



Code of conduct on the use of stress tests

April 2015



The **Association Française de la Gestion financière** (French Asset Management Association – AFG) represents and defends the interests of the French asset management industry. Established in 1961, it brings together asset management players from the collective and discretionary portfolio management segments. Its membership consists of portfolio management companies, whether independent or subsidiaries of French and foreign banking groups. In 2009, the AFG opened its doors to “correspondent members” (of which it had over 60 at end 2015) representing the investment ecosystem: lawyers, consulting firms, IT services companies, data providers and branches.

The French asset management industry manages total assets of €3,600 billion (end 2015), with €1,700 billion of this amount in French funds and €1,900 billion in discretionary portfolios and foreign funds. It accounts for over 83,000 jobs, including 26,000 in management companies, and plays a vital role in financing the economy.

The AFG’s mission is to inform, assist and train its members. It provides them with ongoing assistance in the legal, tax, economics, accounting and technical fields. It coordinates thinking in the industry on changes in investment techniques, investor protection, investment strategy, research and training.

The AFG acts as a contact point for French, European and international public authorities and plays an active role in driving regulatory changes. It defines the industry’s ethical rules and acts as a driving force in the area of corporate governance.

The association also helps promote and spread the influence of the French investment management industry – one of the leading such industries in the world – among all relevant players, investors, issuers, politicians and media, both in France and internationally.

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summary

1. Objectives of the Code	3
2. Regulatory reminders	4
3. AFG principles on the use of stress tests	9
3.1 Proportionality principle applicable to stress tests	9
3.2 Use at least one stress test with no correlation among risk factors for CIS whose global exposure is calculated following a VaR-type approach	10
3.3 Define for each CIS a level of tolerance to stress tests	10
3.4 Reverse stress test application threshold for funds whose global exposure (global risk) is calculated following a VaR-type approach	11
3.5 Disclosure of stress tests	11
Thanks to	12

1. Objectives of the Code

The AFG Code of conduct on the use of stress tests is aimed at AFG members as a tool in helping them to implement the regulatory provisions pertaining to these techniques. It applies to any Collective Investment Scheme (CIS) to which a member asset management company applies stress tests. Each asset management company is responsible for the definition and implementation of its own stress test policy.

This Code pursues several objectives:

- **First of all, a regulatory objective:** It aims at defining and promoting standards on the use of stress tests. The different existing regulations, when they require performing stress tests, remain fairly imprecise in this respect. This Code is a means to promote a series of rules appropriate and adapted to our management styles.
- **Second, a competitive issue:** France has developed a know-how in the use of derivatives and of arbitrage strategies in collective asset management. Maintaining access by investors (including retail investors) to investment products with added value is a real issue for the French financial centre. A significant part of these funds measure their global exposure following a VaR approach. Such a risk measurement should be complemented by stress tests in order to enhance the monitoring of these strategies.
- **Last, a willingness to increase transparency:** Different stress test techniques are presented for information only in a separated document for the attention of French management companies that wish to know more about the tools or techniques applicable in this field.

Please note that liquidity stress tests are not covered by this Code.

2. Regulatory reminders

Stress tests are now covered by regulation and should be part of risk management techniques and tools. They are not compulsory for all CIS¹. For UCITS, the applicable European Directive does not require the use of stress tests, except for funds that are VaR-type funds², whereas, for AIFs, stress tests are compulsory regardless of their type.

Texts applicable to UCITS and AIFs whose management company is not covered by the AIFMD (“under the thresholds”)

DIRECTIVE 2010/43/UE (Implementing Directive of the UCITS Directive)

- Article 40 Para. 2

(...)

- c) conduct, **where appropriate**, periodic **stress tests and scenario analyses** to address risks arising from potential changes in market conditions that might adversely impact the UCITS;

AMF GENERAL REGULATION

- Article 313-53-7 (applicable to the management of UCITS and AIFs “under the thresholds”)

I. Investment service providers shall adopt adequate and effective arrangements, processes and techniques in order to:

- a) Measure and manage at any time the risks which the collective investments referred to in article 311-1 A and individual portfolios they manage are or might be exposed to;
- b) Ensure compliance with limits applicable to collective investments concerning global exposure and counterparty risk in accordance with articles 411-72 and 411-73 or 422-51 and 422-52 and with articles 411-82 to 411-83 or 422-61 to 422-63.

Those arrangements, processes and techniques shall be proportionate to the nature, scale and complexity of the activities of the investment service providers and of the collective investments referred to in article 311-1 A and individual portfolios they manage, and shall be consistent with the risk profile of the UCITS and the individual portfolios managed.

