

INVESTMENT SERVICES RULES FOR INVESTMENT SERVICES PROVIDERS

PART B: STANDARD LICENCE CONDITIONS

Appendix 11

Supplementary Licence Conditions on Risk Management, Counterparty Risk Exposure and Issuer Concentration

1. Introduction

1.01 A Licence Holder shall comply at all times with the rules on risk management, counterparty risk exposure and issuer concentration as laid down in this Appendix.

2. Measurement and Management of Risk

2.01 A Licence Holder shall adopt adequate and effective arrangements, processes and techniques in order to:

- a. measure and manage at any time the risks which the Scheme they manage are or might be exposed to; and
- b. ensure compliance with limits concerning global exposure and counterparty risk in accordance with the provisions of this Appendix.

The arrangements, processes and techniques shall be proportionate to the nature, scale and complexity of the business of the Licence Holder and of the Scheme it manages and be consistent with the Scheme's risk profile.

2.02 For the purposes of SLC 2.01, the Licence Holder shall take the following actions for each Scheme managed:

- a. Put in place such risk measurement arrangements processes and techniques as are necessary to ensure that the risks of taken positions and their contribution to the overall risk profile are accurately measured on the basis of sound and reliable data and that the risk measurement arrangements, processes and techniques are adequately documented;
- b. Conduct, where appropriate, periodic back-tests in order to review the validity of risk measurement arrangements which include model-based forecasts and estimates;
- c. Conduct, where appropriate, periodic stress tests and scenario analyses to address risks arising from potential changes in market conditions that might adversely impact the Scheme;

- d. Establish, implement and maintain a documented system of internal limits concerning the measures used to manage and control the relevant risks for each Scheme taking into account all risks which may be material to the Scheme as referred to in SLCs 2.34 to 2.38 of Part BII of these Rules and ensuring consistency with the Scheme's risk-profile;
- e. Ensure that the current level of risk complies with the risk limit system as set out in point (d) for each Scheme; and
- f. Establish, implement and maintain adequate procedures that, in the event of actual or anticipated breaches to the risk limit system of the Scheme, result in timely remedial actions in the best interests of unit-holders.

Liquidity Risk Management

- 2.03 A Licence Holder shall employ an appropriate liquidity risk management process in order to ensure that each Scheme managed is able to comply at any time with the provisions on repurchase or redemption of units by a Scheme as prescribed in the Investment Services Rules for Retail Collective Investment Schemes.

Where appropriate, the Licence Holder shall conduct stress tests which enable assessment of the liquidity risk of the Scheme under exceptional circumstances.

- 2.04 A Licence Holder shall ensure that for each Scheme managed, the liquidity profile of the investments of the Scheme is appropriate to the redemption policy laid down in the rules of the fund or the instruments of incorporation or the prospectus.

3. Calculation of Global Exposure

- 3.01 The Licence Holder shall calculate the global exposure of a managed Scheme as either of the following:
- a. The incremental exposure and leverage generated by the managed Scheme through the use of financial derivative instruments including embedded derivatives pursuant to the provisions of the Investment Services Rules for Retail Collective Investment Schemes, which incremental exposure and leverage may not exceed the total of the Scheme's net asset value; or
 - b. The market risk of the Scheme's portfolio.
- 3.02 The Licence Holder shall calculate the Scheme's global exposure at least on a daily basis. The limits on global exposure must be complied with on an ongoing basis. Depending on the investment strategy being pursued and the composition of the portfolio, a Scheme should, where necessary, also carry out intra-day calculations.
- 3.03 The Licence Holder shall calculate the global exposure by using the commitment approach, the value at risk ("VaR") approach or other advanced risk measurement methodologies as may be appropriate. For the purposes of this Appendix, VaR shall mean a measure of the potential loss to the Scheme due to market risk. More

particularly, VaR shall measure the potential loss at a given confidence level (probability) over a specific time period under normal market conditions.

- 3.04 The Licence Holder shall select an appropriate methodology to calculate global exposure for each Scheme managed. More specifically, the selection should be based on the assessment by the Licence Holder of the risk profile of the Scheme managed resulting from its investment policy (including its use of financial derivative instruments).
- 3.05 For each Scheme managed, the Licence Holder must use an advanced risk measurement methodology such as the VaR to calculate global exposure where:
- a. the Scheme engages in complex investment strategies which represent more than a negligible part of the Scheme's investment policy; and/or
 - b. the Scheme has more than a negligible exposure to exotic derivatives; and/or
 - c. the commitment approach doesn't adequately capture the market risk of the portfolio.
- 3.06 The use of a commitment approach, or VaR approach or any other methodology to calculate global exposure does not exempt the Licence Holder from establishing appropriate internal risk management measures and limits for each managed Scheme.
- 3.07 When a Scheme pursuant to the conditions prescribed in the Investment Services Rules for Retail Collective Investment Schemes employs techniques and instruments including repurchase agreements or securities lending transactions in order to generate additional leverage or exposure to market risk, the Licence Holder shall take these transactions into consideration when calculating global exposure.

