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**CONSULTATION PAPER**

**CESR's Guidelines on Risk  
Measurement and the  
Calculation of Global Exposure  
and Counterparty Risk for  
UCITS**

**Deadline for contributions:** CESR invites responses to this consultation paper by **31 May 2010**. All contributions should be submitted online via CESR's website under the heading 'Consultations' at [www.cesr.eu](http://www.cesr.eu). All contributions received will be published following the close of the consultation, unless the respondent requests their submission to be confidential.



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## Executive Summary

This paper sets out CESR's proposed guidelines on Risk Measurement and the Calculation of Global Exposure and Counterparty Risk for UCITS. These guidelines will accompany the level 2 implementing measures for the revised UCITS Directive (2009/65/EC) that should be adopted by the European Commission by July 2010.

The key purpose of these guidelines is to provide stakeholders with detailed methodologies in order to foster a level playing field among Member States in the area of risk measurement and the calculation of global exposure and counterparty risk for UCITS.

CESR stresses that the calculation of the global exposure represents only one element of the UCITS' overall risk management process. It remains the responsibility of the UCITS to select an appropriate methodology to calculate it; in that context, CESR proposes detailed methodologies to be followed by UCITS when they use the commitment or the Value at Risk (VaR) approach.

For the commitment approach, CESR sets out proposed guidelines on:

- the conversion of financial derivatives into the equivalent position in the underlying assets of those derivatives;
- the methodologies for netting and hedging arrangements and principles to be respected when calculating global exposure; and
- the calculation of global exposure when using Efficient Portfolio Management Techniques.

Under the commitment approach CESR has also identified, for interest rate-related financial derivative instruments that only expose the UCITS to general interest rate risk, two possible methodologies based on the sensitivity. CESR is consulting stakeholders on which option should be retained. In the context of the commitment approach, CESR also sets out its initial thoughts on specific guidelines for structured UCITS (i.e. formula funds) which would involve an alternative approach to the standard commitment methodology for such UCITS, as well as the criteria they would have to satisfy in order to apply such an approach.

For the VaR approach, CESR proposes guidelines on:

- the principles to be applied for the choice between Relative and Absolute VaR;
- the criteria to be used in the selection of the reference portfolio for use in the Relative VaR calculation;
- the methodology for the computation of the global exposure when using Relative and Absolute VaR with a set of quantitative and qualitative requirements to be respected; and
- additional safeguards which UCITS should put in place when calculating the global exposure with the VaR approach.

In these guidelines, CESR also defines a set of high-level principles relating to assets used as collateral to reduce counterparty risk and cover rules for transactions in financial derivative instruments.



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## **Introduction and Background**

In March 2007, the European Commission announced a series of targeted enhancements to the UCITS Directive (85/611/EEC). Following further work and consultation, the Commission adopted a proposal for the revised UCITS Directive in July 2008, an amended version of which was approved by the European Parliament in January 2009 and adopted by the Council in June 2009. The final text of the revised Directive (2009/65/EC) was published in the Official Journal on 17 November 2009.

On 13 February 2009 the European Commission submitted a provisional request to CESR for technical advice on the content of the implementing measures concerning the future UCITS Directive ('the mandate'). The mandate was split into three parts:

- I. Request for technical advice on the level 2 measures related to the management company passport;
- II. Request for technical advice on the level 2 measures related to key investor information;
- III. Request for technical advice on the level 2 measures related to fund mergers, master-feeder structures and the notification procedure.

CESR provided technical advice to the European Commission on Part I of the mandate dealing with level 2 measures related to the UCITS management company passport (Ref: CESR/09-963) in October 2009. This advice included proposed level 2 measures for the calculation of UCITS global exposure. These proposals had been the subject of a public consultation in June 2009 (Ref. CESR/09-489). The advice also recommended that certain implementing measures dealing with the calculation of global exposure be accompanied by level 3 Guidelines. The CESR advice also proposed that the level 2 measures and level 3 guidelines should be adopted as a single package by July 2010.

This consultation paper proposes detailed level 3 Guidelines to accompany the level 2 implementing measures in the context of risk measurement and the calculation of global exposure and counterparty risk for UCITS. It is important to note that the calculation of global exposure represents only one element of a UCITS overall risk management process.

**This paper includes, for information purposes only, the proposed level 2 measures which were included in CESR's advice to the Commission. Respondents are requested to comment on the proposed level 3 Guidelines only.**



## **1. Definition and scope of Global Exposure**

### **Extract from CESR's advice to the European Commission on proposed level 2 measures**

- Global exposure, as referred to in Article 51(3) of the UCITS Directive, is a measure designed to limit either the incremental exposure and leverage generated by a UCITS through the use of financial derivative instruments (including embedded derivatives) or the market risk of the UCITS portfolio.
- Counterparty risk arising from an over-the-counter (OTC) financial derivative instrument is captured by the application of the specific limits set out in Article 52 of the UCITS Directive.
- Where a UCITS, in accordance with Article 51(2) of the UCITS Directive, employs techniques and instruments (other than financial derivative instruments) including repurchase transactions or securities lending transactions, in order to generate additional leverage and market risk through, for example, the reinvestment of collateral, these transactions must also be taken into consideration in the determination of global exposure.
- A UCITS global exposure must be calculated on at least a daily basis.
- A UCITS global exposure may be calculated using the commitment approach, the value at risk approach or advanced risk measurement methodologies recognised by CESR.
- UCITS must ensure that the method selected to measure global exposure is appropriate taking into account the investment strategy being pursued and the types and complexity of the financial derivative instruments used. The UCITS should also consider the proportion of the portfolio comprising financial derivative instruments.

#### **Box 1**

1. UCITS must calculate global exposure on at least a daily basis. The limits on global exposure must be complied with on an ongoing basis. Depending on the investment strategy being pursued UCITS should, where necessary, also carry out intra-day calculations.
2. In accordance with Article XX of the implementing Directive 2009/65/EC of the European Parliament and of the Council as regards organisational requirements, conflicts of interest, conduct of business, risk management and content of the agreement between a depositary and a management company, a UCITS may consider appropriate for the calculation of global exposure only those methodologies on which CESR has published level 3 Guidelines.
3. It is the responsibility of the UCITS to select an appropriate methodology to calculate global exposure. More specifically, a UCITS should undertake a self-assessment of its risk profile resulting from its investment policy (including its use of financial derivative instruments) and select, on the basis of this analysis, an appropriate methodology in order to calculate the global exposure.
4. Where UCITS engage in complex investment strategies which represent more than a negligible part of the UCITS' investment policy, or have more than a negligible exposure to exotic derivatives the UCITS must use an advanced risk measurement methodology (supported by a stress testing program) such as the Value-at-Risk (VaR) approach to calculate global exposure.
5. The use of a commitment approach or VaR approach or any other methodology to



calculate global exposure does not exempt UCITS from the requirement to establish appropriate internal risk management measures and limits.

### **Explanatory Text**

1. CESR emphasised in its advice on risk management in the context of the management company passport that the calculation of the global exposure represents only one element of the UCITS overall risk management process (see in particular Box 1 (points 3 and 4 of explanatory text) and Box 9 (point 50 of explanatory text) in Section IV of the advice). The risk management process should comprise procedures which enable the management company to assess the UCITS' exposure to all material risks including market risks, liquidity risks, counterparty risks and operational risks.
2. With respect to the selection of the methodology used to measure global exposure, CESR expects that the commitment approach should not be applied to UCITS using, to a large extent and in a systematic way, financial derivative instruments for investment purposes and/or making use to a certain extent of more complex strategies or instruments even if such UCITS do not fall within the scope within the scope of paragraph 4 of Box 1.
3. Additionally there are investment strategies that can be pursued by UCITS through the use of financial derivative instruments for which the commitment approach does not adequately capture the related risks (for instance non-directional risks like volatility risk, gamma risk or basis risk) and/or for which it does not give, with regard to the complexity of the strategy, an adequate and risk sensitive view of the related risks (for instance hedge fund-like strategies). Illustrative examples (non-exhaustive list) of such investment strategies might be:
  - option strategies (e.g. delta-neutral or volatility strategies)
  - arbitrage strategies (e.g. arbitrage on interest rate curve, convertible bond arbitrage, etc.)
  - complex long/short and/or market neutral strategies

### **Questions:**

1. **Do you agree with the proposed Level 3 Guidelines for the definition and scope of global exposure?**
2. **Do you have any alternative suggestions?**



## **2 Calculation of Global Exposure using the Commitment Approach**

### **Extract from CESR's advice to the European Commission on proposed level 2 measures**

- The calculation process when using the commitment approach must be applied to all financial derivative positions (including embedded derivatives), whether used as part of the UCITS' general investment policy, risk reduction and/or for the purposes of efficient portfolio management as described in Article 51(2) of the UCITS Directive.
- The standard commitment approach calculation converts the financial derivative position into the market value of an equivalent position in the underlying asset of that derivative. Under the commitment approach, a UCITS may apply other calculation methods to financial derivative positions equivalent to the standard commitment approach.
- When calculating global exposure using the commitment approach, a UCITS may benefit from the effects of netting and hedging arrangements. Additionally, where the use of financial derivative instruments does not generate incremental exposure for the UCITS the underlying exposure is not included in the commitment calculation. Netting and hedging arrangements may only reduce global exposure provided they do not ignore obvious or material risks, result in a clear reduction in such risks and comply with the criteria agreed by CESR members.
- When using the commitment approach, temporary borrowing arrangements entered into by the UCITS in accordance with Article 83 of the UCITS Directive do not form part of the global exposure calculation.

### **2.1 Conversion Methodologies**

#### **2.1.1 Standard Derivatives – Embedded Derivatives and Non-Standard Derivatives**

##### **Box 2**

1. The commitment conversion methodology for standard derivatives is always the market value of the equivalent position in the underlying asset. This may be replaced by the notional value of the derivative contract where this is more conservative. 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 derivatives represent a negligible portion of the UCITS portfolio.
2. The following steps must be taken by a UCITS when calculating global exposure using the commitment approach:
  - Calculate the commitment of each individual derivative (as well as any embedded derivatives and leverage linked to EPM techniques) is calculated.
  - Identify netting and hedging arrangements are identified. 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 net commitment.
- 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 EPM techniques (Ref Box6)
- 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.