II. For the purpose of I, investment service providers shall take the following measures for each UCITS or individual portfolio they manage:

(...)

- c) They shall conduct, when appropriate, periodic stress tests and scenario analyses to take into account risks arising from potential changes in market conditions that might adversely impact the collective investments referred to in article 311-1 A or individual portfolios they manage;

(...)

- Article 411-79

Asset management companies shall establish:

- 1° A device to control *ex-post* the calculations arising from models based on historical data, in order to monitor the accuracy and the efficiency of the Value at Risk model.
- 2° A rigorous, comprehensive, risk-adequate stress testing program adapted to the risk profile of the relevant UCITS allowing to simulate the behaviour of the UCITS in crisis situations.

1) CIS include both UCITS and AIFs.

2) Funds that measure their global risk following the Value at Risk (VaR) approach.

Texts applicable to AIFs

AIFM DIRECTIVE – Directive 2011/61/EU

- **Article 15 3.** AIFMs shall at least:

(...)

- b) Ensure that the risks associated with each investment position of the AIF and their overall effect on the AIF's portfolio can be properly identified, measured, managed and monitored on an ongoing basis, including through the use of appropriate stress testing procedures.

AIFM REGULATION – Commission Delegated Regulation N° 231/2013 of 19 December 2012

- **Article 45 – Risk measurement and management**

1. AIFMs shall adopt adequate and effective arrangements, processes and techniques in order to:
 - a) Identify, measure, manage and monitor at any time the risks to which the AIFs under their management are or might be exposed;
 - b) Ensure compliance with the limits set in accordance with Article 44.
2. The arrangements, processes and techniques referred to in paragraph 1 shall be proportionate to the nature, scale and complexity of the business of the AIFM and of each AIF it manages and shall be consistent with the AIF's risk profile as disclosed to investors in accordance with point (c) of Article 23(4) of Directive 2011/61/EU.
3. For the purposes of paragraph 1, the AIFM shall take the following actions for each AIF it manages:
 - (...)
 - c) Conduct periodic appropriate stress tests and scenario analyses to address risks.
 - (...)

AMF GENERAL REGULATION

- **Article 318-43 (*Application of the AIFM Regulation to AIF asset management companies*)**

Asset management companies shall comply with articles 38 to 45 of the Commission Delegated Regulation n°231/2013 of 19 December 2012.

(Please note that this provision does not apply to management companies which are under the thresholds set by the AIFM Directive and which did not opt for the application of the AIFM Directive).

- **Article 422-58**

Asset management companies shall establish:

- 1° A device to control *ex-post* the calculations arising from models based on historical data, in order to monitor the accuracy and the efficiency of the Value at Risk model;
- 2° A rigorous, comprehensive, risk-adequate stress testing program adapted to the risk profile of the relevant general purpose investment fund allowing to simulate the behaviour of the general purpose investment fund in crisis situations.

Methodological aspects are detailed in the regulation, in particular in CESR Guidelines/10-788 which are reflected in AMF instructions; some of them are laid out below for the record:

AMF Instruction DOC-2011-15

Calculation of global exposure for authorised UCITS and AIFs:

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

2° A rigorous, comprehensive, risk-adequate stress testing program adapted to the composition and market conditions of the UCITS or AIF 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 UCITS or AIF value as a result of unexpected changes in the relevant market parameters and correlation factors. Conversely, whenever appropriate, it should also measure changes in the relevant market parameters and correlation factors, which could result in major depreciation of the UCITS or AIF 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 UCITS or AIF.

The stress tests should cover all risks which influence the net asset value of the UCITS or AIF 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 UCITS or AIF to significant downside risk and could potentially lead to the default of the UCITS or AIF.

They take account at least of the risks relating to an extreme event the UCITS or AIF 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 UCITS or AIF 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 asset management company should implement clear procedures and develop an adequate stress-testing program on the basis of such procedures. It should explain why the program is suitable for the UCITS. Reasons should be given if it is intended to deviate from the program.

CESR/10-788

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

Stress Testing:

Box 19: 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

61. 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.
62. 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.
63. 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.
64. 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.
65. 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 20: 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 tests 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

66. Stress tests should generally refer to all 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.
67. 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.
68. Furthermore, UCITS should take into account the breakdown of common relationships and standards. For instance, correlations can heavily change due to stress situations.

