncertain sale of the property;

(ii) such exposures relating to commercial real estate as may be specified in writing by the Registrar.

When the repayment of a debt obligation of a corporation, partnership or proprietorship is not solely or almost exclusively based on the cash flows envisaged in items (A) to (E) above and the bank is able to rate the credit quality of the obligor based on the obligor's broader ongoing operations and independent capacity to repay its debt obligations, the bank shall classify the said exposure as a corporate exposure instead of one of the subcategories envisaged in items (A) to (E) above.

(ii) Sovereign exposure

A bank shall include in the category of sovereign exposure all exposures that qualify as sovereign exposure in terms of the provisions of the standardised approach envisaged in subregulation (5) read with subregulations (6) and (8), including-

(A) the Central Government of a particular country;

(B) the Central Bank of a particular country;

(C) the Central Government of the RSA;

(D) the Central Bank of the RSA;

(E) the multilateral development banks that qualify for a zero per cent risk weight;

(F) the Bank for International Settlements;

(G) the International Monetary Fund;

(H) the European Central Bank.

(iii) Bank exposure

A bank shall include in this category all relevant exposures to banks, including-

(A) exposures to securities firms and public-sector bodies that are treated in a manner similar to exposures to banks in terms of the provisions of the standardised approach, in subregulation (5) read with the provisions of subregulations (6) and (8);

(B) banks in the RSA;

(C) multilateral development banks that do not qualify for a zero per cent risk weight in terms of the provisions of the standardised approach, in subregulation (5) read with the provisions of subregulations (6) and (8) above.

(iv) Retail exposure

A bank-

(A) shall not classify an exposure as a retail exposure unless the relevant exposure complies with the relevant requirements specified in sub-items (i) to (iii) below and in all cases with the requirements specified in sub-item (iv) below.

(i) Exposure to an individual

The exposure shall be to an individual and shall relate to revolving credit or a line of credit such as a credit card receivable, an overdraft facility, a personal term loan or lease, instalment finance, a loan or lease in respect of a vehicle, a student or educational loan, personal finance, or other exposures with similar characteristics, regardless of the extent of the exposure provided that the Registrar may specify specific thresholds in order to distinguish between retail and corporate exposures.

(ii) Residential mortgage loans or exposure

The exposure shall be secured by mortgage in respect of residential property as envisaged in subregulation (6)(c) above, including first and subsequent liens, term loans and revolving home equity lines of credit, regardless of the extent of the exposure, provided that the Registrar may specify limits in respect of the maximum number of housing units per exposure or persons other than individuals to which the exposure relates.

(iii) Loans or lending extended to small businesses and managed as retail exposure

The exposure-

(aa) shall be in the form of lending extended to a small business or a small business loan extended or guaranteed by an individual;

(bb) shall be managed by the bank as a retail exposure, that is, the exposure, for example, shall be originated in a manner similar to other retail exposures;

(cc) shall be managed on a portfolio basis and not individually in a manner comparable to corporate exposure, provided that-

(i) the aggregate amount of the exposure of the reporting banking group to the said small business borrower shall at no time exceed an amount of R7,5 million;

(ii) the Registrar may from time to time specify a threshold amount lower than the aforesaid amount of R7,5 million.

(iv) Large number of exposures

The exposure shall be one of a large pool of exposures, which exposures shall be managed by the bank on a pooled basis, that is, exposures shall be managed as part of a portfolio segment or pool of exposures with similar risk characteristics, provided that the Registrar may specify a minimum number of exposures within a pool.

(B) shall subdivide all the relevant exposures that meet the requirements specified in item (A) above into one of the three retail subcategories specified in this item (B), that is, each exposure that meets the requirements specified in item (A) above shall be assigned to one of the three pools of exposure specified below.

(i) Exposures secured by residential property

A bank shall include in this pool of exposures only those exposures that comply with the requirements specified in item (A)(ii) above.

(ii) Qualifying revolving retail exposures

In order for a portfolio of exposures to be classified as qualifying revolving retail exposures, the exposures-

(aa) shall be revolving in nature, that is, based on the decision of the relevant obligor to borrow or repay funds within a predetermined limit approved by the bank the outstanding balance of the relevant exposure is permitted to fluctuate;

(bb) shall be unsecured;

(cc) shall be revocable, that is, an uncommitted facility, both contractually and in practice;

(dd) shall be to individuals and the maximum exposure to a single individual counterparty or obligor in the subportfolio shall not exceed an amount of R1 million, provided that the Registrar may specify a lower threshold amount;

(ee) shall exhibit low volatility in loss rates.

(iii) Other retail exposures

A bank shall classify all exposures that qualify as retail exposures, other than exposures secured by residential property or qualifying revolving retail exposures, as other retail exposures.

(C) shall, when the bank assigns an exposure to a particular pool, consider-

(i) the risk characteristics relating to the borrower, such as the borrower type or demographics such as age or occupation;

(ii) the risk characteristics relating to the transaction, including product and/or collateral types such as the loan or lending-to-value measures, seasoning, guarantees and seniority;

(iii) the delinquency of the exposure, that is, the bank shall distinguish between exposures that are delinquent and those exposures that are not delinquent.

(v) Equity exposure

Based on-

(A) the relevant requirements specified in regulation 31;

(B) the economic substance and not the legal form of an instrument,

a bank shall categorise its equity exposures or instruments held in the bank's banking book.

(vi) Purchased receivables

Based on the relevant criteria specified in this paragraph (c), a bank shall subdivide its purchased receivables between retail receivables and corporate receivables.

(vii) Cash and cash equivalent items

This category of exposure shall include all cash and cash equivalent amounts.

For the purposes of this subregulation (11)(c), cash equivalent amounts shall include any amount relating to gold bullion.

(viii) Securitisation or resecuritisation exposures

This category of exposure shall include any exposure relating to a securitisation scheme or resecuritisation exposure, including asset-backed securities, mortgage-backed securities, credit enhancement, liquidity facilities and relevant interest-rate swaps or currency swaps.

(ix) Other exposures

A bank shall classify all exposures other than the exposures envisaged in subparagraphs (i) to (viii) above as other exposures.

(d) Risk-weighted exposure

(i) Unless specifically otherwise provided in this paragraph (d), in order to calculate its risk-weighted credit exposure, a bank that adopted the foundation IRB approach for the measurement of the bank's exposure to credit risk in respect of positions held in the bank's banking book-

(A) shall in the case of exposures other than retail exposures and purchased retail receivables calculate its own estimate of probability-of-default ("PD") in respect of each relevant borrower grade or credit exposure;

(B) shall in the case of retail exposures and purchased retail receivables calculate its own estimate of PD in respect of each relevant pool of retail exposures;

(C) shall in the case of exposures other than retail exposures and purchased retail receivables apply standardised estimates in respect of loss-given-default ("LGD"), exposure-at-default ("EAD") and maturity ("M"), which standardised estimates-

(i) are specified below in respect of each relevant asset class; or

(ii) shall be determined by the Registrar;

(D) shall in the case of retail exposures and purchased retail receivables calculate its own estimates of LGD and EAD;

(E) shall apply the risk-weight functions and risk components in respect of the various exposure categories envisaged in paragraph (c) above in accordance with the relevant requirements specified in this paragraph (d);

(F) shall in the case of securitisation exposures apply the risk-weight functions and risk components in respect of the various types of securitisation exposure in accordance with the relevant requirements specified in paragraphs (e) to (p) below.

(ii) Corporate, sovereign and bank exposures

A bank that adopted the foundation IRB approach for the measurement of the bank's exposure to credit risk shall calculate its risk-weighted assets in respect of corporate, sovereign or bank exposures through the application of the formula and risk components specified below.

(A) In the case of an exposure other than an exposure to a small or medium sized entity ("SME"), which exposure is not in default, as follows:

RWA = K x 12,5 x EAD

where:

RWA is the risk weighted asset amount.