4. Standard Commitment Approach

- 4.01 Where the commitment approach is used for the calculation of global exposure, the Licence Holder shall apply this approach to all financial derivative instrument positions including embedded derivatives as referred to in the Investment Services Rules for Retail Collective Investment Schemes whether used as part of the Scheme's general investment policy, for the purposes of risk reduction or for the purposes of efficient portfolio management as referred to in the aforementioned Rules.
- 4.02 Where the commitment approach is used for the calculation of global exposure, the Licence Holder shall convert each financial derivative instrument position into the market value of an equivalent position in the underlying asset of that derivative (standard commitment approach).
- 4.03 The Licence Holder may apply other calculation methods which are equivalent to the standard commitment approach.

- 4.04 A Licence Holder shall take account of netting and hedging arrangements when calculating global exposure, where these arrangements do not disregard obvious and material risks and result in a clear reduction in risk exposure.
- 4.05 Where the use of financial derivative instruments does not generate incremental exposure for the Scheme, the underlying exposure need not be included in the commitment calculation.
- 4.06 Where the standard commitment approach is used, temporary borrowing arrangements entered into on behalf of the Scheme need not be included in the global exposure calculation.
- 4.07 The standard commitment approach is always the market value of the equivalent position in the underlying asset. This may be replaced by the notional value or the price of the futures contract where this is more conservative. For non-standard derivatives, where it is not possible to convert the derivative into the market value or notional value of the equivalent underlying asset, an alternative approach may be used provided that the total amount of derivatives represent a negligible portion of the Scheme's portfolio.
- 4.08 The following steps must be taken by a Licence Holder for each Scheme managed when calculating global exposure using the commitment approach:
- a. Calculate the commitment of each individual derivative (as well as any embedded derivatives and leverage linked to efficient portfolio management techniques).
 - b. Identify netting and hedging arrangements. For each netting or hedging arrangement, calculate a net commitment as follows:
 - Gross commitment is equal to the sum of the commitments of the individual financial derivative instruments (including embedded derivatives) after derivative netting.
 - If the netting or hedging arrangement involves security positions, the market value of security positions can be used to offset gross commitment.
 - The absolute value of the resulting calculation is equal to the net commitment.
 - c. Global exposure is then equal to the sum of:
 - the absolute value of the commitment of each individual derivative not involved in netting or hedging arrangements; and
 - the absolute value of each net commitment after the netting or hedging arrangements as described above; and

- the sum of the absolute values of the commitment linked to efficient portfolio management techniques.
- 4.09 The calculation of gross and net commitment must be based on an exact conversion of the financial derivative position into the market value of an equivalent position in the underlying asset of that derivative.
- 4.10 The commitment calculation of each financial derivative position should be converted to the base currency of the Scheme using the spot rate.
- 4.11 Where any currency derivative has 2 legs that are not in the base currency of the Scheme, both legs must be taken into account in the commitment calculation.

Conversion Methodologies – Standard Derivatives

- 4.12 The following conversion methods should be applied to the non-exhaustive list of the Standard Derivatives hereunder:

- Futures

- Bond Future

Number of contracts * notional contract size * market price of the cheapest-to-deliver reference bond

- Interest Rate Future

Number of contracts * notional contract size

- Currency Future

Number of contracts * notional contract size

- Equity Future

Number of contracts * notional contract size * market price of underlying equity share

- Index Futures

Number of contracts * notional contract size * index level

- Plain Vanilla Options (bought/sold puts and calls)

- Plain Vanilla Bond Option

Notional contract value * market value of underlying reference bond * delta

- Plain Vanilla Equity Option

Number of contracts * notional contract size * market value of underlying equity share * delta

- Plain Vanilla Interest Rate Option

Notional contract value * delta

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- Plain Vanilla Currency Option
Notional contract value of currency leg(s) * delta
- Plain Vanilla Index Options
Number of contracts * notional contract size * index level * delta
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- Plain Vanilla Options on Futures
Number of contracts * notional contract size * market value of underlying asset * delta
- Plain Vanilla Swaptions
Reference swap commitment conversion amount (refer hereunder) * delta
- Warrants and Rights
Number of shares/bonds * market value of underlying referenced instrument * delta
- Swaps
 - Plain Vanilla Fixed/ Floating Rate Interest Rate and Inflation Swaps
Market value of underlying (the notional value of the fixed leg may also be applied)
 - Currency Swap
Notional value of currency leg(s)
 - Cross Currency Interest Rate Swaps
Notional value of currency leg(s)
 - Basic Total Return Swap
Underlying market value of reference asset(s)
 - Non-Basic Total Return Swap
Cumulative underlying market value of both legs of the TRS
 - Single Name Credit Default Swap
Protection Seller – The higher of the market value of the underlying reference asset or the notional value of the Credit Default Swap.
Protection Buyer – Market value of the underlying reference asset.
 - Contract for Differences
Number of shares/bonds * market value of underlying referenced instrument
- Forwards
 - FX Forward
Notional value of currency leg(s)

- Forward Rate Agreement
Notional value
- Leveraged exposure to indices or indices with embedded leverage
- A derivative providing leveraged exposure to an underlying index, or indices that embed leveraged exposure to their portfolio, must apply the standard applicable commitment approach to the assets in question.

Conversion Methodologies – Embedded Derivatives

4.13 The following conversion methods should be applied to the non-exhaustive list of the financial instruments which embed derivatives:

- Convertible Bonds
Number of referenced shares * market value of underlying reference shares * delta
- Credit Linked Notes
Market value of underlying reference asset(s)
- Partly Paid Securities
Number of shares/bonds * market value of underlying referenced instruments * delta

Conversion Methodologies – Non-Standard (Exotic) Derivatives

4.14 The following instruments are given as examples of non-standard derivatives with the related commitment methodology to be used.

