Luxembourg, 11 March 2011

To all credit institutions and investment firms

CIRCULAR CSSF 11/506

Re: Principles of a sound stress testing programme

Ladies and Gentlemen,

Articles 5(1a) and 17(1a) of the law of 5 April 1993 on the financial sector, as amended, require credit institutions and investment firms to have effective processes to identify, manage, monitor and report the risks they are or might be exposed to.

The purpose of this circular is to specify the implementation of these articles in the field of stress testing which represents an essential practice for sound risk management. This implementation is set out in the guidelines issued in this respect by the European Banking Authority (EBA).¹

Chapter I. Introduction

1. Stress tests form a set of practices the objective of which is to assess how adverse events may jeopardise adequacy between the business model, risk profile and existing capacity to manage and bear risks and to decide, where appropriate, the corrective measures which are required in order to guarantee financial stability and perenniality of an institution. The stress tests are an essential risk management practice which completes in particular the daily control of the compliance with the internal limits corresponding to the risk profile determined by the institution.

2. The strategic dimension inherent in stress testing requires a strong involvement by the authorised management and board of directors which ensure the implementation of a sound stress testing programme in order to secure the financial stability and

¹ Please refer to the document "CEBS Guidelines on Stress Testing (GL32)" published on 26 August 2010 by the Committee of European Banking Supervisors (CEBS) which was replaced by EBA on 1 January 2011. This document is available on the website: http://www.eba.europa.eu/Publications/Standards-Guidelines.aspx. These CEBS/EBA rules are based on the "Principles for sound stress testing practices and supervision" published by the Basel Committee on Banking Supervision in May 2009.
perenniality of their institution. The purpose of this circular is to define the regulatory requirements which apply to all sound stress testing programmes.

3. During the implementation of their stress testing programme, the institutions may use calculation methodologies and resources available in this respect at their group level provided that these resources observe the requirements set out in this circular. The performed tests shall have results which fully reflect the situation of the institution in Luxembourg and shall allow the local operators to have any information and knowledge enabling them to apply the results to the institution in Luxembourg. The detail of these stress tests shall be available to the CSSF at its request.

4. The stress testing programme includes notably the stress tests carried out pursuant to Pillar 2 and documented, in particular, through the ICAAP report that the authorised management submits to the board of directors and to the CSSF at least once a year.

Chapter II. Scope

5. All credit institutions and investment firms incorporated under Luxembourg law and all branches of non-EU credit institutions and investment firms are subject to the provisions of this circular. These entities are referred to as "institutions".

6. The requirements of this circular apply to the institutions based on their individual and consolidated legal situation. They aim at all the internal ("Pillar 2") and regulatory (required in the context of the "advanced" methods of "Pillar 1") stress tests, notwithstanding the requirements governing the performance of regulatory stress tests as shown in other circulars.

Chapter III. Principle of proportionality

7. The requirements of this circular shall be implemented proportionally to the nature, scale and complexity of the institution’s activities and organisation.

8. All institutions shall implement a qualitative stress testing programme which will allow them to assess how the business model, risk profile (defined for all the risks inherent to their activities and organisation) and their existing capacity to manage and bear risks (capital, liquidity buffers and tools for risk management and control) represent a coherent and robust system when confronted to adverse internal and external developments.

9. The quantitative approaches of stress tests ideally combine (simple) analyses of sensitivity to individual risks with integrated analyses allowing the assessment of the impact of (complex) macroeconomic scenarios on the institution's situation. The institutions choose the quantitative analyses combination best suitable for the sound and prudent management of their business. Having regard to the principle of proportionality, this choice may be limited only to sensitivity analyses for institutions whose low and non-complex risk profile is fully analysed in terms of sensitivity analysis.

Chapter IV. Internal governance

10. The board of directors shall regularly ensure that the institution has a sound stress testing programme the results of which allow it to know the (extreme) adverse
events for the institution and to assess how these events may jeopardise the adequacy between the business model, risk profile and the existing capacity to manage and bear risks. It appoints the authorised management to implement a stress testing programme fulfilling this objective.

11. The authorised management is in charge of the implementation of a stress testing programme compliant with the requirements set out in this circular. It lays down in writing and formally adopts the annual plan of stress tests which determines the tests to be performed during the year and the main characteristics (scope, frequency, calibration). The authorised management informs the board of directors, on a regular basis and in case of need, of the state of the stress testing programmes and of the results of this programme.

12. The authorised management critically assesses and approves the main methodological choices and hypotheses as well as the scenarios of the stress testing programme on a regular basis. This assessment shall allow it to know and understand the scope and the limits inherent to the stress testing programme.

13. The board of directors and the authorised management regularly analyse the results of the stress testing programme. If these results invalidate the adequacy between the business model, risk profile and the existing capacity to manage and bear current and future risks, they decide on the corrective measures necessary in terms of business model, incurred risks, tools for risk management and control or on the policies regarding risks, capital or liquidity which are required in order to maintain the financial stability of the institution and to guarantee its perenniality.

Chapter V. Characteristics of a sound stress testing programme

14. The stress testing programme shall observe the following conceptual requirements:
   – exhaustively and adequately cover any risk factor to which the institution is or might be exposed to and any activities carried out by the institution;
   – allow identifying and analysing all risk concentrations;
   – take into account the relations (e.g. correlations) which exist between the different activities and the different risk factors considering the changing nature of these relations particularly in a crisis situation.

