

AMF Instruction 2011-15
Calculation of global exposure for collective investment schemes (CIS)

Reference texts

Articles 411-72 to 411-80 of the AMF General Regulation

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1. General provisions

1.1. Scope of application

Article 1 - Scope of application

The present instruction applies to Collective Investment Schemes (CIS) approved by the AMF, except:

1° Futures funds created prior to 1st July 2011;

2° CIS benefiting from the streamlined procedure and governed by Article L. 214-35 of the Monetary and Financial Code in its wording prior to Law n° 2003-706 of 1st August 2003.

Compliance with the provisions of the present instruction does not exempt CIS from their obligations under Article L. 533-10-1 of the Monetary and Financial Code.

1.2. Perimeter and definition

Article 2 - Elements taken into consideration to calculate CIS global exposure

I. – Calculation of the global exposure of a CIS takes the following into consideration:

1° Financial derivative instruments, including financial derivatives incorporated into other financial securities in accordance with Article R. 214-15-2 of the Monetary and Financial Code, referred to hereafter as embedded derivatives.

To calculate global exposure, these financial derivatives are separated from the host cash instrument;

2° Techniques and instruments including repurchase agreements or securities lending operations in order to generate additional leverage or exposure to market risk;

3° For CIS with streamlined investment rules, cash borrowing.

Article 3 - CIS global exposure

In accordance with Article R. 214-30, clause 1 of the Monetary and Financial Code, a CIS should ensure that its global exposure to financial derivative instruments does not exceed the net asset value of its portfolio.

In accordance with Article R. 214-85, paragraph II of the Monetary and Financial Code, the limit referred to in R. 214-30 is increased to three times net asset value for CIS with streamlined investment rules.

In accordance with Article 411-72 of the AMF General Regulation, the global exposure calculation must be carried out at least daily and the limits on global exposure must be complied with on an ongoing basis. Depending on the investment strategy being pursued and where necessary, intra-day global exposure calculations must also be carried out.

Article 4 - Standard, non-standard and embedded derivative instruments

I. – The following non-exhaustive list of derivatives may be considered standard derivatives:

1° Futures and forwards on financial instruments, currency, interest rates and indices;

2° Plain vanilla options (bought/sold puts and calls);

3° Swaps: fixed for floating rate, fixed for fixed rate, floating for floating rate, and inflation and currency swaps;

4° Total Return swaps by which two parties exchange cash flows representing, for the protection seller, the return on the asset plus any appreciation in the asset and, for the protection buyer, periodic payments plus any depreciation of the asset;

5° Futures transferring single-name credit risk (derivatives such as single-name credit default swaps);

6° Derivatives with payment of a difference, such as Contracts For Differences, enabling the exchange, at contract maturity, of the current value of an asset against the initial value of the same asset. The seller pays the buyer the difference between the initial value and current value of the asset without the underlying asset being bought or sold;

7° Warrants which entitle but do not oblige the holder to buy or sell a given amount of a specific security at a price set in advance, at the maturity date of the warrant or at any time up to that date;

8° Rights to subscribe to stock allowing the investor, over a given period, to subscribe to another security in a quantity and at a price set in advance.

Standard derivatives shall be deemed to exclude the non-standard derivatives mentioned in III.

II. – The financial instruments referred to in the current Article L. 211-1, paragraph II, clauses 1 and 2 and money market instruments hosting a derivative are referred to hereafter as embedded derivatives. The following non-exhaustive list of derivatives may be considered financial instruments with embedded derivatives:

1° Convertible bonds;

2° Credit linked notes;

3° Partly paid securities, 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;

4° Warrants, which entitle but do not oblige the holder to buy or sell a given amount of a specific security at a price set in advance, at the maturity date of the warrant or at any time up to that date;

5° Rights to subscribe to stock allowing the investor, over a given period, to subscribe to another security in a quantity and at a price set in advance.