- Variance Swaps

Variance swaps are contracts that allow investors to gain exposure to the variance (squared volatility) of an underlying asset and, in particular, to trade future realized (or historical) volatility against current implied volatility. According to market practice, the strike and the variance notional are expressed in terms of volatility. For the variance notional this gives:

$$\text{variance notional} = \frac{\text{vega notional}}{2 \times \text{strike}}$$

The vega notional provides a theoretical measure of the profit or loss resulting from a 1% change in volatility.

As a realised volatility cannot be less than zero, a long swap position has a known maximum loss. The maximum loss on a short swap is often limited by the inclusion of a cap on volatility. However without a cap, a short swap's potential losses are unlimited.

The conversion methodology to be used for a given contract at time t is:

Variance Notional * (current) Variance_t (without volatility cap)

Variance Notional * min [(current) Variance_t; volatility cap²] (with volatility cap)

Whereby: (current) variance_t is a function of the squared realised and implied volatility, more precisely:

$$(current) variance_t = \frac{t}{T} * realised\ volatility(0, t^2) + \frac{T-t}{T} * implied\ volatility + (t, T)^2$$

– Volatility Swaps

By analogy with the variance swaps, the following conversion formulae should be applied to volatility swaps:

Vega Notional * (current) Volatility_t (without volatility cap)

Vega Notional * min [(current) Volatility_t; volatility cap] (with volatility cap)

Whereby: (current) volatility_t is a function of the realised and implied volatility

– Barrier (knock-in knock-out) Options

Number of contracts * notional contract size * market value of underlying equity share * maximum delta

Whereby the maximum delta is equal to the highest (if positive) or lowest (if negative) value that the delta of the option may attain taking into account all possible market scenarios.

Financial Derivative Instruments Excluded from the Global Exposure Calculation

4.15 A financial derivative instrument is not taken into account when calculating the commitment if it fulfils all of the following characteristics:

- a. It swaps the performance of financial assets held in the Scheme's portfolios for the performance of other reference financial assets;
- b. It totally offsets the market risk of the swapped assets held in the Scheme's portfolio so that the Scheme's performance (e.g. performance of the net asset value) does not depend on the performance of the swapped assets; and
- c. It includes neither additional optional features, nor leverage clauses nor other additional risks as compared to a direct holding of the reference financial assets.

4.16 A financial derivative instrument is not taken into account when calculating the commitment if it meets both of the following conditions:

- a. The combined holding by the Scheme of a financial derivative instrument relating to a financial asset and cash which is invested in risk free assets is equivalent to holding a cash position in the given financial asset; and

- b. The financial derivative instrument is not considered to generate any incremental exposure and leverage or market risk.

5. Netting and Hedging

- 5.01 When calculating global exposure using the commitment approach, netting and hedging arrangements may be taken into account to reduce global exposure.
- 5.02 Netting arrangements are defined as combinations of trades on financial derivative instruments and/or security positions which refer to the same underlying asset, irrespective – in the case of financial derivative instruments – of the contracts' due date, and where the trades on financial derivative instruments and/or security positions are concluded with the sole aim of eliminating the risks linked to positions taken through the other financial derivative instruments and/or security positions.
- 5.03 Hedging arrangements are defined as combinations of trades on financial derivative instruments and/or security positions which do not necessarily refer to the same underlying asset and where the trades on financial derivative instruments and/or security positions are concluded with the sole aim of eliminating the risks linked to positions taken through the other financial derivative instruments and/or security positions.
- 5.04 If for the Scheme managed, the Licence Holder uses a conservative calculation rather than an exact calculation of the commitment for each financial derivative instrument, hedging and netting arrangements cannot be taken into account to reduce commitment on the derivatives involved if it results in an underestimation of the global exposure.
- 5.05 The Licence Holder for each Scheme managed may net positions:
 - a. between financial derivative instruments, provided they refer to the same underlying asset, even if the maturity date of the financial derivative instruments is different; and/ or
 - b. between a financial derivative instrument (whose underlying asset is a transferable security, money market instrument or a collective investment undertaking) and that same corresponding underlying asset.
- 5.06 Schemes that invest primarily in interest rate derivatives may make use of specific duration-netting rules in order to take into account the correlation between the maturity segments of the interest rate curve.

Duration-Netting Rules

- 5.07 The duration-netting rules cannot be used if it would lead to an incorrect assessment of the risk profile of the Scheme. In the case of Scheme availing of these netting rules, the Licence Holder should not include other sources of risk such as volatility in their interest rate strategy. Therefore, for example, interest rate arbitrage strategies may not apply these netting rules.