Box 21: 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

69. 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. For index replicating UCITS that comply with Article 53 of the UCITS Directive the stress tests could be conducted less frequently since they do not have an impact on the investment decisions.
70. 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.
71. Since these requirements allow 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 execution the program (including the concrete implementation, the results and consequences) should be traceable documented.

3. AFG principles on the use of stress tests

Some of the principles laid down below may prove ill-suited to the underlyings of some CIS: funds of funds, private equity, infrastructure, real estate...

3.1 Proportionality principle applicable to stress tests

The regulation specifies that the complexity of stress tests should be in line with the risk profile of the CIS concerned, i.e. stress tests for a CIS with a complex risk profile should reflect this complexity.

In contrast, for instance for a lower-risk UCITS, stress tests could be accordingly simpler and less demanding (*CESR/10-788 point 61*).

More generally, performance drivers identified in the prospectus or marketing documentation are also sources of risk and should therefore be subject to stress tests. A CIS using arbitrage operations as a performance driver and a source of risk will generally be considered as having a complex risk profile.

Arbitrage strategies generate a low net market bias. Taking into account only the net bias in stress tests will imply not assessing all the risks relating to these strategies.

For example, in the case of a CAC/DAX arbitrage strategy (Long 100% CAC / Short 100% DAX), only stressing the net bias will produce a null result whereas, if based on a monthly historical stress, the results of a stress on the arbitrage will be around 8%.

This point is relevant regardless of the risk factor considered (rate, credit, currency...).

It therefore seems useful for all positions of imperfect arbitrage or hedging to take into account in the stress tests each of these positions.

Following the same principle of proportionality, for a plain vanilla directional AIF (equity benchmark), stress tests may be simpler. For example, the stress test may consist in applying a scenario to the beta of the fund as compared to its benchmark.

3.2 Use at least one stress test with no correlation among risk factors for CIS whose global exposure is calculated following a VaR-type approach

The principle underlying the global exposure (global risk) ratio is to ensure that a CIS may not find itself in a situation of default.

Stress tests applicable to VaR-type funds should allow to measure the extreme risks that are not taken into account in the VaR. The VaR includes some correlation elements. It therefore seems relevant to apply one stress test with no correlation among risk factors (“worst case” scenarios). Historical stress tests are therefore not sufficient for funds which calculate their global exposure following a VaR approach.

Regarding the shocks’ severity, it would be beneficial to consider at least two stress scenarios:

- one calibrated to describe situations unfavourable to the fund but likely ;
- another calibrated to take into account severe market crisis situations.

3.3 Define for each CIS a level of tolerance to stress tests

The regulation specifies that stress tests should be integrated into the CIS risk management process. That is to say that the stress test calculation results should be monitored and analysed 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 CIS. 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 risk appropriately (for instance by hedging or reducing the exposure). (*CESR/10-788 point 65*)

It therefore seems useful to define for each CIS with a stress test program a loss tolerance threshold in order to conduct, when a stress test reaches such a level, an analysis of the situation.

Such a tolerance level may depend, for example, on the SRRRI of the CIS (or on its VaR) and should be disclosed to senior management.

3.4 Reverse stress test application threshold for funds whose global exposure (global risk) is calculated following a VaR-type approach

A reverse stress test allows to define the levels of market changes which, applied to a CIS, will result in a given loss for a CIS.

In practice, this allows to answer the question: “Which market changes will imply that the UCITS will lose for example 10% in a week?”

The notion of “reverse stress” test was introduced in the regulation:

“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.” (*CESR/10-788 Box 19 – point 2*)

The implementation of reverse stress tests is therefore at the discretion of management companies depending on their risk profile. It does not seem optimal to perform reverse stress tests for a CIS whose level of tolerance to stress tests, as defined above is low.

It only seems relevant to implement reverse stress tests in cases where the tolerance threshold of a CIS is above 50% and the result of the stress test(s) of the CIS is close to that level.

3.5 Disclosure of stress tests

Stress test results may be disclosed to clients in marketing presentations or in reportings for example.

If this is the case, information on stress tests may sometimes create confusion regarding the risk factors simulated or the level of the market shocks applied. For example, for a stress test aiming at replicating the subprime crisis, results will vary depending on the frequency chosen and the granularity of the risk factors applied.

In order to avoid confusion and inform clients on the level of simulations with a higher level of transparency, it therefore seems useful, when results are disclosed to clients, to make the assumptions of the stress tests available to them (on a website for example).

The level of accuracy relating to the assumptions of the stress tests to be disclosed to clients is at the discretion of management companies.

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