K is the capital requirement, which capital requirement shall be calculated through the application of the formula specified below

K = [LGD x N [(1 - R)^-0.5 x G (PD) + (R/(1 - R))^0.5 x G(0.999)] – PD x LGD] x (1 - 1.5 x b)^ -1 x (1 + (M - 2.5) x b)

Provided that when the calculation of K results in a negative capital requirement in respect of a particular exposure, the bank shall apply a capital requirement equal to zero in respect of the relevant exposure

PD is the probability of default, and constitutes a ratio

In the case of exposures to-

(i) corporate institutions or banks, the PD ratio shall be equal to the higher of the one-year PD associated with the relevant internal grade to which the exposure is assigned, or 0.03 per cent;

(ii) sovereigns, the PD ratio shall be the one-year PD ratio associated with the relevant internal grade to which the exposure is assigned;

(iii) intragroup banks or other formally regulated intragroup financial entities with capital requirements similar or equivalent to these Regulations, which banks or entities are included in the consolidated amounts calculated in accordance with the relevant requirements specified in these Regulations in respect of consolidated supervision, the PD ratio shall be deemed to be equal to zero.

LGD is the loss-given-default ratio

In the case of-

(i) senior claims not secured by eligible collateral, a bank shall apply a ratio of 45 per cent;

(ii) subordinated claims, that is, a facility that is expressly subordinated to another facility, a bank shall apply a ratio of 75 per cent.

M is the effective maturity of the relevant exposure, which maturity shall be regarded as being equal to 2.5 years unless the exposure relates to a repurchase or resale transaction in which case an effective maturity equal to six months shall apply, provided that-

(i) the Registrar may require; or

(ii) on prior written application by the reporting bank and subject to such conditions as may be specified in writing, the Registrar may allow,

a bank to calculate the effective maturity of a particular exposure in accordance with the relevant requirements specified in subregulation (13)(d)(ii)(B) below

R is the relevant correlation, which correlation shall be calculated through the application of the formula specified below

R = 0.12 × (1 – EXP (-50 × PD)) / (1 – EXP (-50)) + 0.24 × [1 - (1 - EXP(-50 × PD))/(1 - EXP(-50))]

b is the relevant maturity adjustment, which maturity adjustment shall be calculated through the application of the formula specified below

b = (0.11852 – 0.05478 × ln (PD))^2

ln denotes the natural logarithm

EXP is the inverse of the natural logarithm, ln

N(x) denotes the cumulative distribution function for a standard normal random variable, that is, the probability that a normal random variable with a mean equal to zero and variance of one is less than or equal to x.

G(z) denotes the inverse cumulative distribution function for a standard normal random variable, that is, the value of x such that N(x) = z.

EAD is the exposure at default, which exposure shall be measured gross of any specific credit impairment raised or partial write-offs made by the reporting bank.

A bank shall measure its exposure at default in accordance with the relevant requirements specified below.

(i) In the case of any drawn amounts, the exposure at default shall be equal to the sum of the drawn amounts after the effect of set-off in accordance with the relevant requirements specified in regulation 13 has been recognised provided that the said exposure shall not be less than the sum of-

(aa) the amount by which the bank's capital requirement would be reduced when the exposure amounts are written off in full; and

(bb) any specific credit impairment raised or partial write-off made by the reporting bank in respect of the relevant exposure amounts.

(ii) In the case of off-balance-sheet items other than unsettled derivative contracts, the exposure at default shall be equal to the sum of committed but undrawn amounts multiplied by the relevant credit conversion factors specified in subregulation (6)(g), provided that-

(aa) in the case of any irrevocable undrawn commitment, note-issuance facility or revolving underwriting facility, instead of the credit-conversion factors specified in subregulation (6)(g), the bank shall apply a credit-conversion factor of 75 per cent irrespective of the maturity of such commitments, note-issuance facilities or revolving underwriting facilities, unless the said exposures or a portion of the said exposures constitutes an uncommitted or revocable facility in which case the bank shall apply a credit-conversion factor equal to zero per cent in respect of the said uncommitted or revocable exposure, provided that in the case of-

(i) a constraining condition in respect of an unused committed facility, such as a limit on the available amount, which limit may relate to the financial position of the relevant obligor at a point in time, the bank shall apply the relevant credit-conversion factor to the lower amount of the unused committed facility and the said constraining limit;

(ii) a facility with a constraining condition as envisaged in item (i) above, the reporting bank shall have in place sufficiently robust line monitoring and management procedures that demonstrate to the satisfaction of the Registrar the ability of the bank to enforce the said constraining limit;

(iii) any uncommitted or revocable facility the reporting bank shall demonstrate to the satisfaction of the Registrar that the bank actively monitors the financial condition of the relevant obligor and that the internal control systems of the bank are adequate to cancel a facility upon receiving evidence of a deterioration in the credit quality of the relevant obligor;

(bb) when a commitment is obtained in respect of another off-balance-sheet exposure, the bank shall apply to the relevant exposure the lower of the relevant credit-conversion factors.

(iii) In the case of unsettled derivative contracts, the exposure amount or exposure at default shall be equal to the sum of amounts calculated in accordance with the relevant requirements specified in subregulations (15) to (19) below.

(B) In the case of an exposure that is in default-

(i) the capital requirement (K) shall be equal to the higher of zero and the difference between the exposure's LGD and the bank's estimate of expected loss.

The risk-weighted amount in respect of the defaulted exposure shall be calculated through the application of the formula specified below.

RWA = K x 12,5 x EAD

(ii) a bank shall assign to the relevant exposure a PD ratio equal to 100 per cent.

(C) In the case of an exposure to an SME borrower, which SME borrower would otherwise be categorised as a corporate exposure, the bank shall make an adjustment to the formula specified in item (A) above, which adjustment shall be calculated through the application of the formula specified below, provided that the reported sales for the consolidated group of which the SME borrower is a member shall be less than R400 million, provided that, subject to such conditions as may be specified in writing, the Registrar may specify in writing a different threshold amount or base, such as assets instead of sales.

0.04 x (1 – (S – 40)/360)

where:

S shall be the total annual sales expressed in millions of Rand and the values of S falling in the range of R40 million ≤ S ≤ R400 million

For the purposes of the aforesaid adjustment, sales of less than R40 million shall be deemed to be equal to R 40 million

R is the relevant correlation, which correlation shall be calculated through the application of the formula specified below

$$R = 0.12 \times (1 - EXP(-50 \times PD)) / (1 - EXP(-50)) + 0.24 \times [1 - (1 - EXP(-50 \times PD))/(1 - EXP(-50))] - 0.04 \times (1 - (S-40)/360)$$

EXP is the inverse of the natural logarithm, ln

(iii) Specialised lending

(A) Subject to the provisions of items (B) and (C) below, a bank that adopted the foundation IRB approach for the measurement of the bank's exposure to credit risk shall calculate its risk-weighted exposure in respect of specialised lending in accordance with the relevant requirements relating to corporate exposure specified in subparagraph (ii) above, provided that the bank shall comply with the relevant requirements for the estimation of PD ratios in respect of corporate exposure.

(B) In the case of high-volatility commercial real estate exposure, a bank that adopted the foundation IRB approach for the measurement of the bank's exposure to credit risk shall apply the asset correlation formula specified below instead of the asset correlation formula that would otherwise apply to corporate exposures.

$$R = 0.12 \times (1 - EXP(-50 \times PD)) / (1 - EXP(-50)) + 0.30 \times [1 - (1 - EXP(-50 \times PD))/(1 - EXP(-50))]$$

(C) When a bank that adopted the foundation IRB approach for the measurement of the bank's exposure to credit risk is unable to comply with the prescribed requirements to estimate the probability of default in terms of the foundation IRB approach for corporate exposure or the Registrar directs a bank to map its internal risk grades to the risk grades specified below, the bank shall map its internal risk grades, which internal risk grades shall be based on the bank's own criteria, systems and processes, to the risk grades specified below, which specified risk grades shall be linked to the risk weights for unexpected loss, and are likely to correspond to the range of external credit assessments, specified below.