- 5.08 The use of duration-netting rules cannot generate any unjustified level of leverage through investment in short term positions. Thus, for example, short dated interest rate derivatives cannot be the main source of performance for a Scheme with medium duration if it makes use of this netting methodology.
- 5.09 A Scheme interest rate derivative should be converted into its equivalent underlying asset position according to the following methodology:
- a. Allocate each interest rate financial derivative instrument to the appropriate range ('bucket') of the following maturity-based ladder:

Bucket	Maturities range
1	0 - 2 years
2	2 - 7 years
3	7 - 15 years
4	> 15 years

- b. Calculate the equivalent underlying asset position of each interest rate derivative instrument as its duration divided by the target duration of the Scheme and multiplied by the market value of the underlying asset:

$$\text{Equivalent underlying asset position} = \frac{\text{duration}_{\text{FDI}}}{\text{duration}_{\text{target}}} \times \text{MtM}_{\text{Underlying}}$$

where:

- $\text{duration}_{\text{FDI}}$ is the duration (sensitivity to interest rates) of the interest rate derivative instrument;
 - $\text{duration}_{\text{target}}$ is in line with the investment strategy, the directional positions and with the expected level of risk at any time and will be regularised otherwise. It is also in line with the portfolio duration under normal market conditions; and
 - $\text{MtM}_{\text{underlying}}$ is the market value of the underlying asset as detailed SLC 4.07 to 4.14 of this Appendix.
- c. Net the long and short equivalent underlying asset positions within each bucket. The amount of the former which is netted with the latter is the netted position for that bucket.
- d. Net the amount of the remaining unnetted long (or short) position in the bucket (*i*) with the amount of the remaining short (long) position remaining in the bucket (*i+1*).
- e. Net the amount of the unnetted long (or short) position in the bucket (*i*) with the amount of the remaining short (long) position remaining in the bucket (*i+2*).

- f. Calculate the netted amount between the unnetted long and short positions of the two most remote buckets.
- g. The Scheme calculates its total global exposure as the sum of:
 - i. 0% of the netted position for each bucket;
 - ii. 40% of the netted positions between two adjoining buckets (i) and ($i+1$);
 - iii. 75% of the netted positions between two remote buckets separated by another one, meaning buckets (i) and ($i+2$);
 - iv. 100% of the netted positions between the two most remote buckets; and
 - v. 100% of the remaining unnetted positions.

5.10 A Scheme making use of the duration-netting rules, which are optional, can still make use of the hedging framework further to SLCs 5.11 to 5.13 hereunder. However, only the interest rate derivatives which are not included in hedging arrangements can still make use of duration-netting rules.

Hedging

- 5.11 Hedging arrangements may only be taken into account when calculating global exposure if they offset the risks linked to some assets and, in particular, if they comply with all the criteria below:
- a. Investment strategies that aim to generate a return should not be considered as hedging arrangements;
 - b. There should be a verifiable reduction of risk at the Scheme level;
 - c. The risks linked to financial derivative instruments, i.e. general and specific if any, should be offset;
 - d. They should relate to the same asset class; and
 - e. They should be efficient in stressed market conditions.
- 5.12 Notwithstanding the criteria referred to in SLC 5.11, financial derivative instruments used for currency hedging purposes (i.e. that do not add any incremental exposure, leverage and/or other market risks) may be netted when calculating the Scheme's global exposure.
- 5.13 For avoidance of doubt, no market neutral or long/short investment strategies will comply with all the criteria prescribed in SLCs 5.11 and 5.12.

6. Alternative Commitment Approach

6.01 Schemes which comply in full with the criteria in SLC 6.02 may calculate global exposure using the commitment approach in the way described in SLC 6.03.

6.02 The criteria are the following:

- a. The Scheme is passively managed and structured to achieve at maturity the pre-defined payoff and holds at all times the assets needed to ensure that this pre-defined payoff will be met;
- b. The Scheme is formula-based and the pre-defined payoff can be divided into a limited number of separate scenarios which are dependent on the value of the underlying assets and which offer investors different payoffs;
- c. The investor can only be exposed to one payoff profile at any time during the life of the Scheme;
- d. The use of the commitment approach as defined in section 4 to calculate global exposure for the individual scenarios is appropriate taking into account the requirements of SLC 3.04 to SLC 3.06 of this Appendix;
- e. The Scheme has a final maturity not exceeding 9 years;
- f. The Scheme does not accept new subscriptions from the public after the initial marketing period;
- g. The maximum loss the Scheme can suffer when the portfolio switches from one payoff profile to another must be limited to 100% of the initial offer price;
- h. The impact of the performance of a single underlying asset on the payoff profile when the Scheme switches from one scenario to another complies with the diversification; and
- i. The requirements of the UCITS Directive based on the initial net asset value of the Scheme.

6.03 The calculation method is the commitment approach as described in Section 4 but adjusted in the following way:

- a. The formula-based investment strategy for each pre-defined payoff is broken down into individual payoff scenarios;
- b. The financial derivative instruments implied in each scenario are assessed to establish whether the derivative may be excluded from the calculation of global exposure under the provisions of SLC 4.15 and SLC 4.16 of this Appendix; and
- c. Finally the Scheme calculates the global exposure of the individual scenarios to assess compliance with the global exposure limit of 100% of NAV.

6.04 Schemes which satisfy the criteria set out in SLC 6.02 (a) to (d) above and which were authorised before 1st July, 2011 shall apply the conditions on risk management and the calculation of global exposure and counterparty risk for Scheme as laid down in the Investment Services Rules for Retail Collective Investment Schemes which applied until the [to insert date].

6.05 The Licence Holder which makes use of the approach for the calculation of global exposure outlined in SLCs 6.01 to 6.04 above should ensure that the prospectus:

- a. contains full disclosure regarding the investment policy, underlying exposure and payoff formulas in clear language which can be easily understood by the retail investor; and
- b. includes a prominent risk warning informing investors who redeem their investment prior to maturity that they do not benefit from the predefined payoff and may suffer significant losses.