### Conversion Methodologies – Standard Derivatives

3. The following conversion method should be applied to the non-exhaustive list of standard derivatives below.

- 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
  - Plain Vanilla Currency Option:  
Notional contract value of currency leg(s)<sup>1</sup> \* delta

<sup>1</sup> Where any currency derivative has 2 legs that are not in the base currency of the fund, both legs must be taken into account in the commitment calculation



- Plain Vanilla Index Options:  
Number of contracts\*notional contract size\* index level \* delta
  
- 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 (see below) \* 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:  
Market value of underlying reference asset (the notional value may also be applied)
  
  - 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. The following conversion method should be applied to the following non-exhaustive list of 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
- Warrants and Rights:  
Number of shares/bonds \* market value of underlying referenced instrument \* delta

### Conversion Methodologies – Non-Standard (Exotic) Derivatives

5. 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 pursuant to a 1% change in volatility.

As 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 <sub>$t$</sub>  (without volatility cap)

Variance Notional \* min [(current) Variance <sub>$t$</sub> ; volatility cap<sup>2</sup>] (with volatility cap)

whereby: (current) variance <sub>$t$</sub>  is a function of the squared realized and implied volatility, more precisely:

$$\text{(current) variance}_t = \frac{t}{T} * \text{realized volatility } (0,t)^2 + \frac{T-t}{T} * \text{implied volatility } (t,T)^2$$

- Volatility Swaps

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

Vega Notional \* (current) Volatility <sub>$t$</sub>  (without volatility cap)

Vega Notional \* min [(current) Volatility <sub>$t$</sub> ; volatility cap] (with volatility cap)

Whereby the (current) volatility <sub>$t$</sub>  is a function of the realized and implied volatility.



#### 6. 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.

#### Explanatory Text

4. The following are illustrative numeric examples of the calculation of the commitment on certain types of derivatives using the prescribed conversion methods:

- Bond Future:

A UCITS purchases 10 contracts of the Sept 2009 Bund future. Assuming that the 'cheapest-to-deliver' bond is the 10 Year 4% Bund (2018), trading at €120, the commitment calculation is:

$$10 * 100,000 * (\text{€}120/100) = \text{€}1,200,000$$

- Plain Vanilla Index Option:

A UCITS purchases 100 puts on the Dow Jones Euro STOXX 50. Assuming a current index level of 3,000 and a notional contract size of 10, the commitment calculation for this index option (assume a delta of 0.50) is:

$$(100 * 10) * 3,000 * 0.50 = \text{€}1,500,000$$

- Single Name Credit Default Swap:

A UCITS sells credit protection on an investment grade corporate bond with a notional value of €1,000,000. Assuming the reference bond is trading at €86, the commitment calculation is:

$$\text{€}1,000,000 * (\text{€}86/100) = \text{€}860,000 \text{ (alternatively } \text{€}1,000,000 \text{ may be used).}$$

- Variance Swaps:

Assume that a UCITS has a long position on a variance swap (without volatility cap) on the Eurostoxx50 with a strike price of 25 (expressed in terms of volatility), a vega notional of €250,000 and that the current variance (squared volatility) is  $30^2$  (=€900).

As a consequence, the variance notional would equal €5,000 for the given contract.

For that contract the commitment at time t amounts to:  $5000 * 30^2 = \text{€}4,500,000$ .

- Barrier (knock-in knock-out) Options:

A UCITS purchases 100 knock out options (up and out call) on the DJ Eurostoxx 50. assuming a current index level of 3000 and a notional contract size of 10, and a maximum delta of 0.8. then the commitment calculation is:

$$(100 * 10) * 3,000 * 0.80 = \text{€}2,400,000$$

5. Embedded derivatives may be present in commonly traded financial products such as convertible bonds. Structured products may also embed derivatives and as such trigger the requirement to



apply the commitment calculation methodology. Depending on the complexity of the derivative structure embedded in the host security, the structure should be broken down into its component parts and the effect of layers of derivative exposures must be adequately captured.

6. Certain derivative instruments exhibit risk characteristics that mean the standard conversion approach is not appropriate as it does not adequately capture the inherent risks relating to this type of product. Some derivatives, for example, may exhibit path-dependency, such features emphasising the need to have both robust models for risk management and pricing purposes, but also to reflect their complexity in the commitment calculation methodology. These derivatives may be stand-alone OTC contracts or may be embedded in a host security (see above)<sup>2</sup>.
7. Another common feature of these products is the existence of a highly volatile delta which could, for example, result in significant losses. It is expected that many of these instruments will need to be assessed on a case by case basis as alternative structures can include multiple barriers or barriers incorporated into other types of derivatives, for example binary options can be structured with barriers. The level of potential losses, which may be unlimited, will also need to be taken into account by reference to which side of the particular contract the UCITS is on.
8. There are other non-standard derivatives such as derivatives on bespoke baskets (baskets of credit derivatives) with features like accumulators, non-linear participation features and complex default correlation features. Where it is not possible to determine a suitable approach for a particular derivative or derivative structure, the UCITS may not apply the commitment methodology.

#### **Questions:**

3. **Do you agree with the proposed conversion methodologies for the different types of financial derivative instrument?**
4. **Do you have any alternative suggestions?**
5. **Do you find the numeric examples useful in providing further clarity?**
6. **In particular, do you consider that the use of the market (or notional) value of the underlying reference asset for a credit default swap is appropriate? Do you have any alternative suggestions?**

#### **2.1.2 Types of financial derivative instruments which may be excluded from the global exposure calculation**

##### **Box 3**

1. A financial derivative instruments, is not taken into account when calculating the commitment if it fulfils all of the following characteristics:
  - It swaps the performance of financial assets held in the UCITS portfolios for the performance of other reference financial assets;
  - It totally offsets the market risk of the swapped assets held in the UCITS portfolios, making that the UCITS performance (e.g. performance of the net asset value) does not depend on the performance of the swapped assets;
  - It includes neither additional optional features, nor leverage clauses nor other additional risks as compared to a direct holding of the reference financial assets;

#### **Explanatory Text**

<sup>2</sup> Path dependency is defined in the Glossary of terms (section 6).



9. A financial derivative instrument which meets the criteria above is meant to substitute the exposure of other reference financial assets for the exposure on financial assets directly held in the UCITS portfolio. Furthermore, it does not subject the UCITS to the market risk of the assets held as it totally protects the UCITS from movements in the market value of these assets.
10. As an example, if the UCITS portfolio invests in the DAX index and holds a financial derivative instrument which swaps the performance of the DAX index with the performance of the NIKKEI index then it must be equivalent to holding exposure to the NIKKEI index in the portfolio. So, the UCITS net asset value does not depend on the performance of the DAX index.
11. As the financial derivative instrument does not provide any incremental exposure or leverage (i.e. exposure is created on an un-leveraged basis) as calculated using the commitment approach, it will not have to be taken into account in the commitment approach calculation process.
12. This reasoning can be extended to cases in which the performance swap involves several assets or even the entire portfolio.

**Box 4**

1. A financial derivative instrument is not taken into account when calculating the commitment if it meets both the following conditions:
  - The combined holding by the UCITS of a financial derivative instrument relating to a financial asset and cash is equivalent to holding a cash position in the given financial asset.
  - The financial derivative instrument is not considered to generate any incremental exposure and leverage or market risk.

**Explanatory text**

13. As an example, assume that the UCITS invests in index future contracts and holds a cash position equal to the total notional of future contracts. This is equivalent to directly investing in index shares and the use of these financial derivative instruments (i.e. index futures) does not provide any incremental exposure

**Questions:**

7. **Do you agree that derivatives which do not result in incremental exposure for the UCITS should be excluded from the global exposure calculation? If you do not agree please explain your answer**
8. **Do you consider that the examples provided in the explanatory text properly reflect circumstances which do not result in incremental exposure for the UCITS?**



### 2.1.3 Netting and Hedging<sup>3</sup>

**Box 5**

#### **Netting and hedging**

1. When calculating global exposure using the commitment approach, netting and hedging arrangements may be taken into account to reduce global exposure.
2. 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
3. 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 offsetting risks linked to positions taken through the other financial derivative instruments and/or security positions
4. If the UCITS 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.

#### **Netting**

5. A UCITS may net positions:
  - between financial derivative instruments, provided they refer to the same underlying asset, even if the maturity date of the financial derivative instruments is different;
  - between a financial derivative instrument (whose underlying asset is a transferable security, money market instrument or a collective investment undertaking) and that same cash security;

#### **Hedging**

6. 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 :
  - investment strategies that aim to generate a return should not be considered as hedging arrangements;
  - there should be a verifiable reduction of risk at the UCITS level.
  - the risks linked to financial derivatives instruments, i.e., general and specific if any, should be offset;

<sup>3</sup> Netting and hedging arrangements taken into account by the UCITS in its global exposure calculation are without prejudice to the requirement that the UCITS comply at all times with the issuer concentration limits set out in Article 52 of Directive 2009/65/EEC.



- they should relate to the same asset class; and
- they should be efficient in stressed market conditions.

7. For the avoidance of doubt, no market neutral or long/short investment strategies will comply with all the criteria laid down above.

### **Explanatory Text - Netting**

14. The requirement that netting arrangements should refer to the same underlying asset should be interpreted strictly: assets which the UCITS considers as equivalent or highly correlated, such as different share classes or bonds issued by the same issuer, should not be considered as identical for the purpose of netting arrangements.
15. The definition of netting arrangements aims to ensure that only those trades which offset the risks linked to other trades, leaving no material residual risk, are taken into account. This means that combinations of trades which aim to generate a return, however small, by reducing some risks but keeping others should not be considered as netting arrangements. This is the case, for example, with arbitrage investment strategies which aim to generate a return by taking advantage of pricing discrepancies between financial derivative instruments with the same underlying but different maturities.
16. It is possible to net a call option on share xyz with a 3 month maturity with a put option on that same share xyz with a 6 month maturity. The global exposure on the residual position on these two options is equal to the (absolute value of the) sum of the exposure on the call option (which is positive) and on the put option (which is negative).
17. It is possible to net a long position on share xyz with a put option on that same share xyz.
18. The following simple example illustrates the netting process.

The UCITS portfolio contains:

- 10 Dax listed shares X whose combined market value is 100
- a short position through futures on that same share X whose market value is -20.
- a long position through futures on the FTSE with a market value of 30
- a short position through futures on the DAX with a market value of -10

The commitment of each individual derivative is:

- derivative on share X : -20
- derivative on FTSE : 30
- derivative on DAX : -10

Without any netting or hedging arrangement, the global exposure would be equal to the sum of the absolute values of each individual derivative commitment: **60**.

The combined long position and short position on share X constitutes a netting arrangement. The gross commitment of that netting arrangement is -20. However, the position in shares X (100) can be offset against these -20. This leads to a net commitment of nil.