(i) In the case of project finance, as follows:

Risk driver	Rating grade				
	Strong	**Good**	**Satisfactory**	**Weak**	**Default**
	70%	**90%**	**115%**	**250%**	**0%**
	Likely external assessment				
	BBB- or better	**BB+ to BB**	**BB- to B+**	**B to C-**	
Financial strength					
• Market conditions	Few competing suppliers or substantial and durable advantage in respect of location, cost or technology. Demand is strong and growing.	Few competing suppliers or better than average location, cost or technology but the situation may not last. Demand is strong and stable.	The project has no advantage in respect of location, cost or technology. Demand is adequate and stable.	The project has worse than average location, cost or technology. Demand is weak and declining.	
• Financial ratios such as debt service coverage ratio (DSCR), loan life coverage ratio (LLCR), project life coverage ratio (PLCR) and debt-to-equity ratio	Strong financial ratios considering the level of project risk. Very robust economic assumptions.	Strong to acceptable financial ratios considering the level of project risk. Robust project economic assumptions.	Standard financial ratios considering the level of project risk.	Aggressive financial ratios considering the level of project risk.	
• Stress analysis	The project is able to meet its financial obligations under sustained, severely stressed economic or sectoral conditions.	The project is able to meet its financial obligations under normal stressed economic or sectoral conditions. The project is only likely to default under severe economic conditions.	The project is vulnerable to stresses that are not uncommon through an economic cycle and may default in a normal downturn situation.	The project is likely to default unless conditions improve soon.	

Risk driver	Rating grade				
	Strong	Good	Satisfactory	Weak	Default
	70%	90%	115%	250%	0%
	Likely external assessment				
	BBB- or better	BB+ to BB	BB- to B+	B to C-	
Financial structure					
• The duration of the credit compared to the duration of the project.	The useful life of the project significantly exceeds the duration of the loan.	The useful life of the project exceeds the duration of the loan.	The useful life of the project exceeds the duration of the loan.	The useful life of the project may not exceed the duration of the loan.	
• Amortisation schedule	Amortising debt.	Amortising debt.	Amortising debt repayments with limited bullet payment.	Bullet repayment or amortising debt repayments with high bullet repayment.	
Political and legal environment					
• Political risk, including transfer risk, considering project type and mitigants	Very low exposure and strong mitigation instruments when required	Low exposure and satisfactory mitigation instruments when required	Moderate exposure and fair mitigation instruments.	High exposure and no or weak mitigation instruments.	
• Force majeure risk such as war and civil unrest.	Low exposure	Acceptable exposure	Standard protection	Significant risks that are not fully mitigated.	
• Government support and project's importance for the country over the long term	Project of strategic importance for the country (preferably export-oriented). Strong support from Government.	Project considered important for the country. Good level of support from Government.	Project may not be strategic but brings unquestionable benefits for the country. Support from Government may not be explicit.	Project not key to the country. No or weak support from Government.	
• Stability of legal and regulatory environment (risk of change in law)	Favourable and stable regulatory environment over the long term.	Favourable and stable regulatory environment over the medium term.	Regulatory changes can be predicted with a fair level of certainty.	Current or future regulatory issues may affect the project.	

Risk driver	Rating grade				
	Strong	**Good**	**Satisfactory**	**Weak**	**Default**
	70%	**90%**	**115%**	**250%**	**0%**
	Likely external assessment				
	BBB- or better	**BB+ to BB**	**BB- to B+**	**B to C-**	
Political and legal environment					
• Acquisition of all necessary supports and approvals for such relief from local content laws	Strong	Satisfactory	Fair	Weak	
• Enforceability of contracts, collateral and security	Contracts, collateral and security are enforceable	Contracts, collateral and security are enforceable	Contracts, collateral and security are considered enforceable even if certain non-key issues may exist.	There are unresolved key issues in respect of actual enforcement of contracts, collateral and security.	
Transaction characteristics					
Design and technology risk	Fully proven technology and design	Fully proven technology and design	Proven technology and design. Start-up issues are mitigated by a strong completion package	Unproven technology and design. Technology issues exist and/or complex design	
Construction risk					
• Permitting and siting	All permits have been obtained	Some permits are still outstanding but their receipt is considered very likely	Some permits are still outstanding but the process is well defined and are considered routine	Key permits still need to be obtained and are not considered routine. Significant conditions may be attached	
• Type of construction contract	Fixed-price date-certain turnkey construction engineering and procurement contract	Fixed-price date-certain turnkey construction engineering and procurement contract	Fixed-price date-certain turnkey construction contract with one or several contractors	No or partial fixed-price turnkey contract and/or interfacing issues with multiple contractors	

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Risk driver	Rating grade				
	Strong	**Good**	**Satisfactory**	**Weak**	**Default**
	70%	**90%**	**115%**	**250%**	**0%**
	Likely external assessment				
	BBB- or better	**BB+ to BB**	**BB- to B+**	**B to C-**	
Construction risk					
• Completion guarantees	Substantial liquidated damages supported by financial substance and/or strong completion guarantee from sponsors with excellent financial standing	Significant liquidated damages supported by financial substance and/or completion guarantee from sponsors with good financial standing	Adequate liquidated damages supported by financial substance and/or completion guarantee from sponsors with good financial standing	Inadequate liquidated damages or not supported by financial substance or weak completion guarantees	
• Track record and financial strength of contractor in constructing similar projects	Strong	Good	Satisfactory	Weak	
Operating risk					
• Scope and nature of operations and maintenance contracts	Strong long-term operations and maintenance contract, preferably with contractual performance incentives and/or operations and maintenance reserve accounts	Long-term operations and maintenance contract and/or operations and maintenance reserve accounts	Limited operations and maintenance contract or operations and maintenance reserve account	No operations and maintenance contract. Risk of high operational cost overruns beyond mitigants.	
• Operator's expertise, track record and financial strength	Very strong or committed technical assistance of the sponsors	Strong	Acceptable	Limited/weak or local operator dependent on local authorities	

Risk driver	Rating grade				
	Strong	Good	Satisfactory	Weak	Default
	70%	90%	115%	250%	0%
	Likely external assessment				
	BBB- or better	BB+ to BB	BB- to B+	B to C-	
Off-take risk					
• If there is a take-or-pay or fixed-price off-take contract	Excellent creditworthiness of off-taker. Strong termination clauses. Tenor of contract comfortably exceeds the maturity of the debt	Good creditworthiness of off-taker. Strong termination clauses. Tenor of contract exceeds the maturity of the debt	Acceptable financial standing of off-taker. Normal termination clauses. Tenor of contract generally matches the maturity of the debt	Weak off-taker. Weak termination clauses. Tenor of contract does not exceed the maturity of the debt	
• If there is no take-or-pay or fixed-price off-take contract	Project produces essential services or a commodity sold widely on a world market. Output can readily be absorbed at projected prices even at lower than historic market growth rates	Project produces essential services or a commodity sold widely on a regional market that will absorb it at projected prices at historical growth rates	Commodity is sold on a limited market that may absorb it only at lower than projected prices	Project output is demanded by only one or a few buyers or is not generally sold on an organised market	
Supply risk					
• Price, volume and transportation risk of feed-stocks. Supplier's track record and financial strength	Long-term supply contract with supplier of excellent financial standing	Long-term supply contract with supplier of good financial standing	Long-term supply contract with supplier of good financial standing – a degree of price risk may remain	Short-term supply contract or long-term supply contract with financially weak supplier – a degree of price risk definitely remains	
• Reserve risks such as natural resource development	Independently audited, proven and developed reserves well in excess of requirements over lifetime of the project	Independently audited, proven and developed reserves in excess of requirements over lifetime of the project	Proven reserves can supply the project adequately through the maturity of the debt	Project relies to some extent on potential and undeveloped reserves	