7. Efficient Portfolio Management Techniques

7.01 If Schemes are authorised to undertake repurchase transactions or securities lending transactions in order to generate additional leverage through the reinvestment of collateral, the Licence Holder must take these transactions into consideration for the determination of the global exposure.

7.02 Where a Scheme reinvests collateral in financial assets that provide a return in excess of the risk-free return, the Licence Holder must include in the global exposure calculations of the managed Scheme:

- a. the amount received if cash collateral is held; and
- b. the market value of the instrument concerned if non-cash collateral is held.

7.03 Any global exposure generated will be added with the global exposure created through the use of derivatives and the total of these must not be greater than 100% of NAV.

7.04 Any further use of collateral as part of another repurchase transaction or securities lending transactions must be similarly treated and included in the global exposure calculation.

8. Calculation of Global Exposure using the VaR Approach

8.01 When calculating the global exposure calculation by using the VaR approach, the Licence Holder should consider all the positions of the Scheme's portfolio.

8.02 A Scheme should always set the maximum VaR limit according to its defined risk profile.

VaR Approaches – Relative VaR and Absolute VaR – The Choice

- 8.03 For the purpose of calculating global exposure of the managed Scheme, the Licence Holder can use the relative VaR approach or the absolute VaR approach as laid down hereafter.
- 8.04 The Licence Holder is responsible for deciding which VaR approach is the most appropriate methodology given the risk profile and investment strategy of the Scheme.
- 8.05 The Licence Holder should be able to demonstrate that the VaR approach it uses is appropriate. The decision and its underlying assumptions should be fully documented.
- 8.06 As a general rule, there must be consistency in the choice of the type of VaR used for the calculation of the global exposure.

Relative VaR Approach

- 8.07 Under the relative VaR approach, the Licence Holder shall calculate the global exposure of the Scheme managed as follows:
- a. Calculate the VaR of the Scheme's current portfolio (which includes derivatives);
 - b. Calculate the VaR of a reference portfolio;
 - c. Check that the VaR of the Scheme's portfolio is not greater than twice the VaR of the reference portfolio in order to ensure a limitation of the global leverage ratio of the Scheme to 2. This limit can be presented as follows:

$$\frac{(\text{VaR UCITS}-\text{VaR Reference Portfolio}) \times 100}{\text{VaR Reference Portfolio}} \leq 100\%$$

- 8.08 The reference portfolio and the related processes should comply with the following criteria:
- a. The reference portfolio should be unleveraged and should, in particular, not contain any financial derivative instruments or embedded derivatives, except that;
 - a Scheme engaging in a long/short strategy may select a reference portfolio which uses financial derivative instruments to gain the short exposure; and
 - a Scheme which intends to have a currency hedged portfolio may select a currency hedged index as a reference portfolio.

- b. The risk profile of the reference portfolio should be consistent with the investment objectives, policies and limits of the Scheme's portfolio;
- c. If the risk/return profile of a Scheme changes frequently or if the definition of a reference portfolio is not possible, then the relative VaR method should not be used; and
- d. The process relating to the determination and the ongoing maintenance of the reference portfolio should be integrated in the risk management process and be supported by adequate procedures. Guidelines governing the composition of the reference portfolio should be developed. In addition, the actual composition of the reference portfolio and any changes should be clearly documented.

Absolute VaR Approach

8.09 The absolute VaR approach limits the maximum VaR that a Scheme can have relative to its Net Asset Value.

Minimum Requirements for VaR Approach

8.10 When assessing the global exposure by means of a relative or absolute VaR approach of a managed Scheme, the Licence Holder should comply with the quantitative and qualitative minimum requirements as laid down hereunder.

VaR approach: Quantitative requirements

8.11 Calculation Standards

8.11.1 The absolute VaR of a Scheme cannot be greater than 20% of its NAV.

8.11.2 The Licence Holder shall carry out the calculation of the absolute and relative VaR in accordance with the following parameters:

- a. One-tailed confidence interval of 99%;
- b. Holding period equivalent to 1 month (20 business days);
- c. Effective observation period (history) of risk factors of at least 1 year (250 business days) unless a shorter observation period is justified by a significant increase in price volatility (for instance extreme market conditions);
- d. Quarterly data set updates, or more frequent when market prices are subject to material changes; and
- e. At least daily calculation.

8.11.3 A confidence interval and/or holding period differing from the default parameters in SLC 8.11.2 (a) and (b) may be used by the Scheme provided the confidence interval is not below 95% and the holding period does not exceed 1 month (20 days).

8.11.4 In the case where the managed Scheme uses an absolute VaR approach, the use of other calculation parameters goes together with a rescaling of the 20% limit to the particular holding period and/or confidence interval. The rescaling can only be done under the assumption of a normal distribution with an identical and independent distribution of the risk factor returns by referring to the quantiles of the normal distribution and the square root of time rule.

8.12 Risk Coverage

8.12.1 The VaR model used for global exposure calculation purposes should take into account, as a minimum, general market risk and, if applicable, idiosyncratic risk. The event (and/or default) risks to which a Scheme is exposed following its investments should be taken into account, as a minimum, in the stress testing program. If the proposed risk measurement framework should prove inadequate, the MFSA reserves the right to require stricter measures for such Scheme.