Global exposure is equal to the sum of:

- the absolute value of the commitment of the derivative on FTSE : 30
- the absolute value of the commitment of the derivative on DAX : 10
- the absolute value of the net commitment of the netting arrangement : 0





It is not permitted to net the DAX short exposure against share X. Global exposure is thus equal to 40.

### **Explanatory Text – Hedging**

19. The scope of hedging arrangements as defined in these Guidelines is much narrower than that of strategies often referred to as hedging strategies.

20. The following list illustrates situations where the hedging strategy may comply with the above criteria:

- A portfolio management practice which aims to reduce the duration risk by combining an investment in a long-dated bond with an interest rate swap or at reducing the duration of a UCITS bond portfolio by concluding a short position on bond future contracts representative of the interest rate risk of the portfolio (duration hedging).
- A portfolio management practice which aims to offset the significant risks linked to an investment in a well diversified portfolio of shares by taking a short position on a stock market index future, where the composition of the equity portfolio is very close to that of the stock market index and its return highly correlated to that of the stock market index and where the short position on the stock market index future allows for an unquestionable reduction of the general market risk related to the equity portfolio (beta-hedging of a well diversified equity portfolio where the specific risk is considered not being significant).
- A portfolio management practice which aims to offset the risk linked to an investment in a fixed interest rate bond by combining a long position on a credit default swap and an interest rate swap which swaps that fixed interest rate with an interest rate equal to an appropriate money market reference rate (for example, EONIA<sup>4</sup>) plus a spread.

Such a strategy might be considered as a hedging strategy as all the hedging criteria laid down above are in principle complied with.

21. The following list illustrates situations which do not comply with the hedging criteria:

- A portfolio management practice which aims to offset the risk of a given share by taking a short position through a derivative contract on a share that is different but strongly correlated with that first share.

Though this strategy relies on taking opposite positions on the same asset class, it does not hedge the specific risk linked to the investment in share x. It should not be considered as a hedging strategy as mainly criteria (1), (2) and (3), as laid down under point 6 of Box 5 above, are not complied with.

- A portfolio management practice which aims to keep the alpha of a basket of shares (comprising a limited number of shares) by combining the investment in that basket of shares with a beta-adjusted short position on a future on a stock market index.

This strategy does not aim to offset the significant risks linked to the investment in that basket of shares but to offset the beta (market risk) of that investment and keep the alpha. It should not be considered as a hedging strategy when calculating the global exposure as mainly criteria (1) and (2) (as the alpha component of the basket of shares may dominate over the beta component and as such lead to losses at the level of the UCITS), as laid down under point 6 of Box 5 above, are not complied with.

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<sup>4</sup> EONIA European Overnight Index Average





- A merger arbitrage strategy: such a strategy combines a synthetic short position on a stock with a long position (synthetic or not) on another stock.

As in the previous example, such a strategy aims to hedge the beta (market risk) of the positions and generate a return linked to the relative performance of both stocks. It should not be considered as a hedging strategy when calculating the global exposure as mainly criteria (1), (2) (as the alpha component of the basket of shares may dominate over the beta component and as such lead to losses at the level of the UCITS) and (3), as laid down under point 6 of Box 5 above, are not complied with.

- A strategy which aims to hedge a long stock position with purchased credit bond protection (CDS) on the same issuer.

This strategy relates to two different asset classes and cannot be taken into account for the purpose of calculating the global exposure as criterion (4), inter alia, as laid down under point 6 of Box 5 above, is not complied with.

#### **Questions:**

9. Do you agree with the proposed definitions of netting and hedging?
10. Do you agree with the proposed criteria for netting and hedging in order to reduce global exposure?
11. Do you have any alternative suggestions?
12. Do you agree with the examples provided of strategies where netting is possible?
13. Do you agree with the examples provided where hedging is possible?
14. Do you agree with the examples provided where hedging is not possible?  
In particular do you agree that so-called beta-hedging strategies may not be taken into account for hedging purposes when calculating global exposure?

#### **2.1.4 Efficient Portfolio Management Techniques**

##### **Box 6**

1. If UCITS are authorised to undertake repurchase transactions or securities lending transactions in order to generate additional leverage through the reinvestment of collateral, these transactions must be taken into consideration for the determination of the global exposure.
2. UCITS that reinvest collateral in financial assets that provide a return in excess of the risk-free return, must include in their global exposure calculations:
  - The amount received if cash collateral is held
  - The market value of the instrument concerned if non-cash collateral is held
3. 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.
4. 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

#### **Explanatory Text**



22. In this paper CESR refers to the ‘further use’ of collateral received by a UCITS. CESR considers that such ‘further use’ cannot result in UCITS being entitled to engage in transactions which consist of the re-use of collateral for the purpose of settling a delivery obligation arising from a security it has sold short.

23. The following are examples of transactions which may give rise to global exposure:

- Sale & Repurchase Agreements (‘repo’):

This transaction normally occurs where a UCITS ‘sells’ securities to a reverse-repo counterparty and agrees to buy them back at an agreed price in the future. The UCITS will incur a *financing cost* from engaging in this transaction and therefore will need to re-invest the cash proceeds (effectively cash collateral) in financial instruments that provide a return greater than the financing cost incurred. This reinvestment of ‘cash collateral’ means that incremental market risk will be carried by the UCITS and so must be taken into account in the global exposure calculation. It is important to note that the economic risks and rewards of the ‘sold’ securities remain with the UCITS. It is also worth noting that a repo transaction will almost always give rise to leverage as the cash collateral *must* be reinvested at a yield greater than the financing costs incurred in order for the UCITS to make a return. In the event that non-cash collateral is received as part of the transaction and this collateral is further used as part of another repo, or stock-loan agreement, the full market value of the collateral must be included in the global exposure amount.

- Purchase and Resale Agreements (‘reverse repo’):

This transaction occurs where a UCITS ‘purchases’ securities from a repo counterparty and agrees to sell them back at an agreed price in the future. UCITS normally engage in these transactions to generate a low-risk money-market type return, and the ‘purchased’ securities act as collateral. Therefore there is no global exposure generated and nor does the UCITS take on the risks and rewards of the ‘purchased’ securities, i.e. there is no incremental market risk. However it is possible for the ‘purchased’ securities to be further used as part of a repo or stock-loan transaction, as described above, and in that case the full market value of the securities must be included in the global exposure amount.

- Securities Lending Agreements:

A UCITS engaging in a securities lending transaction<sup>5</sup> will lend stock to a stock-borrowing counterparty (who will normally borrow stock to cover a physical short sale transaction) for an agreed fee. The stock borrower will deliver either cash or non-cash collateral to the UCITS. Only where cash collateral is reinvested in instruments that provide a return greater than the ‘risk-free return’ will global exposure be created. If the non-cash collateral is further used as part of a repo or another stock lending transaction, the full market value of the securities must be included in the global exposure amount as described above.

- Risk Free Return:

UCITS that invest cash collateral in financial instruments providing a yield greater than the generally accepted risk-free return must take the market value of these financial instruments into account when calculating their global exposure. The risk-free return is also quite hard to define, however it is generally accepted that in practice markets use the return of short-dated (generally 3-month) government bonds of the currency in question, for example 3-month US T-bills.

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<sup>5</sup> Also referred to as a ‘stock lending’ or ‘stock loan’ transaction



## Questions:

15. Do you agree with the proposed approach to the treatment of leverage generated through efficient portfolio management techniques?
16. Do you have any alternative suggestions?

### 2.1.5 Sensitivity Approach

Calculating the exposure linked to interest rate derivatives through the classic commitment approach leads to considering interest rates with different maturities as different underlying assets and thus excluding any netting or hedging between instruments on these interest rates. This conservative approach disregards the fact that interest rates with different maturities are linked.

To deal with this issue, a sensitivity approach can be used, as Sensitivity (or modified duration) measures the variation of the marked-to-market value of a bond or an interest rates derivative with respect to changes in interest rates, as such it allows the calculation of equivalent underlying asset positions that can be matched under specific conditions.

CESR has identified two possible methodologies that are described below.

#### Option 1:

#### Box 7

This approach establishes a sensitivity or duration-based approach under the same methodology applied for the calculation of capital requirements on interest rate instruments. Therefore this methodology is consistent with a widely discussed Directive which is based on the Basel II Accord.

Under this approach the UCITS takes the notional of each interest rate derivatives and those whose underlying is a debt instrument. The process for the calculation is as follows:

1. Calculate the yield to maturity<sup>6</sup> and the modified duration of each debt instrument on the basis of the following formula: modified duration = ((duration (D))/(1 + r)), where:

$$D = \frac{\sum_{i=1}^n \frac{t_i * FC_i}{(1+r)^{t_i}}}{\sum_{i=1}^n \frac{FC_i}{(1+r)^{t_i}}}$$

where:

r = yield to maturity

FC<sub>i</sub> = cash payment in time t,

n = total maturity

2. Allocate each debt instrument to the appropriate zone in the Table on the basis of the modified duration of each instrument, and calculate the duration weighted position for each instrument by multiplying its notional by its modified duration and by the assumed interest rate change for an

<sup>6</sup> In the case of floating rate instruments, the institution shall take the market value of each instrument and calculate its yield on the assumption that the principal is due when the interest rate can next be changed.



instrument with that particular modified duration (see the Table).

| Zone  | Modified Duration   | Assumed interest(change in %) |
|-------|---------------------|-------------------------------|
| One   | $MD \leq 1,0$       | 1,00                          |
| Two   | $1,0 < MD \leq 3,6$ | 0,85                          |
| Three | $MD > 3,6$          | 0,70                          |

3. Calculate the UCITS' duration-weighted long position and its duration-weighted short position within each zone. The amount of the former which are matched by the latter within each zone are the matched duration-weighted position for that zone.

Calculate the UCITS' unmatched duration-weighted positions for each zone.

4. Calculate the amount of the unmatched weighted long (short) position in zone one which is matched by the unmatched weighted short (long) position in zone two. This shall be referred in point 8 as the matched weighted position between zones one and two. Perform the same calculation for that part of the unmatched weighted position in zone two which is left over and the unmatched weighted position in zone three in order to calculate the matched weighted position between zones two and three.

5. Match the remainder of the unmatched weighted position in zone one with what remains of that for zone three after the latter's matching with zone two in order to derive the matched weighted position between zones one and three.

Calculate the sum of the residual positions, following the three separate matching calculations in points 4, 5 and 6.

6. The UCITS calculates a 'Total amount' as the sum of:

- (a) 2 % of the matched duration-weighted position for each zone;
- (b) 40 % of the matched duration-weighted positions between zones one and two and between zones two and three;
- (c) 150 % of the matched duration-weighted position between zones one and three; and
- (d) 100 % of the residual unmatched duration-weighted positions.