15. When implementing the stress testing programme, the authorised management ensures that the programme:
   – has competent and sufficient executing personnel as well as a technically adequate infrastructure;
   – is subject to written internal procedures which determine the objectives, the implemented processes as well as methods for stress tests, including working hypotheses and the selection of the relevant scenarios/sensitivities. These procedures identify in particular the responsibilities of the main contributors to the stress testing programme and ensure that these responsibilities are clearly allocated;
   – allows all the stakeholders of the institution (business lines, functions of risk management and internal control) and the different hierarchical levels to contribute to the efficiency of the stress testing programme through their expertise and to take responsibilities in this matter;
– is sufficiently flexible so as to easily and quickly generate new stress tests when necessary.

16. The results of the stress testing programme shall:

− show the possible inconsistencies between the business model, risk profile and existing capacity to manage and bear risks.

The results of the stress tests are therefore used to validate in particular the business model, the set tolerance to risk and the risk policy as well as the policies of internal capital and liquidity buffers;

− correspond to all different "organisational units" so as to allow managers of these units to include them in their daily management. The organisational units are the institution as a whole, including its branches, its subsidiaries, if any, as well as the units corresponding to the perimeter of the main portfolios and business lines. The stress tests covering the institution as a whole may be the aggregation of the stress tests of the different constituent organisational units provided that the methods used are consistent and that the simple aggregation is representative of the aggregate risk profile of the institution as a whole;

− give rise to credible corrective measures as well as consideration as regards the practical implementation of these measures in case adverse developments indeed occur. These measures shall be reflected particularly at the level of the crisis management processes described in the policies of internal capital and liquidity buffers.

17. The stress tests shall be performed regularly and at least once a year. Their frequency shall be adapted to the institution's activities and to the nature of the incurred risks.

18. The institution shall submit its stress testing programme to a regular and independent internal review aiming to guarantee that the stress testing programme remains efficient, sound and robust especially in a changing environment.

19. The institution shall document its policy, procedures and results regarding the stress tests as well as the ensuing conclusions and actions.

Chapter VI. Methodologies

20. The use of appropriate methodologies is a key element in order to reach the goal set in point 1. Generally, any efficient stress testing programme combines sensitivity analyses and scenario analyses with so-called reverse stress tests as defined under Chapter VI.4. The institutions shall identify the best combination of these methods taking into account the application of the principle of proportionality and the objective described in point 1.

Sub-chapter VI.1. Sensitivity analyses

21. Sensitivity analyses aim to assess the effect of an adverse development of one or several risk factors on the institution's situation. They allow the institutions to better understand the impact of an adverse development of their main risk factors.
22. Any institution shall carry out sensitivity analyses of all its main risk factors. The implementation of these analyses requires an exhaustive identification of the main risk factors inherent to the institution's activities and organisation.

23. In sensitivity analyses, the risk factors identified as the main ones shall be subject to adverse developments characterised by different intensity degrees matching past experiences as well as hypothetical and prospective considerations.

**Sub-chapter VI.2. Scenario analyses**

24. Scenario analyses may be compared to multi-factorial sensitivity analyses in which the selection of risk factors included in the analysis as well as the severity of their adverse development depend on a hypothetical state of the world ("scenario"). The scenarios may be historical (state of the world observed in the past) or hypothetical.

25. **Having regard to the principle of proportionality**, the institutions carry out scenario analyses. The scenarios shall be representative of the incurred risks (cover all the main risk factors) and of the environment in which the institution, with its activities and organisation, evolves (prospective scenarios which avoid in particular repeating the historical scenarios which ceased to be representative) and shall refer to adverse developments characterised by different degrees of intensity. In addition, the chosen scenarios shall take into account systemic interactions (in particular contagion effects and correlated behaviour) and feedback effects.

26. The translation of the scenarios into risk parameters being a difficult task, the institution ensures that the ensuing risk parameters are consistent and that the model risk is limited via critical expert judgement and through an adequate degree of conservatism.

**Sub-chapter VI.3. Time horizon and severity of the stress tests**

27. The stress testing programme shall be based on severe adverse developments ("exceptional but likely events"). It shall correspond at least to adverse developments of risk factors during a severe economic recession.

28. The institution chooses the time horizon of the stress tests (assumed duration of the effects of adverse developments for the institution) according to the characteristics of its activities and risks (liquidity and maturity of the exposures), the underlying hypotheses of the stress tests and, where applicable, the dynamics of the chosen scenario. The time horizon takes into account the execution deadlines necessary in order to implement, where applicable, the required corrective measures.

**Sub-chapter VI.4. Reverse stress testing**

29. Reverse stress testing starts from the assumption of a severely impaired situation (e.g. a situation in which capital or liquidity buffers are insufficient or the institution's business model is called into question) and aims to build adverse events or combinations of adverse events which may trigger such situation. This approach, the purpose of which is to identify the developments with a strong negative impact for the institution, is particularly suitable for the assessment of choices and hypotheses regarding the business model, the risk profile and the institution's capacity to manage and bear risks.

30. The institutions implement *qualitative* reverse stress tests which allow them to identify the nature and characteristics of adverse events which may jeopardise the adequacy between their business model, their risk profile and their existing capacity.
to manage and bear their current and future risks. **Having regard to the principle of proportionality**, the institutions complete this qualitative approach with quantitative reverse stress tests.

### Chapter VII. Entry into force and amending provisions

31. This circular comes into force with immediate effect.

32. Circular CSSF 07/301 is amended as follows:

- Points 33, 34 and 37 are repealed;
- The second paragraph of Part IV of the Annexe shall be amended as follows:
  - In the second sentence "internal capital adequacy" is replaced by "the existing capacity to manage and bear risks (capital, liquidity buffers and tools for risk management and control)";
  - In the fourth sentence, "and internal capital" as well as footnote 10 shall be deleted.

Yours faithfully,

COMMISSION DE SURVEILLANCE DU SECTEUR FINANCIER

Claude SIMON  
Director

Andrée BILLON  
Director

Simone DELCOURT  
Director

Jean GUILL  
Director General