8.13 Completeness and Accuracy of the Risk Assessment

8.13.1 The choice of the appropriate model remains the responsibility of the Licence Holder in the case of a managed Scheme. When selecting the VaR model for a managed Scheme, the Licence Holder should ensure that the model is appropriate with regard to the investment strategy being pursued and the types and complexity of the financial instruments used.

8.13.2 The VaR model should provide for completeness and it should assess the risks with a high level of accuracy. In particular:

- a. all the positions of the Scheme's portfolio should be included in the VaR calculation;
- b. the model should adequately capture all the material market risks associated with portfolio positions and, in particular, the specific risks associated with financial derivative instruments. For that purpose, all the risk factors which have more than a negligible influence on the fluctuation of the portfolio's value should be covered by the VaR model;
- c. the quantitative models used within the VaR framework (pricing tools, estimation of volatilities and correlations, etc.) should provide for a high level of accuracy; and
- d. all data used within the VaR framework should provide for consistency, timeliness and reliability.

8.14 Back Testing

8.14.1 In the case of a managed Scheme, the Licence Holder should monitor the accuracy and performance of its VaR model (i.e. prediction capacity of risk estimates), by conducting a back testing program.

- 8.14.2 The back testing program should provide for each business day a comparison of the one-day value-at-risk measure generated by the Scheme's model for the Scheme's end-of-day positions to the one-day change of the Scheme's portfolio value by the end of the subsequent business day.
- 8.14.3 The Licence Holder should carry out the back testing program at least on a monthly basis, subject to always performing retroactively the comparison for each business day in SLC 8.14.2.
- 8.14.4 The Licence Holder should determine and monitor the 'overshootings' on the basis of this back testing program. An 'overshooting' is a one-day change in the portfolio's value that exceeds the related one-day value-at-risk measure calculated by the model.
- 8.14.5 If the back testing results reveal a percentage of 'overshootings' that appears to be too high, the Licence Holder should review the VaR model and make appropriate adjustments.
- 8.14.6 With regards to a managed Scheme, the senior management of the Licence Holder should be informed at least on a quarterly basis (and where applicable the Scheme's regulatory authority should be informed on a semi-annual basis), if the number of overshootings for each Scheme for the most recent 250 business days exceeds 4 in the case of a 99% confidence interval. This information should contain an analysis and explanation of the sources of 'overshootings' and a statement of what measures if any were taken to improve the accuracy of the model. The MFSA may take measures and apply stricter criteria to the use of VaR if the 'overshootings' exceed an unacceptable number.
- 8.15 Stress Testing
- 8.15.1 With regards to a managed Scheme using the VaR approach, the Licence Holder should conduct a rigorous, comprehensive and risk adequate stress testing program in accordance with the qualitative and quantitative requirements set out hereunder.
- 8.15.2 The stress testing program should be designed to measure any potential major depreciation of the managed Scheme value as a result of unexpected changes in the relevant market parameters and correlation factors. Conversely where appropriate, it should also measure changes in the relevant market parameters and correlation factors which could result in major depreciation of the Scheme's value.
- 8.15.3 The stress tests should be adequately integrated into the Scheme's risk management process and the results should be considered when making investment decision for the Scheme.
- 8.15.4 The stress tests should cover all risks which affect the value or the fluctuations in value of the Scheme to any significant degree. In particular, those risks which are not fully captured by the VaR model used, should be taken into account.

- 8.15.5 The stress tests should be appropriate for analysing potential situations in which the use of significant leverage would expose the Scheme to significant downside risk and could potentially lead to the default of the Scheme (i.e. NAV <0).
- 8.15.6 The stress tests should focus on those risks which, though not significant in normal circumstances, are likely to be significant in stress situations, such as the risk of unusual correlation changes, the illiquidity of markets in stressed market situations or the behaviour of complex structured products under stressed liquidity conditions.
- 8.15.7 Stress tests should be carried out on a regular basis, at least once a month. Additionally, they should be carried out whenever a change in the value or the composition of the managed Scheme or a change in market conditions makes it likely that the test results will differ significantly.
- 8.15.8 The design of the stress tests should be adapted in line with the composition of the Scheme and the market conditions that are relevant for the Scheme.
- 8.15.9 The Licence Holder should implement clear procedures relating to the design of, and ongoing adaptation of the stress tests. A program for carrying out stress tests should be developed on the basis of such procedures for each managed Scheme. It should be explained why the program is suitable for the managed Scheme. Completed stress tests together with their results should be clearly documented. Reasons should be given if it is intended to deviate from the program.

VaR Approach: Qualitative Requirements

8.16 Tasks to be carried out by the risk management function

- 8.16.1 In accordance with SLC 2.32 of Part BII of these Rules, the risk management function should be responsible for:
- (a) sourcing, testing, maintaining and using the VaR model on a day-to-day basis;
 - (b) supervising the process relating to the determination of the reference portfolio if the Scheme reverts to a relative VaR approach;
 - (c) ensuring on a continuous basis that the model is adapted to the Scheme's portfolio;
 - (d) performing continuous validation of the model;
 - (e) validating and implementing for each Scheme a documented system of VaR limits consistent with its risk profile that is to be approved by Senior Management and the Board of Directors;
 - (f) monitoring and controlling the VaR limits;
 - (g) monitoring on a regular basis the level of leverage generated by the Scheme; and

- (h) producing on a regular basis reports relating to the current level of the VaR measure (including back testing and stress testing) for Senior Management.