III. - The following non-exhaustive list of derivatives may be considered non-standard derivatives:

1° Digital or binary options paying a predetermined return if certain market conditions are fulfilled on expiry, and zero return otherwise;

2° Barrier options where the payoff depends on a set threshold being exceeded by the price of the underlying asset during the lifetime of the option;

3° Futures transferring credit risk other than single-name credit risk, for example credit derivatives such as First to Default Swaps;

4° Variance Swaps and Volatility Swaps are contracts that allow investors to gain exposure to the variance (squared volatility) or volatility respectively of an underlying asset and, in particular, to trade future realised volatility against current implied volatility.

Article 5 - Management company resources and organisation

The use of a commitment approach or Value At Risk approach, referred to hereafter as the VaR approach, to calculate global exposure of a CIS does not exempt the company managing it from the requirement to establish appropriate internal risk management measures and limits.

2. Global exposure calculation

2.1. Commitment approach

Article 6 - General method

I. - The commitment calculation 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.

This may be replaced by the notional value or the price of the futures contract where this is more conservative.

Only for non-standard derivatives, where it is not possible to convert the derivative into the market value or notional value of the equivalent underlying asset, an alternative conservative approach determined by the management company may be used, provided that the total amount of the derivatives represents a negligible portion of the CIS portfolio.

II. – The global exposure of a CIS determined using the commitment approach is calculated by the following method:

1° The management company calculates the commitment of each derivative individually;

2° It identifies netting and hedging arrangements. For each of these arrangements, it calculates a net commitment as follows:

- a) Gross commitment is equal to the sum of the commitments of the individual financial derivative instruments (including embedded derivatives) after derivative netting;
- b) If the netting or hedging arrangement involves security positions, the market value of security positions can be used to offset gross commitment;
- c) The absolute value of the resulting calculation is equal to net commitment.

3° It then calculates global exposure as the sum of:

- a) The absolute value of the commitment of each individual derivative not involved in netting or hedging arrangements;
- b) The absolute value of each net commitment after the netting or hedging arrangements as described above;
- c) The sum of the absolute values of the commitment linked to Efficient Portfolio Management techniques, notably to techniques and instruments relating to eligible securities and money market instruments and to repurchasing or securities lending operations, as defined in Article R. 214-18 of the Monetary and Financial Code.

The commitment calculation for each financial derivative position should be converted to the base currency of the CIS using the spot rate.

Where any currency derivative has two legs that are not in the base currency of the fund, both legs must be taken into account separately in the commitment calculation.

Article 7 - Conversion methods

I. – Examples of commitment calculation methods by conversion into an equivalent position in the underlying asset for a non-exhaustive list of standard derivatives are set out in Annexe I.

II. - Examples of commitment calculation methods by conversion into an equivalent position in the underlying asset for a non-exhaustive list of embedded derivatives are set out in Annexe II.

III. - Examples of commitment calculation methods by conversion into an equivalent position in the underlying asset for a non-exhaustive list of non-standard derivatives are set out in Annexe III.

Article 8 - Netting and hedging rules

I. – The management company may net positions:

1° Between financial derivative instruments, provided they refer to the same underlying asset, even if the maturity date of the financial derivative instruments is different;

2° Between a financial derivative instrument whose underlying asset is a transferable security, money market instrument or collective investment scheme and that same corresponding underlying asset held in the portfolio.

II. – 1° The management company may only take hedging arrangements into account when calculating global exposure if the said arrangements offset the risks linked to some assets and, in particular, if they comply with all the criteria below:

- a) there should be a verifiable reduction of risk at the CIS level;
- b) the risks linked to financial derivative instruments, i.e. general and specific risks if any, should be offset;
- c) the hedging arrangements should relate to the same asset class;
- d) the hedging arrangements remain efficient in stressed market conditions.

Investment strategies that aim to generate a return should not be considered as hedging arrangements.

Notwithstanding the above criteria, financial derivative instruments used for currency hedging purposes (i.e. that do not add any incremental exposure, leverage and/or other market risks) may be netted when calculating the global exposure of the CIS.

No market neutral or long/short investment strategies will be deemed to comply with all the criteria laid down above.

2° If the management company uses a conservative calculation rather than an exact calculation of the commitment for each financial derivative instrument (i.e. exact conversion into the market value of the

equivalent position in the underlying assets), hedging and netting arrangements cannot be taken into account to reduce commitment on the derivatives involved if it results in an underestimation of the global exposure.