Risk driver	Rating grade				
	Strong	Good	Satisfactory	Weak	Default
	70%	90%	115%	250%	0%
	Likely external assessment				
	BBB- or better	BB+ to BB	BB- to B+	B to C-	
Strength of sponsor					
• Sponsor's track record, financial strength and country/ sector experience	Strong sponsor with excellent track record and high financial standing	Good sponsor with satisfactory track record and good financial standing	Adequate sponsor with adequate track record and good financial standing	Weak sponsor with no or questionable track record and/or financial weaknesses	
• Sponsor support, as evidenced by equity, ownership clause and incentive to inject additional cash when necessary	Strong. Project is highly strategic for the sponsor (core business – long-term strategy)	Good. Project is strategic for the sponsor (core business – long-term strategy)	Acceptable. Project is considered important for the sponsor (core business)	Limited. Project is not key to sponsor's long-term strategy or core business	
Security package					
• Assignment of contracts and accounts	Fully comprehensive	Comprehensive	Acceptable	Weak	
• Pledge of assets, taking into account quality, value and liquidity of assets	First perfected security interest in all project assets, contracts, permits and accounts necessary to run the project	Perfected security interest in all project assets, contracts, permits and accounts necessary to run the project	Acceptable security interest in all project assets, contracts, permits and accounts necessary to run the project	Little security or collateral for lenders. Weak negative pledge clause	
• Lender's control over cash flow (e.g. cash sweeps, independent escrow accounts)	Strong	Satisfactory	Fair	Weak	

Risk driver	Rating grade				
	Strong	Good	Satisfactory	Weak	Default
	70%	90%	115%	250%	0%
	Likely external assessment				
	BBB- or better	BB+ to BB	BB- to B+	B to C-	
Security package					
• Strength of the covenant package (mandatory prepayments, payment deferrals, payment cascade and dividend restrictions	Covenant package is strong for this type of project Project may issue no additional debt	Covenant package is satisfactory for this type of project Project may issue extremely limited additional debt	Covenant package is fair for this type of project Project may issue limited additional debt	Covenant package is insufficient for this type of project Project may issue unlimited additional debt	
• Reserve funds (debt service, operations and maintenance, renewal and replacement, unforeseen events, etc)	Longer than average coverage period. All reserve funds fully funded in cash or letters of credit from highly rated bank	Average coverage period. All reserve funds fully funded	Average coverage period. All reserve funds fully funded	Shorter than average coverage period. Reserve funds funded from operating cash flows	

(ii) In the case of income-producing real estate and high-volatility commercial real estate exposures, as follows:

Risk driver	Rating grade				
	Strong	**Good**	**Satisfactory**	**Weak**	**Default**
	Risk weights for income-producing real estate exposures				
	70%	**90%**	**115%**	**250%**	**0%**
	Risk weights for high-volatility commercial real estate exposures				
	95%	**120%**	**140%**	**250%**	
Financial strength					
• Market conditions	The supply and demand for the project's type and location are currently in equilibrium. The number of competitive properties coming to market is equal to or lower than forecasted demand.	The supply and demand for the project's type and location are currently in equilibrium. The number of competitive properties coming to market is roughly equal to forecasted demand.	Market conditions are largely in equilibrium. Competitive properties are coming on the market and others are in the planning stages. The project's design and capabilities may not be state of the art compared to new projects.	Market conditions are weak. It is uncertain when conditions will improve and return to equilibrium. The project is losing tenants at lease expiration. New lease terms are less favourable compared to those expiring.	
• Financial ratios and advance rate	The property's debt service coverage ratio (DSCR) is considered strong (DSCR is not relevant for the construction phase) and its loan or lending-to-value ratio (LTV) is considered low given its property type. Where a secondary market exists, the transaction is underwritten to market standards.	The DSCR (not relevant for the development of real estate) and LTV are satisfactory. Where a secondary market exists, the transaction is underwritten to market standards.	The property's DSCR has deteriorated and its value has fallen, increasing its LTV ratio.	The property's DSCR has deteriorated significantly and its LTV ratio is well above underwriting standards for new loans.	
• Stress analysis	The property's resources, contingencies and liability structure allow it to meet its financial obligations during a period of severe financial stress (e.g. interest rates, economic growth)	The property can meet its financial obligations under a sustained period of financial stress (e.g. interest rates, economic growth). The property is likely to default only under severe economic conditions.	During an economic downturn, the property would suffer a decline in revenue that would limit its ability to fund capital expenditures and significantly increase the risk of default.	The property's financial condition is strained and is likely to default unless conditions improve in the near term.	
Cash-flow predictability					
• In the case of	The property's leases are	Most of the property's	Most of the property's	The property's leases are	

Risk driver	Rating grade				
	Strong	**Good**	**Satisfactory**	**Weak**	**Default**
	Risk weights for income-producing real estate exposures				
	70%	**90%**	**115%**	**250%**	**0%**
	Risk weights for high-volatility commercial real estate exposures				
	95%	**120%**	**140%**	**250%**	
complete and stabilised property.	long-term with creditworthy tenants and the maturity dates are scattered. The property has a track record of tenant retention upon lease expiration. Its vacancy rate is low. Expenses (maintenance, insurance, security, and property taxes) are predictable.	leases are long-term, with tenants that range in creditworthiness. The property experiences a normal level of tenant turnover upon lease expiration. The property's vacancy rate is low. Expenses are predictable.	leases are medium rather than long-term with tenants that range in creditworthiness. The property experiences a moderate level of tenant turnover upon lease expiration. The property's vacancy rate is moderate. Expenses are relatively predictable but vary in relation to revenue.	of various terms with tenants that range in creditworthiness. The property experiences a very high level of tenant turnover upon lease expiration. The property's vacancy rate is high. Significant expenses are incurred preparing space for new tenants.	
• In the case of complete but not stabilised property	Leasing activity meets or exceeds projections. The project should achieve stabilisation in the near future	Leasing activity meets or exceeds projections. The project should achieve stabilisation in the near future	Most leasing activity is within projections. However, stabilisation will not occur for some time.	Market rents do not meet expectations. Despite achieving target occupancy rate, cash flow coverage is tight due to disappointing revenue.	
• In the case of construction phase	The property is entirely pre-leased through the tenor of the loan or pre-sold to an investment grade tenant or buyer or the bank has a binding commitment for take-out financing from an investment grade lender.	The property is entirely pre-leased or pre-sold to a creditworthy tenant or buyer or the bank has a binding commitment for permanent financing from a creditworthy lender.	Leasing activity is within projections but the building may not be pre-leased and there may not exist a take-out financing. The bank may be the permanent lender.	The property is deteriorating due to cost overruns, market deterioration, tenant cancellations or other factors. There may be a dispute with the party providing the permanent financing.	
Asset characteristics					

Risk driver	Rating grade				
	Strong	**Good**	**Satisfactory**	**Weak**	**Default**
	Risk weights for income-producing real estate exposures				**0%**
	70%	**90%**	**115%**	**250%**	
	Risk weights for high-volatility commercial real estate exposures				
	95%	**120%**	**140%**	**250%**	
• Location	The property is located in a highly desirable location that is convenient to services that tenants desire.	Property is located in a desirable location that is convenient to services that tenants desire.	The property location lacks a competitive advantage.	The property's location, configuration, design and maintenance have contributed to the property's difficulties.	
• Design and condition	Property is favoured due to its design, configuration, and maintenance, and is highly competitive with new properties.	Property is appropriate in terms of its design, configuration and maintenance. The property's design and capabilities are competitive with new properties.	Property is adequate in terms of its configuration, design and maintenance.	Weaknesses exist in the property's configuration, design or maintenance.	
• Property is under construction	Construction budget is conservative and technical hazards are limited. Contractors are highly qualified.	Construction budget is conservative and technical hazards are limited. Contractors are highly qualified.	Construction budget is adequate and contractors are appropriately qualified.	Project is over budget or unrealistic given its technical hazards. Contractors may be under qualified.	