8.17 Use of the VaR model

8.17.1 The VaR model and the related outputs should represent an integral part of the daily risk management work. In addition, they should be integrated in the regular investment process lead by the investment managers as part of the risk management program to keep the Scheme's risk profile under control and consistent with its investment strategy.

8.18 Model validation

8.18.1 Following initial development, the model should undergo a validation by a party independent of the building process for ensuring that the model is conceptually sound and captures adequately all material risks. This validation process must also be carried out following any significant change to the model. A significant change could relate to the use of a new product by the Scheme, the need to improve the model following the back testing results, or a decision taken by the Scheme to change certain aspects of the model in a significant way.

8.18.2 The risk management function should perform ongoing validation of the VaR model (this includes, but is not limited to back testing as laid down SLCs 8.14.1. to 8.14.6. of this Appendix in order to ensure the accuracy of the model's calibration. The review should be documented. Where necessary, the model should be adjusted.

8.19 Documentation and procedures

8.19.1 The documentation requirements referred to in SLC 2.02 above should be taken to include an adequate documentation of the VaR model and the related processes and techniques, thereby covering, among others:

- a. the risks covered by the model;
- b. the model's methodology;
- c. the mathematical assumptions and foundations;
- d. the data used;
- e. the accuracy and completeness of the risk assessment;
- f. the methods used to validate the model;
- g. the back testing process;
- h. the stress testing process;
- i. the validity range of the model; and

- j. the operational implementation.

VaR Approach: Additional Safeguards and Disclosure

8.20 Additional Safeguards

- 8.20.1 The Licence Holder should regularly monitor the leverage of each managed Scheme which calculates its global exposure using a VaR methodology.
- 8.20.2 The Licence Holder should supplement the VaR / Stress Testing framework, where appropriate by taking into account the risk profile and the investment strategy being pursued, with other risk measurement methods.

8.21 Disclosure: Prospectus and Annual Reports

- 8.21.1 The Licence Holder shall disclose in the prospectus and annual report of a managed Scheme the method used to calculate the global exposure (i.e. commitment approach, relative VaR or absolute VaR).
- 8.21.2 The Licence Holder should disclose the expected level of leverage and the possibility of higher leverage levels in the prospectus of managed Scheme using VaR approaches.
- 8.21.3 Leverage should be calculated as the sum of the notionals of the derivatives used.
- 8.21.4 When using the relative VaR approach, information on the reference portfolio should be disclosed in the prospectus and the annual report.
- 8.21.5 The VaR measure of the managed Scheme should be published in the annual report. In this respect, the information provided should at least include the lowest, the highest and the average utilization of the VaR limit calculated during the financial year. The model and inputs used for calculation (calculation model, confidence level, holding period, length of data history) should be displayed.

9. Counterparty Risk and Issuer Concentration

- 9.01 The Licence Holder shall ensure that the counterparty risk arising from an over-the-counter (“OTC”) financial derivative instrument is subject to the limits prescribed in the Investment Services Rules for Retail Collective Investment Schemes.
- 9.02 When calculating the Scheme’s exposure to a counterparty within the limits prescribed in the Investment Services Rules for Retail Collective Investment Schemes, the Licence Holder shall use the positive mark-to-market value of the OTC derivative contract with that counterparty.

- 9.03 A Licence Holder may net the derivative positions of a Scheme with the same counterparty, provided that they are able to legally enforce netting agreements with the counterparty on behalf of the Scheme. Netting shall only be permissible with respect to OTC derivative instruments with the same counterparty and not in relation to any other exposures the Scheme may have with the same counterparty.
- 9.04 The Licence Holder may reduce the Scheme's exposure to a counterparty of an OTC derivative transaction through the receipt of a collateral. Collateral received shall be sufficiently liquid so that it can be sold quickly at a price that is close to its pre-sale valuation.
- 9.05 The Licence Holder shall take collateral into account when calculating exposure to counterparty risk when the Licence Holder passes collateral to OTC counterparty on behalf of the Scheme. Collateral passed may be taken into account on a net basis only if the Licence Holder is able to legally enforce netting arrangements with this counterparty on behalf of the Scheme.
- 9.06 The Licence Holder shall calculate issued concentration on the basis of the underlying exposure created through the use of financial derivative instruments pursuant to the commitment approach.
- 9.07 With respect to the exposure arising from OTC derivatives transactions, the Licence Holder shall include in the calculation any exposure to OTC derivative counterparty risk.
- 9.08 The risk exposure of a Scheme to a counterparty to an OTC derivative may not exceed 5% of assets. This limit is raised to 10% in the case of credit institutions. The following exposure must also be calculated within the OTC counterparty limits:
- Initial margin posted to and variation margin receivable from a broker relating to exchange-traded or OTC derivatives which is not protected by client money rules or other similar arrangements to protect the Scheme against the insolvency of the broker.
- 9.09 The following exposure must also be included when calculating the issuer concentration limit of 20%:
- Any net exposure to a counterparty generated through a stock-lending or repurchase agreement, net exposure being understood as the amount receivable by the Scheme less any collateral provided to the Scheme. Exposures created through the reinvestment of collateral must also be taken into account in the issuer-concentration calculations.
- 9.10 When calculating exposure, a Scheme must establish whether its exposure is to an OTC counterparty, a broker or a clearing house.
- 9.11 Position exposure to the underlying assets of financial derivative instruments (including embedded financial derivative instruments) in transferable securities such as money market instruments or collective investment undertakings, combined where

relevant with positions resulting from direct investments, may not exceed the limits set out in the Investment Services Rules for Retail Collective Investment Schemes.