Article 9 - Efficient portfolio management techniques, repurchase or securities lending transactions

If the CIS uses efficient portfolio management techniques such as those mentioned in Article R.214-18 of the Monetary and Financial Code, these operations must be taken into consideration for the determination of global exposure, provided that they generate additional leverage through the reinvestment of collateral.

If the CIS reinvests collateral in financial assets that provide a return in excess of the risk-free return, it must include in the global exposure calculations:

1° The amount of cash received as collateral if cash collateral is held;

2° The market value of the instrument concerned if non-cash collateral is held.

Any global exposure generated by these transactions should be added to the global exposure created through the use of derivatives and the total of these must not be greater than 100% of the net asset value of the CIS portfolio.

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.

Article 10 - Specific provisions for interest rate derivative instruments

For the purposes of the present article, an interest rate derivative instrument is a derivative where the underlying asset is an interest rate. The variation of the marked to market of the interest rate derivative is mainly related to moves in the interest rate curve. Examples (non-exhaustive list) of interest rate derivatives might be: interest rate swaps, FRA, interest rate futures, futures on bonds. Forward rate agreements are interest rate derivatives.

I. – The duration-netting rules specific to interest rate derivative instruments can only be used when the investment strategy of the CIS implies no significant source of risk other than interest rates (e.g. volatility or exchange risks). Therefore, duration-netting rules may not be applied to interest rate arbitrage strategies.

In addition, use of these duration-netting rules cannot generate any increase in interest rate risk through investment in short-term positions. Thus, for example, short-dated interest rate derivatives cannot be the main source of performance for a CIS with medium duration if it makes use of these duration-netting rules.

II. – Positions on interest rate derivatives should be converted into equivalent positions according to the following methodology:

1° The investment management company allocates each interest rate financial derivative instrument to the appropriate maturity range ("bucket") in the following table:

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

2° The management company converts the position of each interest rate derivative instrument into the equivalent underlying asset position as its duration divided by the target duration of the CIS and multiplied by the market value of the underlying asset:

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



Whereby:

- duration_{FDI} is the duration or sensitivity to interest rates, of the interest rate derivative;
 - duration_{target} is in line with the investment strategy, the directional positions and with the expected level of risk at any time and will be regularised otherwise. It is also in line with the portfolio duration under normal market conditions;
 - MtM_{underlying} is the market value of the underlying asset.
- 3° The long and short equivalent underlying asset positions within each bucket are netted to determine the netted position of the bucket. The short or long balance is the unnetted position of the bucket.
- 4° The unnetted long (or short) positions in bucket (i) are netted with the remaining unnetted positions in bucket (i+1).
- 5° The remaining unnetted long (or short) positions in bucket (i) are netted with the unnetted positions remaining in bucket (i+2).
- 6° The remaining unnetted long (or short) positions in bucket (1) are finally netted with the unnetted positions remaining in bucket (4).
- 7° The global exposure of the collective investment scheme is the sum of:
- a) 0% of the absolute value of the netted position for each bucket;
 - b) 40% of the absolute value of the netted position between two adjoining buckets (i) and (i+1);
 - c) 75% of the absolute value of the netted position between buckets (i) and (i+2);
 - d) 100% of the absolute value of the netted position between the two most remote buckets, (1) and (4);
 - e) 100% of the absolute values of the remaining unnetted positions.

Article 11 - Specific provisions for structured funds

I. – When the CIS is a structured fund and meets the criteria set out in Article 411-80 of the AMF General Regulation, the global exposure calculation may be based on the commitment method for each scenario to which the investor may be exposed, and is applied as follows:

1° The predefined formula on which the investment strategy is based is divided into a finite number of individual scenarios,

2° Each scenario is analysed to define whether the financial derivative instruments and transactions structuring it can be excluded from the global exposure calculation by the commitment approach and according to the provisions of Article 411-76 of the AMF General Regulation.
In addition, a scenario structured on an investment in eligible assets providing a return other than a risk-free return may only be considered as complying with Article 411-76, paragraph II of the AMF General Regulation if that investment is coupled with a guarantee of the fund investment objective under the terms of Article R. 214-19 of the Monetary and Financial Code.