8. The UCITS' commitment is the result of multiplying the 'Total amount' by 12.5.

### **Explanatory Text**

- 24. The aim of the sensitivity method is to have a more risk-based approach to interest rates than the standard approach (where the general rule is to use the notional of the contract). Therefore this approach takes into account the different risk and volatilities between interest rate instruments (i.e. the sensitivity of a 20-year bond can be 80 times higher than the sensitivity of a three-month money market instrument).
- 25. The first part of this approach is similar to the standard approach because the UCITS has to calculate the notional for each long and short position on interest rates.
- 26. The modified duration (or sensitivity) of each position has to be calculated and multiplied by the notional and by an assumed interest rate change. That is the duration-based approach according to the Basel framework (Annex I of Directive 2006/49/EC). This duration-based approach could



be considered coherent taking into account that this parameter is the best way to measure interest rates. Other features like the maturity does not take into account the interest rate risk, for example, in the case of a float-to-float swap, its risk depends on the reset periods of the coupons but not on the maturity (for example if the reset is annually and the maturity 20 years, the sensitivity (or modified duration) of the instrument is nearly one).

27. Therefore through the application of this duration-based approach (allowing compensations between different instruments) a unique risk amount on interest rates can be arrived at.
28. Finally in order to be coherent with the commitment approach this risk amount has to be multiplied by a factor of 12.5 in order to convert it into exposure. This multiplier derives from the traditional 8% parameter used for converting a risk position into a capital requirement. Therefore given a capital requirement of 8% (which is what derives from the calculations), by multiplying for 12.5 (100%/8%) the UCITS can go back to global exposure on interest rates, which is what is needed in the commitment approach.
29. This method allows the use of a risk-weighted approach to interest instruments; however, it does not take into account other risks that may be present in such instruments such as credit risk. Therefore the exposure to credit derivatives cannot be taken into account through this approach and the standard approach proposed in the commitment paper should in such a case be maintained.

### Example

| Instrument     | Underlying asset | Maturity | Notional | Modified Duration | Zone | Assumed Interest | Duration-weighted position (Notional x Modified Duration x Assumed Interest) |
|----------------|------------------|----------|----------|-------------------|------|------------------|--|
| Bond           |                  | 5Y       | 400.000  | 4,8               | 3    |                  |  |
| Bond           |                  | 8Y       | 200.000  | 7,38              | 3    |                  |  |
| Future (long)  | Interest rates   | 3M       | 100.000  | 0,3               | 1    | 1,00%            | 300  |
| Future (short) | Interest rates   | 2Y       | 400.000  | 1,97              | 2    | 0,85%            | 6.696  |
| Future (long)  | Interest rates   | 9Y       | 300.000  | 9,29              | 3    | 0,70%            | 19.509   |



|           |                  |       | Matching calculations |           |           |        |
|-----------|------------------|-------|-----------------------|-----------|-----------|--------|
| Portfolio |                  |       | 2%                    | 40%       | 150%      | 100%   |
| Bucket    |                  |       | Bi                    | Bi & Bi+1 | Bi & Bi+2 |        |
| Zone 1    | Assumed interest | 1,00% | 0,00                  |           |           |        |
|           | 300              |       |                       |           |           |        |
|           | 300,00           |       |                       |           |           |        |
| Zone 2    | Assumed interest | 0,85% | 0,00                  | 300,00    |           |        |
|           | -6.698           |       |                       |           |           |        |
|           | -6698,00         |       |                       |           |           |        |
| Zone 3    | Assumed interest | 0,70% | 0,00                  | 6398,00   | 0,00      |        |
|           | 19.509           |       |                       |           |           |        |
|           | 19509,00         |       |                       |           |           |        |
|           |                  |       | 0,00                  | 2679,20   | 0,00      | 13,111 |

  

|               |         |
|---------------|---------|
| Total Amount  | 15.790  |
| $\times 12,5$ |         |
| Commitment    | 197.378 |

**Option 2:**

**Box 8**

This option aims to calculate the exposure of the fund to interest rates derivative instruments as follows:

1. Allocate each 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       |

2. Calculate the equivalent underlying asset position of each interest rate derivative instrument is calculated as its sensitivity (or modified duration) divided by the target



sensitivity of the UCITS and multiplied by the market value of the underlying asset:

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

where:

- $\text{sensitivity}_{\text{FDI}}$  is the sensitivity to interest rates of the interest rate derivative instrument,
- $\text{sensitivity}_{\text{target}}$  is the sensitivity the manager reasonably expects the UCITS to reach under the current market conditions,
- $\text{MtM}_{\text{underlying}}$  is the market value of the underlying asset.

3. Match the long and short equivalent underlying asset positions within each bucket. The amount of the former which is matched with the latter is the *matched position* for that bucket.
4. Match the amount of the remaining unmatched long (or short) position in the bucket (*i*) with the amount of the remaining short (long) position remaining in the bucket (*i+1*).
5. Match the amount of the unmatched long (or short) position in the bucket (*i*) with the amount of the remaining short (long) position remaining in the bucket (*i+2*).
6. Calculate the matched amount between the unmatched long and short positions of the two most remote buckets.
7. The UCITS calculates a total amount as the sum of:
  - a) 0% of the matched position for each bucket;
  - b) 40% of the matched positions between two adjoining buckets (*i*) and (*i+1*);
  - c) 75% of the matched positions between two remote buckets separated by another one, meaning buckets (*i*) and (*i+2*);
  - d) 100% of the matched positions between the two most remote buckets; and
  - e) 100% of the remaining unmatched positions.

### **Explanatory text**

30. This approach complies with the principles of the commitment calculation i.e. converting a financial derivative position into the market value of an equivalent cash position (meaning a cash position which has the same sensitivity to variations in the value of the underlying asset of the derivative).
31. For each financial derivative instrument, the equivalent underlying asset position stands for the amount that would need to be invested in a cash asset in order to have the same risk profile as the aggregate risk profile of the interest rate derivative instruments held by the UCITS. Consequently, the cash asset is taken to be a bond with a sensitivity which is equal to the target sensitivity of the UCITS.
32. The target sensitivity is either defined in the full prospectus – if national regulations require it and if it is relevant given the investment strategy of the UCITS – or corresponds to the weighted average sensitivity of the UCITS at the date of the calculation. The target sensitivity must be in line with the investment strategy. This ensures that the impact of interest rate derivatives is compared to the maximum interest rate risk of the UCITS.



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33. Besides, this approach is in line with the Basel framework (Annex I of Directive 2006/49/EC) dealing with the general market risk (i.e. this is the risk of a price change in the instrument due to a change in the level of interest rates), that recommends the use of a time-ladder, be it maturity-based or duration-based, to sort the financial derivative instruments and match them appropriately.
  34. Considering the potential lack of stability in a bucket for an instrument whose modified duration is close to the duration threshold, using the maturity-based ladder seems to be a better option (for example a financial derivative instrument whose modified duration is around 1 would continuously fluctuate from zone 1 to zone 2).
  35. The maturities suggested to be the thresholds of the buckets (2 years, 7 years and 15 years) have been chosen in such a way that the buckets would surround the main issuing maturities on the bond market (5, 10 and 30 years).
  36. The method used allows the matching of long positions with short positions whose underlying assets are different interest rates (e.g. 1 year vs. 2 years).
    - within each bucket, matching of positions is totally accepted.

For instance, the UCITS may invest in the derivative instrument with the closest maturity to the one it aims to hedge for liquidity issues, and a long position on an interest rates derivative instrument with a 18 months maturity may be matched with a short position on an interest rates derivative instrument with a 2 years maturity because of its low liquidity on the bond market.

- Matching of positions between two different buckets is partially allowed.

Matching long and short positions whose underlying assets have a large maturity spread is only partially allowed between different zones. Indeed, positions whose modified duration is much higher than the whole portfolio's modified duration are not in line with the investment strategy of the UCITS and totally matching them should not be allowed. For instance, it would not be appropriate to match a 18 months maturity short position (set in zone 1) with a 10 years maturity long position (set in zone 3), the target sensitivity of the UCITS being around 2.

37. Some penalties have to be applied to the matched positions to allow only for partial matching and are expressed by means of percentages relying on the average correlations between the maturity buckets 2 years, 5 years, 10 years and 30 years of the interest rates curve.
38. In fact, the bigger the time-band spread between the positions the more that any matching between them must be subject to penalty, which explains why these percentages increase with the distance between the zones.





**Example**

**Portfolio**

| Target sensitivity | 9,04             |               |          |          |        |             |                          |
|--------------------|------------------|---------------|----------|----------|--------|-------------|--------------------------|
| Instrument         | Underlying asset | Maturity date | Maturity | Notional | Quote  | Sensitivity | Cash equivalent position |
| Bond               |                  | 15/01/2015    | 5Y       | 400 000  |        | 4,80        |                          |
| Bond               |                  | 25/04/2018    | 8Y       | 200 000  |        | 7,38        |                          |
| Future             | Interest rates   | 09/09/2011    | 18M      | 100 000  | 102,00 | 0,30        | 3 384                    |
| Future             | Interest rates   | 04/01/2012    | 2Y       | -400 000 | 109,15 | 1,97        | -94 996                  |
| Future             | Interest rates   | 04/01/2019    | 9Y       | 300 000  | 124,39 | 9,29        | 382 217                  |

**Suggested approach**

| Commitment                                     | 328 604            |                    |                    |                    |
|--|--------------------|--------------------|--------------------|--------------------|
| Portfolio risk                                 | Matched positions  |                    |                    |                    |
|  | 40%                | 75%                | 100%               | 100%               |
|  | Position Bi & Bi+1 | Position Bi & Bi+2 | Position Bi & Bi+3 | Unmatched position |
| <b>Maturity Buckets</b>                        |                    |                    |                    |                    |
| <b>Zone 1 : 0 year &lt; ... &lt; 2 years</b>   |                    |                    |                    |                    |
| Exposure                                       | 3 384              |                    |                    |                    |
|  | 3384               |                    |                    |                    |
|  | 0                  |                    |                    |                    |
| <b>Zone 2 : 2 years &lt; ... &lt; 7 years</b>  |                    | 3 384              |                    |                    |
| Exposure                                       |                    | -94 996            |                    |                    |
|  |                    | -94 996            |                    |                    |
|  |                    | 0                  |                    |                    |
| <b>Zone 3 : 7 years &lt; ... &lt; 15 years</b> |                    | 91 611             | 0                  |                    |
| Exposure                                       |                    | 382 217            |                    |                    |
|  |                    | 382 217            |                    |                    |
| <b>Zone 4 : &gt;15 years</b>                   |                    | 0                  | 0                  | 0                  |
| Expo Total bucket                              |                    | 0                  |                    |                    |
| Sensitivity                                    |                    | 0                  |                    |                    |
|  |                    | 0                  |                    |                    |
|  | 37 998             | 0                  | 0                  | 290 606            |

**Questions:**

17. What are the advantages and disadvantages of each methodology?
18. Which methodology do you consider more appropriate? Please give explanations and indicate whether additional safeguards should be included.
19. In the last step of Option 1, the total amount is multiplied by 12.5. Do you consider that (i) this takes due account of the sensitivity of the UCITS and (ii) that this is in



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line with the commitment conversion methodology (e.g. conversion of the derivative into the market value of the equivalent position in the underlying assets)?