Risk driver	Rating grade				
	Strong	Good	Satisfactory	Weak	Default
	Risk weights for income-producing real estate exposures				0%
	70%	90%	115%	250%	
	Risk weights for high-volatility commercial real estate exposures				
	95%	120%	140%	250%	
Strength of sponsor/ developer					
• Financial capacity and willingness to support the property.	The sponsor/developer made a substantial cash contribution to the construction or purchase of the property. The sponsor/developer has substantial resources and limited direct and contingent liabilities. The sponsor/developer's properties are diversified geographically and in terms of property type.	The sponsor/developer made a material cash contribution to the construction or purchase of the property. The sponsor/developer's financial condition allows it to support the property in the event of a cash flow shortfall. The sponsor/developer's properties are located in several geographic regions.	The sponsor/developer's contribution may be immaterial or non-cash. The sponsor/developer is average to below average in terms of financial resources.	The sponsor/developer lacks capacity or willingness to support the property.	
• Reputation and track record with similar properties.	Experienced management and high sponsors' quality. Strong reputation and lengthy and successful record with similar properties.	Appropriate management and sponsors' quality. The sponsor or management has a successful record with similar properties.	Moderate management and sponsors' quality. Management or sponsor track record does not raise serious concerns.	Ineffective management and substandard sponsors' quality. Management and sponsor difficulties have contributed to difficulties in managing properties in the past.	
• Relationships with relevant real estate role players	Strong relationships with leading role players such as leasing agents.	Proven relationships with leading role players such as leasing agents.	Adequate relationships with leasing agents and other parties providing important real estate services.	Poor relationships with leasing agents and/or other parties providing important real estate services.	

Risk driver	Rating grade				
	Strong	Good	Satisfactory	Weak	Default
	Risk weights for income-producing real estate exposures				0%
	70%	90%	115%	250%	
	Risk weights for high-volatility commercial real estate exposures				
	95%	120%	140%	250%	
Security package					
• Nature of lien	Perfected first lien	Perfected first lien	Perfected first lien	Ability of lender to foreclose is constrained	
• Assignment of rents in the case of projects leased to long-term tenants	The lender has obtained an assignment. They maintain current tenant information that would facilitate providing notice to remit rents directly to the lender, such as a current rent roll and copies of the project's leases.	The lender has obtained an assignment. They maintain current tenant information that would facilitate providing notice to the tenants to remit rents directly to the lender, such as current rent roll and copies of the project's leases.	The lender has obtained an assignment. They maintain current tenant information that would facilitate providing notice to the tenants to remit rents directly to the lender, such as current rent roll and copies of the project's leases.	The lender has not obtained an assignment of the leases or has not maintained the information necessary to readily provide notice to the building's tenants.	
• Quality of the insurance coverage	Appropriate	Appropriate	Appropriate	Substandard	

(iii) In the case of object finance, as follows:

Risk driver	Strong	Good	Satisfactory	Weak	Default
	Rating grades				
	70%	90%	115%	250%	0%
	Likely external assessment				
	BBB- or better	BB+ to BB	BB- to B+	B to C-	
Financial strength					
• **Market** conditions	Demand is strong and growing. Strong entry barriers, low sensitivity to changes in technology and economic outlook.	Demand is strong and stable. Some entry barriers, some sensitivity to changes in technology and economic outlook.	Demand is adequate and stable. Limited entry barriers, significant sensitivity to changes in technology and economic outlook.	Demand is weak and declining. Vulnerable to changes in technology and economic outlook. Highly uncertain environment.	
• **Financial** ratios such as debt service coverage ratio and loan-to-value ratio	Strong financial ratios considering the type of asset. Very robust economic assumptions.	Strong / acceptable financial ratios considering the type of asset. Robust project economic assumptions.	Standard financial ratios for the asset type.	Aggressive financial ratios considering the type of asset.	
• **Stress analysis**	Stable long-term revenues. Capable of withstanding severely stressed conditions through an economic cycle.	Satisfactory short-term revenues. Loan can withstand some financial adversity. Default is only likely under severe economic conditions.	Uncertain short-term revenues. Cash flows are vulnerable to stresses that are not uncommon through an economic cycle. The loan may default in a normal downturn.	Revenues subject to strong uncertainties. Even in normal economic conditions the asset may default, unless conditions improve.	
• **Market** liquidity	Market is structured on a worldwide basis. Assets are highly liquid.	Market is worldwide or regional. Assets are relatively liquid.	Market is regional with limited prospects in the short term, implying lower liquidity.	Local market and/or poor visibility. Low or no liquidity, particularly on niche markets.	

Risk driver	Rating grades				
	Strong	**Good**	**Satisfactory**	**Weak**	**Default**
	70%	**90%**	**115%**	**250%**	**0%**
	Likely external assessment				
	BBB- or better	**BB+ to BB**	**BB- to B+**	**B to C-**	
Political and legal environment					
• Political risk, including transfer risk	Very low. Strong mitigation instruments when required	Low. Satisfactory mitigation instruments when required	Moderate. Fair mitigation instruments.	High. No or weak mitigation instruments.	
• Legal and regulatory risks	Jurisdiction is favourable to repossession and enforcement of contracts.	Jurisdiction is favourable to repossession and enforcement of contracts.	Jurisdiction is generally favourable to repossession and enforcement of contracts, even if repossession might be long and/or difficult.	Poor or unstable legal and regulatory environment. Jurisdiction may make repossession and enforcement of contracts lengthy or impossible.	
Transaction characteristics					
• Financing term compared to the economic life of the asset	Full payout profile/ minimum balloon. No grace period.	Balloon more significant, but still at satisfactory levels.	Important balloon with potential grace periods.	Repayment in fine or high balloon.	

Risk driver	Rating grades				
	Strong	**Good**	**Satisfactory**	**Weak**	**Default**
	70%	**90%**	**115%**	**250%**	**0%**
	Likely external assessment				
	BBB- or better	**BB+ to BB**	**BB- to B+**	**B to C-**	
Operating risk					
• Permits / licensing	All permits have been obtained. Asset meets current and foreseeable safety regulations.	All permits obtained or in the process of being obtained. Asset meets current and foreseeable safety regulations.	Most permits obtained or in process of being obtained, outstanding ones considered routine. Asset meets current safety regulations.	Problems in obtaining all required permits. Part of the planned configuration and/or planned operations might need to be revised.	
• Scope and nature of operations and maintenance contracts	Strong long-term operations and maintenance contract, preferably with contractual performance incentives, and/or operations and maintenance reserve accounts (if needed)	Long-term operations and maintenance contract, and/or operations and maintenance reserve accounts (if needed)	Limited operations and maintenance contract or operations and maintenance reserve account (if needed)	No operations and maintenance contract. Risk of high operational cost overruns beyond mitigants.	
• Operator's financial strength, track record in managing the asset type and capability to re-market asset when it comes off-lease	Excellent track record and strong re-marketing capability.	Satisfactory track record and re-marketing capability.	Weak or short track record and uncertain re-marketing capability.	No or unknown track record and inability to re-market the asset.	