3° The global exposure of each individual scenario complies with the limit of 100% of the net asset value of the CIS portfolio.

The ESMA Guidelines ESMA/2011/112 provide examples to illustrate these specific provisions.

2.2. Value at Risk calculation method

Article 12 - General provisions

The management company may calculate global exposure by a VaR approach on the terms set out in Article 411-77 of the AMF General Regulation. A confidence interval and/or a holding period differing from

those mentioned in Article 411-77 of the AMF General Regulation may be used in the calculation provided that:

- The confidence interval is not below 95%;
- The holding period does not exceed 20 business days.

If other calculation parameters are used, the management company must rescale the amount it has calculated to the VAR defined in Article 411-77, paragraph II of the AMF General Regulation, 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.

Article 13 - Relative VaR

I. - In accordance with Article 411-78, paragraph II, clause 1 of the AMF General Regulation, global exposure calculated by the relative VaR approach is equal to the VAR of the CIS divided by the VaR of a reference portfolio, minus one, multiplied by the net assets. The VaR of the CIS is thus limited to twice the VaR of the reference portfolio.

II. - The reference portfolio should be unleveraged and should, in particular, not contain any financial derivative instruments or embedded derivatives, except that:

- a) If the CIS engages in a long/short type strategy, the reference portfolio may contain financial derivative instruments to gain the short exposure;
- b) If the currency risk of the CIS is hedged, it may select a currency hedged index as a reference portfolio.

The risk profile of the reference portfolio should be consistent with the investment objectives, policies and limits of the CIS.

If the risk/return profile of the CIS 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 ongoing maintenance of the reference portfolio should be integrated in the risk management process and be supported by adequate procedures. The management company should define guidelines governing the composition of the reference portfolio. In addition, the actual composition of the reference portfolio and any changes should be clearly documented.

Article 14 - VaR calculation model

I. – The investment management company is responsible for choosing an appropriate model. It ensures that the model is appropriate with regard to the investment strategy being pursued and the types and complexity of the financial instruments used.

The model takes account at least of general market risk and, if possible, of other risks. The VaR model should adequately and sufficiently accurately capture the risks of the CIS, in particular:

1° It adequately captures 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.

2° The quantitative models used within the VaR framework (pricing tools, estimation of volatilities and correlations, etc) should provide for a high level of accuracy.

3° The data used within the VaR framework should be consistent, robust and reliable.

Article 15 - Resources and organisation of management companies using the VaR calculation method

I. – In accordance with Article 313-53-4 of the AMF General Regulation, a management company using the VaR approach should have a permanent risk management function that is independent from its commercial and operational units. This function is responsible for validating the VaR model and reviewing it.

II. – To this effect, the investment management company implements:

1° A system for recording and back testing the calculations performed to verify that the models used capture the risks of the CIS appropriately, meaning notably that back testing should be carried out at least on a monthly basis to check that the variations in the one-day value of the portfolio are consistent with the exposure calculations used.

The management company should determine and monitor overshootings of the VaR threshold value, i.e. when the one-day change in the CIS portfolio's value exceeds the related one-day value-at-risk measure calculated by the model.

If the percentage of overshootings appears to be too high, the CIS should review the VaR model and make appropriate adjustments, which should be documented.

The senior management should be informed at least on a quarterly basis if the number of overshootings for each CIS over 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, have been taken.

2° A rigorous, comprehensive, risk-adequate stress testing program adapted to the composition and market conditions of the CIS should be conducted to simulate its behaviour in crisis situations.

The stress testing program should be designed to measure any potential major depreciation of the CIS 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 CIS value.

The stress tests should be adequately integrated into the risk management process and the results should be considered when making investment decisions for the CIS.

The stress tests should cover all risks which influence the net asset value of the CIS to any significant degree, in particular those risks which are not fully captured by the VaR model used (specific risks). They should be appropriate for analysing potential situations in which the use of significant leverage would expose the CIS to significant downside risk and could potentially lead to the default of the CIS.

They take account at least of the risks relating to an extreme event the CIS might be exposed to (risk that the value of a financial instrument changes in a 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, default risk).