20. Under option 2 the target sensitivity of the UCITS can be longer than the sensitivity of the derivative while the equivalent underlying position is relatively small. This can result in high levels of leverage within the UCITS. Please provide views on the additional safeguards that could be introduced to mitigate this risk.



### **3 Calculation of Global Exposure using the Value at Risk (VaR) Approach**

#### **Extract from CESR's advice to the European Commission on proposed level 2 measures**

- Value at risk and advanced risk measurement methodologies should comply with quantitative and qualitative requirements including, stress testing and back testing which will be agreed by CESR members.

#### **3.1 General Principles and general requirement**

##### **Box 9**

1. The global exposure calculation by means of the VaR approach should consider all the positions of the UCITS portfolio.
2. A UCITS should always set the maximum VaR limit according to its defined risk profile.

#### **Explanatory Text**

39. If a UCITS refers to the VaR approach for measuring the global exposure, then it should comply with all the requirements laid down hereafter as well as with those of CESR's risk management principles and CESR's technical advice.
40. The VaR approach is a measure of the maximum potential loss due to market risk rather than leverage. More particularly, the VaR approach measures the maximum potential loss at a given confidence level (probability) over a specific time period under normal market conditions.
41. For example if the VaR (1 day, 99%) of a UCITS equals \$4 million, this means that, under normal market conditions, the UCITS can be 99% confident that a change in the value of its portfolio would not result in a decrease of more than \$4 million in 1 day. This is also equivalent to saying that there is a 1% probability (confidence level) that the value of its portfolio could decrease by \$4 million or more during 1 day, but the level of this amount is not specified (i.e. it could be catastrophic).
42. As part of the overall risk management process, a UCITS must establish, implement and maintain a documented system of internal limits concerning the measures used to manage and control the relevant risks for each UCITS. The VaR limits should always be set according to the defined risk profile. In particular, CESR considers that there might be circumstances where, giving the agreed risk profile, the UCITS should set a VaR limit that is lower than the regulatory threshold for ensuring consistency between the VaR limit and the risk profile.
43. UCITS that use VaR as their risk management methodology must ensure that all efficient portfolio management exposures are also included in their calculations and limits.

#### **Questions:**

- 21. Do you agree with the general principles outlined for the use of VaR?**



### **3.2 VaR Approaches – Relative VaR and Absolute VaR – The Choice**

#### **Box 10**

1. For the purpose of the calculation of global exposure the UCITS can use the relative VaR approach or the absolute VaR approach as laid down hereafter.
2. The decision regarding the VaR approach is the responsibility of the UCITS. This decision is based on the choice of the most appropriate methodology given the risk profile and investment strategy of the UCITS.
3. The UCITS should be able to demonstrate that the VaR approach used is appropriate. The decision and its underlying assumptions should be fully documented.

#### **Explanatory Text**

44. Market practice in UCITS over the last number of years suggests that there are two main approaches to using VaR, namely the relative and absolute VaR measurement approaches. For both approaches, the VaR is calculated for all the positions of the UCITS portfolio.
45. Strategies that directly fit into the relative VaR approach are those where a leverage free benchmark is defined for the UCITS, reflecting the investment strategy which the UCITS is pursuing. In this case the benchmark is a standardization that obviously serves as basis for a reference portfolio for the relative VaR approach. The use of relative VaR would also be the most transparent way for the investor, who is in general aware of the benchmark and who might have, at least implicitly, an idea of the risk of this benchmark.
46. In contrast, UCITS investing in multi-asset classes and that do not define the investment target in relation to a benchmark but rather as an absolute return target, are more likely to fit in the absolute VaR approach. In particular, for absolute return UCITS that manage the portfolio in relation to a targeted VaR, the calculation of a reference portfolio might be inappropriate.

#### **Questions:**

- 22. Do you agree with the proposals regarding the choice of the VaR approach?**



### 3.3 Relative VaR approach

**Box 11**

1. Under the relative VaR approach, the calculation of the global exposure of the UCITS follows the following steps:
  - Calculate the VaR of the UCITS' current portfolio (which includes derivatives);
  - Calculate the VaR of a reference portfolio;
  - Check that the VaR of the UCITS 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 UCITS to 2. This limit can be presented as follows:

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

2. The reference portfolio and the related processes should fulfil the following criteria:
  - The reference portfolio should be unleveraged and should, in particular, not contain any financial derivative instruments or embedded derivatives;
  - As an exception a UCITS engaging in a long/short strategy may select a reference portfolio which uses financial derivative instruments to gain the short exposure;
  - The risk profile of the reference portfolio should be consistent with the investment objectives, policies and limits of the UCITS' portfolio;
  - If the risk/return profile of a UCITS changes frequently or if the definition of a reference portfolio is not possible, then the relative VaR method should not be used.
  - 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.

#### **Explanatory Text**

47. The relative VaR approach does not measure the leverage of the strategies, rather it allows UCITS to double the risk of loss under a given VaR model. It creates a clear link between the risk of loss of the reference portfolio and the risk of loss of the UCITS, and the similarity of risks between the reference portfolio and the UCITS' portfolio should prevent the UCITS from using highly leveraged strategies given the level 3 requirements regarding the choice of the reference portfolio.



48. It is CESR's view that the proposed level 3 criteria governing the choice of the reference portfolio should be complied with as there is the risk that some UCITS might be tempted to build the reference portfolio in a way that 'games' the calculation of relative VaR.
49. In accordance with these criteria, the reference portfolio should not contain financial derivatives or embedded derivatives to avoid any leverage inside the reference portfolio itself except for UCITS engaging in long/short strategies; if short positions are used in the reference portfolio, then the absolute sum of long and short positions must be equal to 100% of the NAV of the UCITS.
50. The reference portfolio should have a risk profile that is very close, if not identical, to the UCITS' portfolio. The UCITS' portfolio should be scaled back to an unleveraged reference portfolio which must be consistent with the investment objectives and policies of the UCITS (as provided in the fund rules and the prospectus). It should also adhere to the investment limits (but not necessarily to the issuer limits) set out in the UCITS Directive). For the avoidance of doubt, a long-only benchmark should not be used as a reference portfolio for a long/short strategy, since it would not entail a similarity in the risk profiles of the reference and UCITS portfolios.
51. The reference portfolio can be based on a combination of unleveraged market indices that is consistent with the investment strategy. It can also be inferred from a target allocation, an asset allocation observed over the recent period, or a statistical analysis of the market risks of the portfolio. Where a choice must be made between different reference portfolios, the portfolio with the lower potential market risk level should be chosen. For the avoidance of doubt, this implies that an emerging markets index should not be used as a reference for a portfolio invested in less volatile markets.

**Questions:**

23. Do you agree with the proposed approach regarding the use of the relative VaR?
24. Do you agree with the proposed criteria for the reference portfolio?
25. Do you have any alternative suggestions?

**3.4 Absolute VaR approach**

**Box 12**

1. The absolute VaR approach consists in limiting the maximum VaR that UCITS can have relative to its Net Asset Value (NAV).

**Questions:**

26. Do you agree with this description of absolute VaR?

**3.5 Minimum requirements for VaR approach**

**Box 13**

1. When assessing the global exposure by means of a relative or absolute VaR approach, UCITS should comply with a set of quantitative and qualitative minimum requirements as laid down hereafter.



### 3.6 VaR approach: Quantitative requirements

#### 3.6.1 Calculation Standards

**Box 14**

1. The absolute VaR of a UCITS cannot be greater than 20% of its NAV.
2. The calculation of the VaR should be done according to the following calculation standards:
  - one-tailed confidence interval of 99 %;
  - holding period equivalent to 1 month (20 business days);
  - 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);
  - quarterly data set updates, or more frequent when market prices are subject to material changes;
  - at least daily calculation.
3. A confidence interval and/or a holding period differing from the default parameters laid down above could be used by UCITS provided the confidence interval is not below 95% and the holding period does not exceed 1 month (20 days).
4. For UCITS referring to 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 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.

#### **Explanatory Text**

52. With regard to the quarterly data set updates, CESR considers that this guideline is particularly relevant for UCITS referring to a parametric VaR model.
53. UCITS may deviate from the default VaR calculation standards (i.e., confidence interval of 99% and holding period of 1 month (20 days)) laid down above. For instance, a UCITS could theoretically use a confidence interval of 95% and a holding period of 7 days. In that case, the maximum VaR limit of 20% has to be scaled down to account for these different calculation standards according to the principles laid down in Box 14.
54. With regard to the rescaling, CESR is of the view that the rescaling of the absolute VaR limit to a different confidence interval and different holding period should be done in line with the principles laid down hereafter.

When rescaling the absolute VaR limit to a different confidence interval, the UCITS should take into account the table below outlining the quantiles of the normal distribution:

| Confidence Level | Coefficient normal distribution |
|------------------|---------------------------------|
| 99,0%            | 2,326                           |
| 97,5%            | 1,96                            |
| 95,0%            | 1,645                           |

In front of a confidence interval of y% (and a holding period of 20 days), the 20% limit with a confidence interval of x% (i.e., 99%) should be rescaled according to the following formula (1):

$$\text{VaR}(y\%) \approx \frac{\text{coeff}(y\%)}{\text{coeff}(x\%)} \times \text{VaR}(x\%)$$

For example, if the UCITS uses a confidence interval of 95% in its internal processes, the application of formulae (1) leads to the following rescaled maximum VaR limit:

$$\text{VaR}(95\%) \approx \frac{1,645}{2,326} \times \text{VaR}(99\%) = \frac{1,645}{2,326} \times 20\% \approx 14,1\%$$

In the same way, it is possible to move from a time period to another one by using the square root of time rule. For a UCITS using an absolute VaR approach with a holding period of x days (and a confidence interval of 99%), the 20% limit with a holding period of t days (i.e., 20) has to be rescaled according to the following formula (2):

$$\text{VaR}(x \text{ days}) \approx \frac{\sqrt{x}}{\sqrt{t}} \times \text{VaR}(t \text{ days})$$

For example, if the UCITS uses a holding period of 5 days in its internal processes, the application of formula (2) leads to the following rescaled maximum VaR limit:

$$\text{VaR}(5 \text{ days}) \approx \frac{\sqrt{5}}{\sqrt{20}} \times 20\% = 10\%$$

For a UCITS using internally a confidence interval of 95% and a holding period of 5 days, the rescaled maximum VaR limit is:

$$\text{VaR}(95\%, 5 \text{ days}) \approx \frac{1,645}{2,326} \times \frac{\text{VaR}(20 \text{ days}, 99\%)}{\sqrt{4}} \approx 7\% \text{ NAV}$$

With regard to the relative VaR approach, the relative nature of the measure means that no adjustment is necessary to the VaR limit (i.e. 200%) in instances where the UCITS uses other parameters than the standards ones set out above.