Risk driver	Rating grades: Strong	Good	Satisfactory	Weak	Default
	70%	90%	115%	250%	0%
	Likely external assessment: BBB- or better	BB+ to BB	BB- to B+	B to C-	
Asset characteristics					
• **Configuration**, size, **design** and **maintenance** (i.e. age, **size** for a plane) **compared** to other **assets in** the same **market**	Strong advantage in design and maintenance. Configuration is standard such that the object meets a liquid market.	Above average design and maintenance. Standard configuration, maybe with very limited exceptions - such that the object meets a liquid market.	Average design and maintenance. Configuration is somewhat specific and therefore might cause a narrower market for the object.	Below average design and maintenance. Asset is near the end of its economic life. Configuration is very specific. The market for the object is very narrow.	
• **Resale value**	Current resale value is well above debt value.	Resale value is moderately above debt value.	Resale value is slightly above debt value.	Resale value is below debt value.	
• **Sensitivity** of the asset **value and** liquidity to **economic** cycles	Asset value and liquidity are relatively insensitive to economic cycles.	Asset value and liquidity are sensitive to economic cycles.	Asset value and liquidity are quite sensitive to economic cycles.	Asset value and liquidity are highly sensitive to economic cycles.	
Strength of sponsor					
• **Operator's** financial **strength**, track record **in managing** the asset **type and** capability to **re-market** asset when **it comes** off-lease	Excellent track record and strong re-marketing capability.	Satisfactory track record and re-marketing capability.	Weak or short track record and uncertain re-marketing capability.	No or unknown track record and inability to re-market the asset.	
• **Sponsors'** track record **and financial** strength	Sponsors with excellent track record and high financial standing.	Sponsors with good track record and good financial standing.	Sponsors with adequate track record and good financial standing.	Sponsors with no or questionable track record and/or financial weaknesses.	

Risk driver	Rating grades				
	Strong	Good	Satisfactory	Weak	Default
	70%	90%	115%	250%	0%
	Likely external assessment				
	BBB- or better	BB+ to BB	BB- to B+	B to C-	
Security package					
• Asset control	Legal documentation provides the lender effective control (e.g. a first perfected security interest, or a leasing structure including such security) on the asset, or on the company owning it.	Legal documentation provides the lender effective control (e.g. a perfected security interest, or a leasing structure including such security) on the asset, or on the company owning it.	Legal documentation provides the lender effective control (e.g. a perfected security interest, or a leasing structure including such security) on the asset, or on the company owning it.	The contract provides little security to the lender and leaves room to some risk of losing control in respect of the asset.	
• Rights and means at the lender's disposal to monitor the location and condition of the asset	The lender is able to monitor the location and condition of the asset, at any time and place (regular reports, possibility to lead inspections).	The lender is able to monitor the location and condition of the asset, almost at any time and place.	The lender is able to monitor the location and condition of the asset, almost at any time and place.	The ability of the lender to monitor the location and condition of the asset is limited.	
• Insurance against damages	Strong insurance coverage including collateral damages with top quality insurance companies.	Satisfactory insurance coverage (not including collateral damages) with good quality insurance companies.	Fair insurance coverage (not including collateral damages) with acceptable quality insurance companies.	Weak insurance coverage (not including collateral damages) or with weak quality insurance companies.	

(iv) In the case of commodity finance, as follows:

Risk driver	Rating grade				
	Strong	**Good**	**Satisfactory**	**Weak**	**Default**
	70%	**90%**	**115%**	**250%**	**0%**
	Likely external assessment				
	BBB- or better	**BB+ to BB**	**BB- to B+**	**B to C-**	
Financial strength					
• Degree of over-collateralisation of trade	Strong	Good	Satisfactory	Weak	
Political and legal environment					
• Country risk	No country risk	Limited exposure to country risk (in particular, offshore location of reserves in an emerging country)	Exposure to country risk (in particular, offshore location of reserves in an emerging country)	Strong exposure to country risk (in particular, inland reserves in an emerging country)	
• Mitigation of country risks	Very strong mitigation Strong offshore mechanisms Strategic commodity 1st class buyer	Strong mitigation Offshore mechanisms Strategic commodity Strong buyer	Acceptable mitigation Offshore mechanisms Less strategic commodity Acceptable buyer	Only partial mitigation No offshore mechanisms Non-strategic commodity Weak buyer	
Asset characteristics					
• Liquidity and susceptibility to damage	Commodity is quoted and can be hedged through futures or OTC instruments. Commodity is not susceptible to damage.	Commodity is quoted and can be hedged through OTC instruments. Commodity is not susceptible to damage.	Commodity is not quoted but is liquid. There is uncertainty about the possibility of hedging. Commodity is not susceptible to damage.	Commodity is not quoted. Liquidity is limited given the size and depth of the market. No appropriate hedging instruments. Commodity is susceptible to damage.	

Risk driver	Rating grade				
	Strong	**Good**	**Satisfactory**	**Weak**	**Default**
	70%	**90%**	**115%**	**250%**	**0%**
	Likely external assessment				
	BBB- or better	**BB+ to BB**	**BB- to B+**	**B to C-**	
Strength of sponsor					
• Financial strength of trader	Very strong, relative to trading philosophy and risks	Strong	Adequate	Weak	
• Track record, including ability to manage the logistic process	Extensive experience with the type of transaction in question. Strong record of operating success and cost efficiency.	Sufficient experience with the type of transaction in question. Above average record of operating success and cost efficiency.	Limited experience with the type of transaction in question. Average record of operating success and cost efficiency.	Limited or uncertain track record in general. Volatile costs and profits.	
• Trading controls and hedging policies	Strong standards for counterparty selection, hedging, and monitoring.	Adequate standards for counterparty selection, hedging, and monitoring.	Past deals have experienced no or minor problems.	Trader has experienced significant losses on past deals.	
• Quality of financial disclosure	Excellent	Good	Satisfactory	Financial disclosure contains some uncertainties or is insufficient.	
Security package					
• Asset control	First perfected security interest provides the lender legal control over the assets at any time if needed	First perfected security interest provides the lender legal control over the assets at any time if needed	At some point in the process, there is a rupture in the control of the assets by the lender. The rupture is mitigated by knowledge of the trade process or a third party undertaking as the case may be.	Contract leaves room for some risk of losing control over the assets. Recovery may be jeopardised.	
• Insurance against damages	Strong insurance coverage including collateral damages with top quality insurance companies.	Satisfactory insurance coverage (not including collateral damages) with good quality insurance companies.	Fair insurance coverage (not including collateral damages) with acceptable quality insurance companies.	Weak insurance coverage (not including collateral damages) or with weak quality insurance companies.	

(iv) Retail exposures

A bank that adopted the foundation IRB approach for the measurement of the bank's exposure to credit risk shall calculate its risk-weighted assets in respect of retail exposures through the application of the relevant formulae and risk components specified below.

(A) In the case of residential mortgage exposures, which residential mortgage exposures are not in default, as follows:

RWA = K x 12,5 x EAD

where:

RWA is the relevant risk-weighted asset amount

K is the capital requirement, which capital requirement shall be calculated through the application of the formula specified below

K = LGD x N[(1 - R)^-0.5 x G(PD) + (R / (1 - R))^0.5 x G(0.999)] - PD x LGD

PD is the probability of default, and constitutes a ratio

A bank shall apply a PD ratio equal to the higher of the one-year PD associated with the relevant internal grade to which the pool of exposures is assigned, or 0.03 per cent.

LGD is the loss-given-default ratio estimated by the bank provided that-

(i) the LGD estimate in respect of retail exposures secured by residential property shall in no case be less than 10 per cent unless the said exposure is protected by a guarantee obtained from a sovereign;

(ii) the Registrar may amend the minimum LGD ratio of 10 per cent subject to such conditions as may be specified in writing by the Registrar.

R is the correlation, which correlation shall be a constant number equal to 0.15

EAD is the exposure at default, which exposure shall be measured gross of any specific credit impairment raised or partial write-offs made by the reporting bank

A bank shall measure its exposure at default as follows:

(i) in the case of any drawn amounts, the exposure at default shall be equal to the sum of the drawn amounts after the effect of set-off in accordance with the relevant requirements specified in regulation 13 has been recognised, provided that the said exposure shall not be less than the sum of-

(aa) the amount by which the bank's capital requirement would be reduced when the exposure amounts are written off in full; and

(bb) any specific credit impairment raised or partial write-off made by the reporting bank in respect of the exposure amounts.