- 9.12 When calculating issuer-concentration risk, the financial derivative instrument (including embedded financial derivative instruments) must be looked through in determining the resultant position exposure. This position exposure must be taken into account in the issuer concentration calculations. It must be calculated using the commitment approach when appropriate or the maximum potential loss as a result of default by the issuer if more conservative. It must also be calculated by all Schemes, regardless of whether they use VaR for global exposure purposes.
- 9.13 This provision does not apply in the case of index-based financial derivative instruments provided the underlying index is one which meets with the criteria prescribed in the Investment Services Rules for Retail Collective Investment Schemes.

Collateral

- 9.14 Collateral may be used to reduce counterparty risk exposure provided it complies with the following set of high-level principles at all times:
- Liquidity – any collateral posted must be sufficiently liquid in order that it can be sold quickly at a robust price that is close to pre-sale valuation. Collateral should normally trade in a highly liquid marketplace with transparent pricing. Additionally collateral with a short settlement cycle is preferable to a long settlement cycle as assets can be converted into cash more quickly.
 - Valuation – collateral must be capable of being valued on at least a daily basis and the possibility of ‘stale prices’ should not be allowed. An inability to value collateral through independent means would clearly place the Scheme at risk, and this would also apply to ‘mark to model’ valuations and assets that are thinly traded.
 - Issuer credit quality – as collateral provides secondary recourse, the credit quality of the collateral issuer is important. This may involve the use of haircuts in the event of a less than ‘very high grade’ credit rating. It should be reasonable to accept collateral on assets that exhibit higher price volatility once suitably conservative haircuts are in place.
 - Correlation – Correlation between the OTC counterparty and the collateral received must be avoided.
 - Collateral diversification (asset concentration) – there is an obvious risk if collateral is highly concentrated in one issue, sector or country.
 - Operational and legal risks – collateral management is a highly complex activity. As such, the existence of appropriate systems, operational capabilities and legal expertise is critical.

- Collateral must be held by a third party custodian which is subject to prudential supervision, and which is either unrelated to the provider or is legally secured from the consequences of a failure of a related party.
- Collateral must be fully enforced by the Scheme at any time without reference to or approval from the counterparty.
- Non-cash collateral cannot be sold, re-invested or pledged.
- Cash collateral can only be invested in risk-free assets.

9.15 A Scheme may disregard the counterparty risk on condition that the value of the collateral, valued at market price and taking into account appropriate discounts, exceeds the value of the amount exposed to risk at any given time.

9.16 For the valuation of collateral presenting a significant risk of value fluctuation, a Scheme should apply prudent discount rates.

10. Transactions in Financial Derivative Instruments

10.01 A Licence Holder for a managed Scheme should, at any given time, be capable of meeting all its payment and delivery obligations incurred by transactions involving financial derivative instruments.

10.02 Monitoring to ensure that financial derivative transactions are adequately covered should form part of the risk management process.

Procedures for the Assessment of the Value of OTC Derivatives

10.03 The Licence Holder shall verify that Scheme's exposure to OTC derivatives as assigned fair values that do not rely only on market quotations by the counterparties of the OTC transactions and which fulfil the criteria set out in Article 8(4) of Directive 2007/16/EC. In this regard, the Licence Holder shall establish, implement and maintain arrangements and procedures which ensure appropriate, transparent and fair valuation of the Scheme's exposures to OTC derivatives.

10.04 The Licence Holder shall ensure that the fair value of OTC derivatives is subject to adequate, accurate and independent assessment.

10.05 The valuation arrangements and procedures shall be adequate and proportionate to the nature and complexity of the OTC derivatives concerned.

10.06 The Licence Holder shall comply with the requirements prescribed in SLC 2.04(b) and SLC 3.23 of Part BII of these Rules when arrangements and procedures concerning the valuation of OTC derivatives involve the performance of certain activities by third parties.

- 10.07 For the purposes of SLCs 10.03 to 10.06, the risk management function shall be appointed with specific duties and responsibilities.
- 10.08 The valuation arrangements and procedures referred to in SLC 10.03 to 10.06 shall be adequately documented.

Reports on Derivative Instruments

- 10.09 The Licence Holder shall deliver to the MFSA at least on an annual basis, reports containing information which reflects a true and fair view of all the types of derivative instruments used for each managed Scheme, the underlying risks, the quantitative limits and the methods which are chosen to estimate the risks associated with the derivative transactions.
- 10.10 The MFSA shall review the regularity and completeness of the information referred to in SLC 10.09 and shall have the opportunity to intervene where appropriate.

11. Further Information

- 11.01 The following documents issued by the European Securities and Markets Authority ('ESMA') include further information and explanations on the different approaches that can be used by Licence Holders in order to monitor, measure and manage risk:
- Guidelines on Risk Measurement and the Calculation of Global Exposure and Counterparty Risk for UCITS, CESR/10-788, (available from: <http://www.esma.europa.eu/popup2.php?id=7000>).
 - Guidelines to competent authorities and UCITS management companies on risk measurement and the calculation of global exposure for certain types of structured UCITS, ESMA/2011/112, (available from: <http://www.esma.europa.eu/popup2.php?id=7000>).