### **Questions:**

- 27. Do you agree with the calculation standards proposed for the VaR approach?**
- 28. Do you agree with the proposals regarding setting different default parameters and rescaling?**





- 
29. Do you consider the examples for the rescaling of parameters are useful in providing further clarity?
  30. Do you have any alternative suggestions?

### 3.6.2 Risk Coverage

**Box 15**

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 UCITS 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 competent authorities reserve the right to require stricter measures for such UCITS.

#### **Explanatory Text**

55. For clarification purposes, the related concepts of general market risk, specific market risk, idiosyncratic risk and event risk are further explained in the glossary (section 6).

#### **Questions:**

31. Do you agree with the requirement regarding the risks which should be taken into account in the VaR model?

### 3.6.3 Completeness and accuracy of the risk assessment

1. The choice of the appropriate model remains the responsibility of the UCITS. When selecting the VaR model, the UCITS 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.
2. The VaR model should provide for completeness and it should assess the risks with a high level of accuracy. In particular:
  - All the positions of the UCITS portfolio should be included in the VaR calculation.
  - 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.
  - The quantitative models used within the VaR framework (pricing tools, estimation of volatilities and correlations, etc) should provide for a high level of accuracy.
  - All data used within the VaR framework should provide for consistency, timeliness and reliability.

### **Explanatory Text**

56. CESR emphasizes that a variety of models exists for estimating VaR. Each model has its own set of assumptions, advantages and drawbacks. Common models include the parametric (Variance-Covariance) model, the Historical Simulation model and the Monte Carlo Simulation model. It is the responsibility of the UCITS to select the appropriate VaR model. For instance, CESR is of the view that for a UCITS referring largely to financial derivatives presenting non-linear risk features, the parametric VaR model is not appropriate and such a UCITS should rather refer to a Historical Simulation model or a Monte-Carlo model.
57. CESR considers that 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 non-negligible influence on the fluctuation of the portfolio's value should be covered by the VaR model. For illustration purposes (non-exhaustive), the following risks should, for instance, be captured, if applicable, by the VaR model:
- all significant price risks with respect to option positions or assimilated ('option-like') positions (i.e. gamma, vega, etc);
  - inconsistent variations in short-term and long-term interest rates (term structure risk);
  - the spread risk (for instance between swaps and bonds) arising from less than perfectly correlated movements between government and other fixed-income interest rates;
  - differences in the development of the spot and forward prices of equities.
58. In order to capture all material market risks, CESR considers that the VaR model should cover a sufficient number of risk factors which will depend on the investments made by the UCITS in the various markets (interest rate risk, foreign exchange risk, equity risk, spread risk, etc.). Possible risk factors (a non-exhaustive list) might be, for instance:



- for interest-rate risk: in the major currencies and markets, the yield curve should be divided into a minimum of six maturity segments, to capture the variations of volatility of rates along the yield curve;
- for (interest rate) spread risk: to specify a completely separate yield curve for non-government fixed income instruments or to estimate the spread over government rates at various points along the yield curve;
- for equity risk: to have, for instance, at a minimum a risk factor for each of the equity markets in which the UCITS holds positions (i.e. market index) or to have risk factors for each sector in which the UCITS holds positions (i.e. sector index) or to have risk factors corresponding to the volatility of individual equities.

### **Questions:**

**32. Do you agree with the proposals regarding the completeness and accuracy of the risk management process?**

### **3.6.4 Back Testing**

#### **Box 17**

1. UCITS should monitor the accuracy and performance of their model (i.e. prediction capacity of risk estimates), by conducting a back testing program.
2. The back testing process should provide for each business day a comparison of the one-day value-at-risk measure generated by the UCITS model for the UCITS' end-of-day positions to the one-day change of the UCITS' portfolio value by the end of the subsequent business day.
3. UCITS should undertake the back testing program at least on a monthly basis, subject to always performing retroactively the aforesaid comparison for each business day.
4. UCITS should determine and monitor the 'overshootings' on the basis of the aforementioned 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.
5. If it appears that the back testing results reveal too high a percentage of 'overshootings', the UCITS should review the VaR model and make appropriate adjustments.
6. The UCITS senior management and where applicable the UCITS competent authority should be informed at least on a quarterly basis, if the number of overshootings for each UCITS 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 competent authority may take measures and apply stricter criteria to the use of VaR if the 'overshootings' exceed an unacceptable number.

### **Explanatory Text**

59. The back testing program should be performed on the basis of either the effective changes ('dirty back testing') or the hypothetical changes ('clean back testing') in the UCITS' portfolio value, or even both. UCITS should take appropriate steps to improve their back testing program, if it is deemed to be insufficient.



60. Back testing is ideally performed on the hypothetical changes in the portfolio's value. That is, it should ideally be based on a comparison between the portfolio's end-of-day value and, assuming unchanged positions, its value at the end of the subsequent day.
61. Under the assumption of a 99% confidence interval, the accurate number of 'overshootings' for each UCITS for the most recent 250 business days is 2,5. A higher number of 'overshootings' indicate an under-estimate of the VaR. If it appears that the back testing results reveal a too high percentage of exceptions, the UCITS should review the VaR model and make, appropriate adjustments.
62. Where the back testing results give rise to consistently inaccurate estimates and an unacceptable number of 'overshootings' (that is to say, that the number of 'overshootings' is not in line with the confidence interval selected for the calculation of the VaR), competent authorities reserve the right to take measures and e.g. apply stricter criteria to the use of VaR or, if need be, to disallow the use of the model for the purpose of measuring global exposure. The competent authorities may, for example, also require that results of the calculation of the UCITS VaR to be scaled up by a multiplication factor.

**Questions:**

33. Do you agree with the proposals regarding back testing of the VaR model?
34. Do you have any alternative suggestions?

**3.6.5 Stress testing**

**Box 18**

**Stress Testing – General Provisions**

1. Each UCITS using the VaR approach should conduct a rigorous, comprehensive and risk-adequate stress testing program in accordance with the qualitative and quantitative requirements set out below.
2. The stress testing program should be designed to measure any potential major depreciation of the UCITS 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 UCITS value.
3. The stress tests should be adequately integrated into the UCITS risk management process and the results should be considered when making investment decisions for the UCITS.



### **Explanatory Text**

63. The guidelines demand a rigorous, comprehensive and risk-adequate stress testing program. The complexity of the stress tests should be in line with the risk profile of the UCITS i.e. stress tests for a UCITS with a complex risk profile should reflect this complexity. In contrast, stress tests for lower-risk UCITS could be accordingly simpler and less demanding.
64. Stress scenarios should be selected and tested to reflect extreme changes in markets and other environmental factors which would affect UCITS. The scenarios should be plausible, i.e. unlikely to occur but not impossible.
65. Conversely, the UCITS should if appropriate in relation to its strategy and risk profile and based on a concrete risk situation, actively identify scenarios which would have a severe impact on the UCITS and probability of such scenarios being realised. For such scenarios, the UCITS should implement appropriate measures in its risk management process for early warnings and prevention.
66. If it is not possible to assess precisely the potential depreciation of the UCITS value or the changes in the parameters and correlations for specific types of risk, the UCITS may instead make a skilled estimate.
67. The stress tests should be integrated into the UCITS risk management process. That is to say that the stress test calculation results should be monitored and analyzed by the Risk Management function and they should be submitted for review to the Senior Management. The results should be considered when making investment decisions for the UCITS. If the stress test calculation results reveal particular vulnerability to a given set of circumstances, then they should give rise, if applicable and appropriate, to prompt steps and corrective actions for managing the risks appropriately (for instance hedging or reduction of exposures).

**Box 19**

#### **Stress Testing - Quantitative Requirements**

1. The stress tests should cover all risks which affect the value or the fluctuations in value of the UCITS to any significant degree. In particular, those risks which are not fully captured by the VaR model used, should be taken into account.
2. The stress test should be appropriate for analyzing potential situations in which the use of significant leverage would expose the UCITS to significant downside risk and could potentially



lead to the default of the UCITS (i.e. NAV <0).

3. 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.

### **Explanatory Text**

68. Stress tests should generally refer to all market risks the UCITS is exposed to except for those which even in stress situations have no more than a negligible/immaterial effect on the UCITS value.
69. A UCITS could theoretically, due to the effect of leverage and depending on the composition and profile of the UCITS, lose more than the value of its own assets in rare situations. Therefore, where appropriate with respect to its composition and risk profile, a UCITS should actively identify scenarios that could result in the value of the UCITS becoming negative. For such scenarios, the UCITS should implement appropriate measures in its risk management process for early warnings and prevention.
70. Furthermore, UCITS should take into account the breakdown of common relationships and standards. For instance, correlations can heavily change due to stress situations.

**Box 20**

### **Stress Testing - Qualitative Requirements**

1. 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 a UCITS or a change in market conditions makes it likely that the test results will differ significantly.
2. The design of the stress tests should be adapted in line with the composition of the UCITS and the market conditions that are relevant for the UCITS.
3. Management companies 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 UCITS. It should be explained why the program is suitable for the UCITS. Completed stress tests together with their results should be clearly documented. Reasons should be given if it is intended to deviate from the program.

### **Explanatory text**

71. The Guidelines require stress tests to be performed at least once a month. For index replicating UCITS according to Article 53 of UCITS IV Directive the stress tests could be conducted less frequently since they do not have an impact on the investment decisions.
72. Monthly stress tests should be sufficient for portfolios that are relatively constant. For rapidly changing portfolios more frequent stress tests might be more appropriate. The guidelines require



additional stress tests to be carried out if the composition of the UCITS portfolio or the market environment changes in a relevant manner.