(ii) in the case of off-balance-sheet items other than foreign exchange or interest rate commitments, the exposure at default shall be equal to the sum of any committed but undrawn amounts multiplied by the credit conversion factors estimated by the reporting bank, provided that-

(aa) when the relevant retail exposures have uncertain future drawdown, such as credit cards, the bank shall take into account its history and/or expectation of additional drawings prior to default;

(bb) when the bank's estimate of EAD does not incorporate credit conversion factors in respect of additional drawings on undrawn lines prior to default, the bank shall make appropriate adjustments to its estimates of LGD;

(cc) when the bank has securitised the drawn balances of retail facilities, the bank shall by way of credit-conversion factors continue to include its exposure in respect of the undrawn balances, that is, the seller's interest, based on the proportions of the seller's and investor's interests of the securitised drawn balances.

(iii) in the case of foreign exchange or interest rate commitments, in accordance with the relevant provisions of subregulation (6) relating to the said commitments.

(B) In the case of qualifying revolving retail exposures, which qualifying revolving retail exposures are not in default, as follows:

RWA = K x 12,5 x EAD

where:

RWA is the relevant risk-weighted asset amount

K is the capital requirement, which capital requirement shall be calculated through the application of the formula specified below

K = LGD × N[(1 - R)^-0.5 × G(PD) + (R / (1 - R))^0.5 × G(0.999)] - PD x LGD

PD is the probability of default, and constitutes a ratio

A bank shall apply a PD ratio equal to the higher of the one-year PD ratio associated with the relevant internal grade to which the pool of exposures is assigned, or 0.03 per cent.

LGD is the loss-given-default ratio as estimated by the bank

R is the correlation, which correlation shall be a constant number equal to 0.04

EAD is the exposure at default, which exposure shall be measured in accordance with the relevant directives relating to the measurement of EAD specified in item (A) above.

(C) In the case of other retail exposures, which other retail exposures are not in default, as follows:

RWA = K x 12,5 x EAD

where:

RWA is the relevant risk-weighted asset amount

K is the capital requirement, which capital requirement shall be calculated through the application of the formula specified below

K = LGD × N[(1 - R)^-0.5 × G(PD) + (R / (1 - R))^0.5 × G(0.999)] - PD x LGD

PD is the probability of default, and constitutes a ratio

A bank shall apply a PD ratio equal to the higher of the one-year PD ratio associated with the relevant internal grade to which the pool of exposures is assigned, or 0.03 per cent.

LGD is the loss-given-default ratio as estimated by the bank

R is the correlation, which correlation shall be calculated through the application of the formula specified below

$$R = 0.03 \times (1 - EXP(-35 \times PD)) / (1 - EXP(-35)) + 0.16 \times [1 - (1 - EXP(-35 \times PD))/(1 - EXP(-35))]$$

EXP is the inverse of the natural logarithm, ln

EAD is the exposure at default, which exposure shall be measured in accordance with the relevant directives relating to the measurement of EAD specified in item (A) above.

(D) In the case of retail exposures that are in default-

(i) the capital requirement (K) shall be equal to the higher amount of zero and the difference between the exposure's LGD and the bank's estimate of expected loss.

The risk-weighted amount in respect of the defaulted exposure shall be calculated through the application of the formula specified below.

$$RWA = K \times 12,5 \times EAD$$

(ii) the bank shall assign to the relevant exposure a PD ratio equal to 100 per cent.

(v) Equity exposures

A bank shall calculate its risk-weighted assets in respect of equity exposures held in its banking book in accordance with the relevant requirements specified in regulation 31.

(vi) **Purchased receivables**

(A) **A bank shall separately calculate its risk-weighted assets in respect of purchased retail receivables and purchased corporate receivables, provided that the bank shall in the calculation of its risk-weighted exposure in respect of a particular purchased receivable or pool of purchased receivables distinguish between-**

(i) the risk of default

When purchased receivables unambiguously belong to one asset class, the bank shall calculate the risk of default relating to the said receivables in accordance with the risk-weight function and risk components applicable to that particular exposure type, provided that the bank shall comply with the relevant requirements in respect of the relevant risk-weight function. For example, when the receivables consist of-

(aa) revolving retail exposures but the bank is unable to comply with the requirements relating to qualifying revolving retail exposures, the bank shall apply the risk-weight function relating to other retail exposures;

(bb) hybrid pools containing a mixture of exposure types, that is, the bank is unable to separate the exposures by type, the bank shall apply the risk-weight function producing the highest capital requirement for the exposures included in the pool of purchased receivables.

(ii) the risk of dilution

In the case of purchased corporate receivables and purchased retail receivables, a bank shall calculate the risk weights relating to the risk of dilution, that is, the risk that a receivable amount may be reduced by way of cash or non-cash credit amounts being made against the receivable account, for example, as a result of the return of goods that were sold or disputes regarding the quality of a product, in accordance with the corporate risk-weight function specified in subparagraph (ii) above, provided that-

(aa) the bank shall estimate the one-year expected loss ratio for dilution risk, expressed as a percentage of the receivable amount, in respect of the pool as a whole or the individual receivables included in the pool on a stand-alone basis, that is, without regard to any assumption of recourse, support or guarantees from the seller or other parties;

(bb) the bank may use relevant external or internal data to estimate the said expected loss ratio;

(cc) the bank shall set the PD estimate equal to the estimated expected loss ratio and the LGD ratio equal to 100 per cent;

(dd) the bank shall apply such a maturity factor as may be specified in writing by the Registrar or, with the prior written approval of the Registrar and provided that the bank manages the risk of dilution in an appropriate manner, a one-year maturity factor;

(ee) when the risk of dilution is immaterial for the purchasing bank, the bank may apply for the approval of the Registrar not to calculate risk weights in respect of the risk of dilution.

(B) Purchased retail receivables

A bank shall calculate the risk estimates of PD and LGD, or expected loss, in respect of default risk relating to purchased retail receivables on a stand-alone basis, that is, without regard to any assumption of recourse or guarantees from the seller or other parties, provided that-

(i) the bank shall comply with the relevant minimum requirements relating to retail exposures specified in paragraphs (b)(v)(D), (b)(vi)(B), (b)(viii)(D), (b)(viii)(E) and (c)(iv) above;

(ii) the bank may use external and internal reference data to estimate the PD ratio and LGD ratio relating to the relevant exposure;

(iii) when the bank complies with the relevant minimum requirements in respect of retail exposure as envisaged in sub-item (i) above, the bank may apply the "top-down" approach envisaged in paragraph (b)(vi)(F) above in order to calculate the said estimates of PD and LGD, provided that the bank shall in addition to the said requirements in respect of retail exposure comply with the relevant requirements relating to the "top-down" approach, specified in paragraph (b)(vi)(F) above.

(C) Purchased corporate receivables

(i) A bank shall calculate the risk-weighted assets relating to default risk of individual obligors in respect of purchased corporate receivables in accordance with the formula and risk components specified in subparagraph (ii) above, which formula and risk components relate to corporate exposure, provided that-

(aa) when the bank is unable to decompose the expected loss ratio into its PD and LGD components, the bank-

(i) shall determine the risk weight in respect of the purchased corporate receivable from the corporate risk-weight function using a LGD ratio of 45 per cent provided that the exposures exclusively consist of senior claims in respect of corporate borrowers;

(ii) shall calculate the PD ratio by dividing the expected loss ratio by the LGD ratio of 45 per cent;

(iii) shall calculate the EAD amount as the outstanding amount minus the capital requirement relating to the risk of dilution, before the bank takes into consideration the effect of any risk mitigation instrument, provided that in the case of a revolving facility the EAD amount shall be equal to the purchased receivable amount **plus** 75 per cent of any undrawn purchased commitments **minus** the capital requirement relating to the risk of dilution;

(iv) shall in all cases other than the exposures already specified in this sub-item (aa), use a PD ratio equal to the expected loss ratio, a LGD ratio equal to 100 per cent and an EAD amount equal to the outstanding amount **minus** the capital requirement relating to the risk of dilution, before the bank takes into consideration the effect of any risk mitigation instrument;