They should focus mainly 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.

They 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 composition of a CIS or a change in market conditions makes it likely that the test results will differ significantly. The results of these tests should be filed and taken into consideration when making any investment decisions.

The management company should implement clear procedures and develop an adequate stress-testing programme on the basis of such procedures. It should explain why the program is suitable for the CIS. Reasons should be given if it is intended to deviate from the programme.

III. – The following are described in detailed documentation:

- a) The operating principles of the VaR models, providing details of the calculation techniques used, including the risks covered by the model, the 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 validity range of the model and its operational implementation;
- b) The back testing process;

- c) The stress testing process.

Article 16 - Disclosure

I. – The method chosen by the management company to calculate the global exposure of a CIS it manages (i.e. commitment approach, relative VaR or absolute VaR) should be disclosed in the prospectus and in the annual report.

II. – When the management company uses VaR approaches to calculate the global exposure of a CIS it manages, it should monitor the leverage level of the CIS regularly.

Therefore, the expected level of leverage of the CIS, calculated as the sum of the notionals of the positions on the derivatives used, should be disclosed in the prospectus and in the annual report, along with the possibility for the CIS to reach higher leverage levels.

If the relative VaR approach is used, information on the reference portfolio should be disclosed in the prospectus detailed memo and in the annual report.

III. - The VaR levels of the CIS should be published in the annual report. In this respect, the information provided should at least include the lowest, the highest and the average VaR levels calculated during the financial year.

The model and inputs used for the calculation, such as the confidence interval and data sample size, should be disclosed.

Annexe I
**Methods for the conversion of standard derivatives into the market value of an equivalent position
in the underlying asset**

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 Future	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) * delta
	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
	Swaptions:	Reference swap commitment conversion amount (see below) * delta
Swaps	Warrants and Rights	Number of shares/bonds * market value of underlying referenced instrument * delt
	Plain Vanilla Fixed/Floating 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 assets
	Non-Basic Total Return Swap	Cumulative underlying market value of both legs of the Total Return Swap
	Single Name Credit Default Swap	Protection Seller – The higher of the market value of the underlying reference asset or the notional value of the Credit Default Swap. Protection Buyer – Market value of the underlying reference asset
Forwards	Contract for Differences	Number of shares/bonds * market value of underlying referenced instrument
	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



Annexe II
Methods for the conversion of embedded derivatives into the market value of an equivalent position in the underlying asset

Convertible Bond	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

Annexe III
Methods for calculating the commitment of non-standard derivatives

<p>Variance Swaps</p>	<p>Variance swaps are contracts that allow investors to gain exposure to the variance (squared volatility) against current implied volatility. According to market practice, the strike and the vega notional are expressed in terms of volatility. For the variance notional, this gives:</p> $\text{Variance notional} = \frac{\text{vega notional}}{2 \times \text{strike}}$ <p>The vega notional provides a theoretical measure of the profit or loss resulting from 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.</p> <p>However without a cap, a short swap's potential losses are unlimited.</p> <p>The conversion methodology to be used for a given contract at time t is: Variance Notional * (current) Variance_t (without volatility cap) Variance Notional * min [(current) Variance_t; volatility cap²] (with volatility cap)</p> <p>whereby: (current) variance_t is a function of the squared realized and implied volatility, more precisely :</p> $(\text{current})\text{variance} = \frac{t}{T} \times \text{realized volatility } (0,t)^2 + \frac{T-t}{T} \times \text{implicit volatility}(t,T)$
<p>Volatility Swaps</p>	<p>By analogy with the variance swaps, the following conversion formulae should be applied to volatility swaps:</p> <p>Vega Notional * (current) Volatility_t (without volatility cap) Vega Notional * min [(current) Volatility_t; volatility cap] (with volatility cap)</p> <p>Whereby the (current) volatility_t is a function of the realized and implied volatility</p>
<p>Barrier (knock-in knock-out) Options</p>	<p>Number of contracts * notional contract size * market value of underlying equity share * maximum delta</p> <p>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</p> <p>if the use of the commitment approach leads to an infinite value (binary option), the position exposure should be equal to the maximum potential loss as a result of default by the issuer</p>