73. Each time the design of the stress tests is changed, both the previous and the modified stress tests should be conducted simultaneously, at least once and the results compared.
74. Since the requirements set out for stress tests allow for a lot of freedom in the design of the stress tests, there should be clear procedures implemented by management companies. For each UCITS, there should be a properly documented program, setting out the individual stress tests to be carried out for the fund with an explanation of why the program is appropriate for the UCITS. Furthermore, the realisation of the program (including the concrete implementation, the results and consequences) should be traceable documented.

#### **Questions:**

35. Do you agree with the proposals regarding the VaR stress testing programme?
36. In particular do you agree with the proposed quantitative and qualitative requirements?
37. Do you have any alternative suggestions?

### **3.7 VaR approach: Qualitative requirements**

**Box 21**

#### **Tasks to be carried out by the risk management function**

1. In accordance with the tasks to be carried out by the risk management function pursuant to Box 3 (point 3) of chapter 1 of section IV of CESR's technical advice, the risk management function should be responsible for:
  - sourcing, testing, maintaining and using the VaR model on a day-to-day basis;
  - supervising the process relating to the determination of the reference portfolio if the UCITS reverts to a relative VaR approach;
  - ensuring on a continuous basis that the model is adapted to the UCITS' portfolio;
  - performing continuous validation of the model;
  - validating and implementing for each UCITS a documented system of VaR limits consistent with its risk profile that is to be approved by Senior Management and the Board of Directors;
  - monitoring and controlling the VaR limits;
  - monitoring on a regular basis the level of leverage generated by the UCITS;
  - producing on a regular basis reports relating to the current level of the VaR measure (including back testing and stress testing) for Senior Management.

#### **Use of the VaR model**

2. 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 pursuant to Box 1 (i.e. point 5(v) of explanatory text) of



chapter 1 of section IV of CESR's technical advice.

### **Model validation**

3. 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 be related to the use of a new product by the UCITS, the need to improve the model following the back testing results, or a decision taken by the UCITS to change certain aspects of the model in a significant way.
4. In addition to the initial validation, the risk management function should perform ongoing validation (this includes, but is not limited to back testing as laid down before) of the VaR model in order to ensure the accuracy of the model calibration. The review should be documented. Where necessary, the model should be adjusted.

### **Documentation and procedures**

5. The documentation requirements referred to in Box 4 (i.e. point 2) of chapter 1 of section IV of CESR's technical advice imply an adequate documentation of the VaR model and the related processes and techniques, thereby covering, among others, the risks covered by the model, the model methodology, the mathematical assumptions and foundations, the data used, the accuracy and completeness of the risk assessment, the methods used to validate the model, the back testing process, the stress testing process, the validity range of the model and the operational implementation.

### **Questions:**

38. Do you agree with the proposed tasks under the responsibility of the risk management function?
39. Do you agree with the requirements regarding model testing and validation?

## **3.8 VaR: Additional safeguards and disclosure**

### **3.8.1 Additional safeguards**



**Box 22**

1. UCITS which calculate global exposure using a VaR methodology should regularly monitor their leverage.
2. UCITS 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.

**Explanatory text**

75. There is a risk that the use of the VaR method could result in UCITS strategies using high levels of leverage with a risk management system that does not adequately capture all the relevant risks, in particular the 'fat tail' risk.
76. For example, UCITS that engage in arbitrage strategies, where the mixture of long and short strategies leads to fat tails (adverse movements of both long and short legs) but low VaR, may incorporate high levels of leverage. UCITS that resorts to leveraged arbitrage strategies while measuring their global exposure with VaR, should therefore take appropriate additional measures to monitor their risk profile (e.g. use CVaR or other methods able to detect the potential impact of low-probability market events).
77. Additionally, UCITS may hold assets where the risk profile cannot be adequately captured by the computation of VaR. Structured securities, credit-linked financial instruments or financial derivative instruments designed to limit the maximum loss at a given confidence level are examples of such assets. Appropriate additional risk management methods should therefore ensure that both the maximum loss and the sensitivity to market movements in adverse conditions are adequately captured and limited.

**Questions:**

40. Do you agree with the proposals regarding the monitoring of leverage and the use of other risk measurement methods?

**3.8.2 Disclosure****a) Prospectus****Box 23**

1. The UCITS should disclose in its prospectus the method used for the calculation of the global exposure (i.e., commitment approach, relative VaR or absolute VaR).
2. UCITS using VaR approaches should disclose the expected level of leverage and the possibility of higher leverage levels in the prospectus.
3. Leverage should be calculated as the sum of the notionals of the derivatives used.

**Explanatory Text**



78. According to Article 70 of UCITS IV Directive, a UCITS' prospectus should provide investors with information about the risk related to derivatives, such as for instance, the existence of leverage risk and the corresponding level of risk taken.
79. Since the VaR approach does not directly limit the level of leverage, the UCITS' prospectus should disclose the possibility of higher leverage levels and also the expected level of leverage that might be reached.

**Questions:**

41. Do you agree with the proposals regarding prospectus disclosure?
42. In particular do you agree that UCITS using VaR to calculate global exposure should disclose the expected level of leverage in the prospectus?
43. Do you agree with the proposed method of calculating leverage for the purposes of prospectus disclosure?

**b) Annual reports**

**Box 24**

1. The UCITS should disclose in its annual report the method used to determine the global exposure (i.e. commitment approach, relative VaR or absolute VaR).
2. When using the relative VaR approach, information on the reference portfolio should be disclosed in the annual report.
3. The VaR measure of the UCITS 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.

**Explanatory Text**

80. The Guidelines require the disclosure of the favoured approach used (commitment, absolute or relative VaR) in the annual report. Moreover the Transparency for investors will be increased by the disclosure of information on the reference portfolio, since its composition mainly determines the level of risk taken by the UCITS.
81. Moreover, since VaR is a common risk measure, its disclosure also increases transparency for investors.

**Questions:**

44. Do you agree with the proposals for disclosure in the UCITS annual reports regarding the VaR methodology?



## 4 OTC Counterparty Risk Exposure

### Extract from CESR's advice to the European Commission on proposed level 2 measures

- UCITS' risk exposure to a counterparty arising from OTC derivative transactions, as referred to in Article 52(1) of the UCITS Directive, should be calculated using the positive mark to market value of the OTC derivative contracts with that counterparty.
- When calculating risk exposure to a counterparty in accordance with the limits in Article 52(1) of the UCITS Directive, a UCITS may net derivative positions with the same counterparty provided there are legally enforceable netting arrangements in place.
- A UCITS may reduce its risk exposure to a counterparty to an OTC derivative transaction through the receipt of collateral. Collateral received must be sufficiently liquid in order that it can be sold quickly by the UCITS at a price that is close to its pre-sale valuation. Collateral must also comply with the principles agreed by CESR members.
- Where a UCITS passes collateral to an OTC derivative counterparty, this must be taken into account in calculating the counterparty risk exposure as referred to in Article 52(1) of the UCITS Directive. Collateral passed may be taken into account on a net basis (i.e. over-collateralization) where there is a legally enforceable netting arrangement in place.
- The issuer concentration limits as set out in Article 52 of the UCITS Directive on underlying exposure arising from the use of financial derivative instruments must be calculated using the commitment approach where appropriate.
- Exposure arising from OTC derivative transactions as referred to in Article 52(2)(c) of the UCITS Directive includes any OTC derivative counterparty risk exposure.

### 4.1 Collateral

#### Box 25

1. 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 cycles is preferable to long settlement cycles 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 UCITS 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 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 UCITS at any time without reference to or approval from the counterparty.
  - Collateral cannot be sold, re-invested or pledged.
2. UCITS may disregard the counterparty risk on the 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.
3. For the valuation of collateral presenting a significant risk of value fluctuation, UCITS should apply prudent discount rates.

### **Explanatory Text**

82. It should be noted that collateral in the form of cash deposits in a currency other than the currency of exposure should also be the subject to an adjustment for currency mismatch.

### **Questions:**

45. **Do you agree with the proposals in Box 25? In particular, do you consider that the proposed criteria for the acceptability of collateral to reduce counterparty exposure are appropriate?**
46. **Do you have any alternative suggestions?**
47. **Do you consider that it would be useful to include some examples of minimum haircuts for different asset classes? Do you have a preference on what these haircuts might be?**



## 4.2 Counterparty/issuer Concentration

### Box 26

1. According to Article 52(1) of the UCITS Directive the risk exposure of a UCITS 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 specified in Article 52(1):
  - Any exposure with a central clearing house whereby exposure with the OTC counterparty is novated to the clearing house. In this case the risk exposure is with the clearing house and not the OTC counterparty.
  - Initial and variation margin posted to a broker for the use of exchange-traded derivatives which is not protected by client money or other similar arrangements to protect the UCITS against the insolvency of the broker.
  - Any net exposure to a counterparty generated through a stock-lending or repurchase agreement, net exposure being understood as the amount receivable by the UCITS less any collateral provided to the UCITS custodian. Exposures created through the reinvestment of collateral must also be taken into account in the issuer-concentration calculations.
2. Position exposure to the underlying assets of financial derivative instruments (including embedded financial derivatives 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 Articles 52 and 55 of the UCITS Directive.
3. Position exposure must be calculated using the commitment approach and must be calculated by all UCITS, regardless of whether they use VaR for global exposure purposes.
4. 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 set out in Article 53(1) of the Directive.

### Explanatory Text

83. A UCITS shall invest no more than 5% of its assets in transferable securities or money market instruments issued by the same body. This limit may be raised to a maximum of 10% of its assets in transferable securities or money market instruments issued by the same body provided that the total value of transferable securities and money market instruments held in issuing bodies in each of which it invests more than 5%, is less than 40%.
84. A UCITS shall invest not more than 10% (or 20% if permitted by the Member State) of its assets in units of a single UCITS or other collective investment undertaking. Moreover, investments made in units of collective investment undertakings other than UCITS may not exceed in aggregate 30% of the assets of the UCITS.

### Questions:



48. Do you agree that exposure to a clearing house should be considered as part of the counterparty exposure limit? Do you have any alternative suggestions?
49. Do you agree that margin passed to a broker which is not protected by client money rules should be included in the counterparty exposure limit? Do you have any alternative suggestions?
50. Do you agree that exposures to a counterparty generated through stock-lending or repurchase agreements should be included in the OTC counterparty exposure limit? Do you have any alternative suggestions?
51. Do you agree that a UCITS position exposure should be calculated using the commitment approach?



## 5 Cover rules for transactions in Financial Derivative Instruments

**Box 27**

1. UCITS should, at any given time, be capable of meeting the obligations incurred by transactions involving financial derivative instruments and which give rise, for UCITS, to delivery as well as payment obligations.
2. Monitoring to ensure adequate coverage of the financial derivative transactions should form part of the risk management process.