(bb) when the bank is able to estimate the PD ratio in a reliable manner, the bank shall determine the risk weight in respect of the relevant exposure from the corporate risk weight function, based on the relevant requirements relating to LGD and M;

(ii) Subject to the prior written approval of and such conditions as may be specified in writing by the Registrar, a bank may apply the "top-down" approach envisaged in paragraph (b)(vi)(F) above in order to calculate the risk weight relating to default risk in respect of a pool of purchased corporate receivables, provided that-

(aa) the bank's programme in respect of purchased corporate receivables shall comply with the relevant requirements specified in paragraph (b)(vi)(F) above;

(bb) the receivables-

(i) shall be purchased from unrelated, third party sellers, that is, the receivables shall not be originated, either directly or indirectly, by the reporting bank;

(ii) shall be generated on an arm's-length basis between the seller and the relevant obligor;

(cc) the bank-

(i) shall have a claim in respect of all proceeds from the pool of receivables or a relevant *pro-rata* interest in the proceeds, which claim shall exclude any first-loss or second-loss positions, that is, the cash flows arising from the purchased corporate receivables shall be the reporting bank's primary protection against default risk;

(ii) shall estimate the pool's one-year expected loss ratio for default risk, expressed as a percentage of the exposure amount, that is, the total EAD amount due to the bank by all obligors in the pool of purchased receivables;

(iii) shall estimate the expected loss ratio in respect of the purchased receivables on a stand-alone basis, that is, without regard to any assumption of recourse or guarantees from the seller or other parties;

(iv) shall, based on the pool's estimated one-year expected loss ratio for default risk, calculate the risk weight for default risk in accordance with the risk-weight function for corporate exposures specified in subparagraph (ii) above;

(v) shall utilise relevant external and internal data to estimate the required PD ratios and LGD ratios;

(vi) shall follow the directives specified in sub-item (i)(aa) above when the bank is unable to decompose the expected loss ratio into its PD and LGD components;

(dd) the Registrar shall grant approval to apply the "top-down" approach only in exceptional cases when the calculation of the bank's risk-weighted exposure in respect of purchased corporate receivables in accordance with the requirements specified in subparagraph (ii) relating to corporate exposure is likely to place an undue burden on the reporting bank;

(D) Purchase price discounts in respect of purchased receivables

A bank-

(i) shall in accordance with the relevant requirements specified in subregulation (6)(j) above deduct from the bank's capital and reserve funds any purchase price discounts relating to purchased receivables, which purchase price discounts-

(aa) provide first loss protection in respect of the risk of default or dilution;

(bb) will be refunded to the seller,

(ii) shall ignore any purchase price discounts that were granted in respect of purchased corporate or retail receivables, other than purchase price discounts envisaged in sub-item (i), when the bank calculates its risk-weighted exposure or credit impairments relating to expected loss provided that the said discounts shall constitute non refundable amounts, that is, the said discounts shall not be paid or repaid to the relevant seller of the receivable amounts.

(vii) Cash and cash equivalent amounts

A bank shall risk weight all cash and cash equivalent amounts such as gold bullion at zero per cent.

(viii) Securitisation or resecuritisation exposure

A bank shall calculate its risk-weighted assets in respect of a securitisation scheme or resecuritisation exposure in accordance with the relevant requirement specified in paragraphs (e) to (p) below.

(ix) Other exposures

Unless specifically otherwise stated, a bank shall risk weight all exposures other than the exposures specified above at a risk weight of 100 per cent, which risk weight shall be deemed to represent the unexpected loss in respect of the relevant exposure.

(e) Securitisation or resecuritisation exposure: rating-based approach

Based on-

(i) the external rating or inferred rating of a securitisation or resecuritisation exposure;

(ii) whether the external or inferred credit rating represents a long-term or short-term credit rating;

(iii) the granularity of the underlying pool of assets or exposures;

(iv) the seniority of a particular position,

a bank shall calculate its risk-weighted assets in respect of a securitisation scheme or resecuritisation exposure by multiplying the relevant amount relating to a particular exposure-

(A) in the case of an exposure with an external long-term credit rating, or when an inferred rating based on an external long-term credit rating is available, by the appropriate risk weights specified in table 14 below.

Table 14

<table>
<tr><th rowspan="2">External long-term rating[1]</th><th colspan="3">Securitisation exposure</th><th colspan="2">Resecuritisation exposure</th></tr>
<tr><th>Risk weight – senior, granular position[2, 3]</th><th>Base risk weight – non-senior, granular[5]</th><th>Risk weight for non-granular [4]</th><th>Senior[6]</th><th>Non-senior</th></tr>
<tr><td>AAA</td><td>7%</td><td>12%</td><td>20%</td><td>20%</td><td>30%</td></tr>
<tr><td>AA</td><td>8%</td><td>15%</td><td>25%</td><td>25%</td><td>40%</td></tr>
<tr><td>A+</td><td>10%</td><td>18%</td><td rowspan="3">35%</td><td>35%</td><td>50%</td></tr>
<tr><td>A</td><td>12%</td><td>20%</td><td>40%</td><td>65%</td></tr>
<tr><td>A-</td><td>20%</td><td>35%</td><td>60%</td><td>100%</td></tr>
<tr><td>BBB+</td><td>35%</td><td colspan="2">50%</td><td>100%</td><td>150%</td></tr>
<tr><td>BBB</td><td>60%</td><td colspan="2">75%</td><td>150%</td><td>225%</td></tr>
<tr><td>BBB-</td><td colspan="3">100%</td><td>200%</td><td>350%</td></tr>
<tr><td>BB+</td><td colspan="3">250%</td><td>300%</td><td>500%</td></tr>
<tr><td>BB</td><td colspan="3">425%</td><td>500%</td><td>650%</td></tr>
<tr><td>BB-</td><td colspan="3">650%</td><td>750%</td><td>850%</td></tr>
<tr><td>Below BB- and unrated</td><td colspan="5">Deducted from capital and reserve funds</td></tr>
</table>

1. The notations used in this table relate to the ratings used by a particular credit assessment institution. The use of the rating scale of a particular credit assessment institution does not mean that any preference is given to a particular credit assessment institution. The assessments/ rating scales of other external credit assessment institutions, recognised as eligible institutions in the RSA, may have been used instead.
2. Relates to senior positions in a securitisation scheme that consists of an effective number of underlying exposures of no less than 6, which effective number of exposures shall be calculated in accordance with the relevant requirements specified in paragraph (n) below, and where senior position means an effective first claim in respect of the entire amount of the assets/exposures in the underlying securitised pool. For example, in the case of-
   (a) a synthetic securitisation scheme the "super-senior" tranche shall be treated as a senior position provided that the bank complies with the relevant conditions specified in paragraph (f) below to infer a rating from a lower tranche.
   (b) a traditional securitisation scheme, in which scheme all tranches above the first-loss position are rated, the highest rated position shall be treated as a senior position provided that when several tranches share the same rating the most senior position in the waterfall of payment shall be treated as the senior position.
3. Including eligible senior exposures that comply with the relevant requirements specified in paragraphs (g) and (h) below relating to the internal assessment approach.
4. Relates to a senior position in a securitisation scheme in which the effective number of underlying exposures, calculated in accordance with the relevant requirements specified in paragraph (n) below, is less than 6.
5. Relates to all positions other than a senior position, such as a position/facility that, in economic substance, constitutes a mezzanine position and not a senior position in respect of the underlying pool.
6. Means a resecuritisation exposure that is a senior position and none of the underlying exposures are resecuritisation exposures, that is, any resecuritisation exposure in respect of which the underlying exposure includes a resecuritisation exposure shall be categorised as a non-senior resecuritisation position or exposure.

(B) in the case of an exposure with an external short-term credit rating, or when an inferred rating based on an external short-term credit rating is available, by the appropriate risk weights specified in table 15 below.