### Explanatory Text

85. The cover rules are applicable to all circumstances where a UCITS has commitments under the terms of the derivative contract, including synthetic short positions (i.e. transactions in which a UCITS is exposed to the risk of having to buy securities at a higher price than the price at which the securities are to be delivered). A UCITS is therefore exposed to the risk that it cannot meet all or part of its commitments under the terms of the derivative contract.
86. In the case of derivative contracts which provide, automatically or at the counterparty's choice, for the physical delivery of the underlying financial instrument on the due date or the exercise date and insofar as physical delivery is a normal practice in the case of the instrument in question, a UCITS:
- should hold in their portfolio the underlying financial instrument as cover, or
  - where in case the UCITS deems that the underlying financial instrument is sufficiently liquid, it may hold as coverage other liquid assets (including cash) under the condition that these assets (after applying appropriate safeguards, i.e. haircuts), held in sufficient quantities, may be used at any time to acquire the underlying financial instrument which is to be delivered.
87. In respect of derivative contracts which provide for cash settlement, automatically or at the UCITS' discretion, the latter should hold enough liquid assets (after the application of appropriate safeguard measures, i.e. haircuts) to allow it to make the contractually required payments (examples: margin calls, interest payments, cash settlement of contracts, etc). The UCITS should determine for itself the method by which it will set the cover level for contracts with cash settlement. This method should ensure that the UCITS is able at all times to meet all its payment obligations.
88. The risk management process should allow for a regular check whether the coverage available to UCITS, either in the form of the underlying financial instrument or in the form of liquid assets as described above, exists in sufficient quantity to meet future obligations.

### Questions:

- 52. Do you agree with the proposed cover rules for financial derivative instruments?**
- 53. Do you think there should be further restrictions on the assets held by the UCITS as cover?**



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## 6 Glossary of Terms

### **Absolute VaR**

This is defined as the VaR of the UCITS capped as a percentage of NAV.

### **Barrier Option**

A barrier option is an option contract where, in addition to the normal strike price, there is (are) additional (a) specific barrier or trigger levels). If the underlying asset of the option touches the barrier during the lifetime of the option, the option contract provides for specific consequences (for instance activation or deactivation of the option) that depend on the type of barrier option. Standard barrier option contracts that can be seen in the industry are knock out or knock in option or options combining both features.

### **Basic Total Rate of Return Swap**

The basic TRORS contract is defined as a bilateral contract between a total return payer and a total return receiver whereby the total return payer pays the total return of a reference asset (i.e., short position on reference asset) and receives from the receiver of the total rate of return (i.e., long position on reference asset), in principle, a floating rate payment (for instance LIBOR) plus a spread.

### **Contract for Differences**

A contract for difference (CFD) is a contract between two parties, typically described as 'buyer' and 'seller', stipulating that the seller will pay to the buyer the difference between the current value of an asset and its value when the contract was entered into. In effect, CFDs are financial derivatives that allow investors to take long or short positions on underlying financial instruments. CFDs do not involve the purchase or sale of an asset, only the agreement to receive or pay the movement in its price.

### **Clearing House**

A clearing house assists in the transfer of funds and contracts between members who execute trades. A clearing house is a central point for depositing and paying out funds that need to be credited or debited into the accounts of its member firms. A clearinghouse may also guarantee the performance of the contract, despite what the individual member may do. If a member defaults, the collective resources of the members are used to satisfy the claim as necessary.

### **Event risk**

Risk that the value of a financial instrument changes in an abrupt or sudden way when compared with the behaviour of the general market and in a way that goes well beyond the normal range of fluctuations in value. Event risk covers, for instance, the migration risk for interest rate products or the risk of significant changes or jumps in equity prices.

### **General market risk**

Risk of loss arising from changes in the general level of market prices or interest rates

### **Global Exposure**

Global exposure is a measure designed to limit either the incremental exposure and leverage generated by a UCITS through the use of financial derivative instruments (including embedded derivatives) or the market risk of the UCITS portfolio.

### **Idiosyncratic risk**

Risk that the value of a financial instrument changes more or less than the market in general (but not in an abrupt/sudden way)

### **Non-Basic Total Rate of Return Swap**

The non-basic TRORS contracts are those where, instead of the floating rate payment leg, the TRORS refers to a fixed rate payment or to the total return of another reference asset.





### **Partly Paid Security**

A security on which only part of the capital amount and any premium due has been paid. The outstanding amounts are payable at a time chosen by the company issuing the securities.

### **Path Dependency**

Path dependency reflects the fact that the terminal value of certain exotic derivatives is dependent not only on the value of the underlying asset at that time, but also at prior points in time. The value is therefore dependent on the 'path' taken by the underlying over the life of the option.

### **Relative VaR**

This is defined as the VaR of the UCITS divided by the VaR of a benchmark or reference portfolio (i.e. a similar portfolio with no derivatives). This can be an actual benchmark portfolio (such as an index) or a fictitious benchmark portfolio. The VaR on the UCITS portfolio shall not exceed twice the VaR on a comparable benchmark portfolio.

### **Right**

A right is granted to existing shareholders of a corporation to subscribe for a new issue of common stock before it is offered to the public. The right normally has a life of 2 – 4 weeks. The subscription price is normally lower than the public offering price.

### **Specific market risk**

The specific market risk covers two types of risks, namely the idiosyncratic risk and the event risk

### **Value at Risk (VaR)**

VaR is a measure of the maximum potential loss to the UCITS due to market risk. More particularly, VaR measures the maximum potential loss at a given confidence level (probability) over a specific time period under normal market conditions.

### **Variance Swap**

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.

### **Warrant**

A security which usually issued along with a bond or preferred stock, entitling the holder to buy a specific amount of securities at a specific price, usually above the current market price at the time of issuance, for a specified or unspecified period. If the price of the security rises to above the warrant's exercise price, then the investor can buy the security at the warrant's exercise price and resell it for a profit. Otherwise, the warrant will simply expire or remain unused.

### **Question:**

54. Do you agree with the proposed definitions?
55. Do you consider that CESR should provide other definitions in these guidelines?  
Do you have any suggestions for other definitions?



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## CESR's initial views on specific guidelines for structured UCITS

1. There are certain structured funds that offer investors a predefined payout at the end of a specific period on the understanding that they remain invested until the maturity of the fund. These types of fund are passively managed, meaning that the portfolio composition is selected at the launch of the fund and remains in place until maturity, with no changes allowed over the life of the fund. The structured return is usually based on a selected benchmark, index or basket of securities using a financial derivative based on the underlying basket, index or benchmark. In addition such funds can include features such as capital protection or a third party capital guarantee or a guarantee of the final payoff to the investors. The funds may also be both highly complex and leveraged. Investors who redeem their units prior to maturity will receive the current net asset value and will therefore not benefit from any guaranteed payout.
2. This issue can be illustrated with the following example of structured funds with capital protection.
  - The cash raised from the public is fully invested in bank deposits.
  - The interest received on the deposits is swapped against the result of the formula at maturity.

In terms of risks, the deposits and the swap are subject to the general risk spreading limits set by the directive. Any additional exposure (on the counterparty of the deposits and/or of the swap) must therefore be collateralized. The capital-protected fund is structured starting from its launch date until its maturity so as to avoid any management decision during its life and with a view to paying back the initial capital at maturity. There is no active management on the assets invested to protect the capital. As far as the additional pay-off is concerned (the amount to be paid by the swap counterparty), the only risk of not receiving the amount resulting from the formula is the default of the counterparty (which is covered by collateral for any exposure exceeding 5% or 10% - depending on whether the counterparty is a credit institution referred to in article 50(f) of the UCITS Directive). Any adjustment in the derivative exposure during the life of the product which is not the result of repurchase orders will cause the risk either that the amount paid by the swap counterparty at maturity is not sufficient to pay the result of the formula to the investors (decrease of the nominal) or that the UCITS is not able to pay the swap counterparty (increase of the nominal).

Investors who remain in the fund until maturity are expected to receive the pre-defined payout and are exposed to the credit risk of the counterparty. Investors who redeem out of the fund at any time prior to maturity will not benefit from the agreed payout (including any protection of capital). They will be exposed to the market risk of the underlying portfolio of the swap and this can involve complex leveraged strategies and potential high volatility.

3. Due to the structured return incorporated into the financial derivative normally inherent in these funds, an alternative methodology may be needed in order for these funds to comply with the global exposure limits.
4. To address this issue CESR is considering whether it would be appropriate to permit structured UCITS which satisfy certain agreed criteria to calculate the global exposure (instead of the standard commitment approach) using either of the following measurement approaches, if applicable:
  - a. the UCITS can make use, given the specific safeguards built into those funds, of the non-standard derivative calculation principles of the Commitment Approach in cases where the structure involves no more than a negligible investment in more complex financial derivatives (for instance barrier options); or



- b. the UCITS can make use, given the specific safeguards built into those funds, of a maximum relative drawdown approach which is the largest percentage drop of the net asset value that can occur during the remaining life of the fund for measuring the commitment.

These approaches are relevant if the UCITS take steps to reduce the risk that the predefined payoff will not be met, that risk being limited to the credit risk of counterparty default.

5. It is important that the types of fund which may benefit from a different treatment incorporate additional robust protections for investors. The following non exhaustive list of criteria for structured UCITS is being considered by CESR:
- The fund is passively managed and structured to achieve a pre-defined payoff; and
  - The pre-defined payoff is based on a calculation formula relating to the performance of financial instruments or other financial parameters; and
  - The fund has a final maturity date not exceeding 9 years; and
  - The fund is not open to new subscriptions; and
  - The prospectus contains full disclosure regarding the investment policy, underlying exposures and pay-off formulas. It should also contain information on leverage levels and the specific risks associated with investing in such a fund.
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- The final predefined payoff is guaranteed by a credit institution located in the OECD or by entity subject to prudential supervision; or
  - Investors capital on maturity is guaranteed by a credit institution located in the OECD or by an entity subject to prudential supervision; or
  - Capital protection on maturity is obtained through investments in deposits, debt securities of high quality such as debt securities issued by an entity subject to prudential supervision and registered in a Member State of the EEA or debt securities issued or guaranteed by a Member State of the EEA.

**Questions:**

- 56. Do you consider that these types of structured UCITS should calculate global exposure using an approach which differs from the standard VaR and commitment methodologies?**
- 57. If you agree that a different commitment calculation should be permitted, please provide a rationale for this approach.**
- 58. Please indicate which of the above criteria would provide sufficient safeguards for investors in UCITS which apply this approach**
- 59. Can you suggest any additional criteria?**