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# **Report on Variable Annuities**

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## ANNEXES

## **1. EXECUTIVE SUMMARY AND MAIN FINDINGS OF THE REPORT**

1. This draft report illustrates the works of Task Force on Variable Annuities (TF), set up by CEIOPS in March 2010 with the aim of establishing common EU guidelines for the supervision on insurers selling VAs.
2. Variable annuities (VAs) are unit-linked life insurance contracts with investment guarantees which, in exchange for single or regular premiums, allow the policyholder to benefit from the upside of the unit but be partially or totally protected when the unit loses value. VAs have experienced a growth in sales in US and Japan since the 1990s and are now also becoming increasingly widespread also in Europe.
3. Guarantees entailed in VAs can vary considerably and imply an increase of risks for insurers relative to pure unit-linked product; insurers have managed those risks in different ways which have varied across time, countries and market players. A common business model for EU VAs features relevant cross-border as well as group aspects: usually VAs are sold by large insurance groups either by their local subsidiaries or by specific subsidiaries dedicated to that business underwriting in several Member States, through freedom of establishment or freedom of services.
4. CEIOPS therefore decided to establish common EU guidelines for supervisors that would foster convergence and spread best practices for the supervision on insurers selling such products; guidelines should be adapted by each supervisor to fit the exact features of each VA product.
5. CEIOPS TF was mandated to draft those guidelines having in mind two main areas of interest, i.e. i) technical and actuarial issues and ii) governance and colleges of supervisors. The TF was also asked to give a preliminary analysis of whether more widespread variable annuities may be the source of a new systemic risk or generate pro-cyclicality in the case of a market downturn. The issue of selling practices is outside of the scope of the work of the TF.
6. Guidelines should include recommendations that can be put immediately in place but that will also be relevant for the upcoming Solvency II supervisory regime: therefore, the TF investigated on desirable supervisory treatment of VAs in a Solvency I as well as in a Solvency II context in the view of opportunity of a smooth transition from Solvency I to Solvency II.
7. The draft report is structured along the lines of the mandate of the TF. Each chapter illustrates issues related to VAs, the relevant frameworks applicable in Solvency I and Solvency II as well as the TF's assessment of if/how those frameworks could fit VAs. Further to this assessment, each chapter provides for some recommendations to supervisors and to insurers; where appropriate, recommendations applicable in a Solvency I and/or in a Solvency II context are highlighted separately. For the sake of clarity, the draft report provides for separate recommendations; however, there are interrelationships among different aspects, for example the same recommendation might be relevant for governance issues and for systemic risk.

8. On technical and actuarial issues (**chapter 3**), section 3.1.1 deals with the definition of VAs, in order to focus on the scope of application of the guidelines. Guarantees entailed in the products are the basis for the identification as VAs: since existing guarantees might vary considerably and new ones might arise in the future, the TF considered it appropriate to adopt a “substance over form” principle. Therefore a non-exhaustive list of possible relevant features for VA guarantees is provided as a first guide for the insurers’ and supervisors’ assessment of products.
9. In order to manage risks stemming from VAs, insurers often have in place a hedging programme, i.e. risks are managed through financial instruments used for replicating the changes in the market value of liabilities; hedging programmes can have different degrees of complexity, be static or dynamic. Section 3.1.2 deals with the assessment of hedging programme’s efficiency by insurers and by supervisors, with specific regard to the risks that have to be assessed and to the properties that the hedging programme/strategy should have, for example appropriateness, accuracy and time steps.
10. On the risks to be assessed, a specific focus (section 3.1.3.) relates to some legal issues stemming from cross border sales which might affect the risk profile of the insurer. The TF considered that those issues should be appropriately assessed by the insurer, who should have sufficient knowledge of local rules concerning insurance contracts and policyholder information, as well as of local jurisprudence. Cooperation between supervisors is envisaged also for such a risk (see chapter 5)
11. Section 3.2 deals with supervisory requirements related to VAs, both with reference to the calculation of technical provisions and to the capital requirements. Under the Solvency I framework, the TF considered it essential that technical provisions are sufficiently prudent; to this regard, the TF gave some indications on how the calculation of the additional technical provisions to be set up according to art. 25 of Life Directive could be performed, i.e. by a combination of deterministic and stochastic methods, provided that it is allowed in the legal situation of the MS. If for whatever reasons (e.g. for accounting or tax rules) in some countries, technical provisions need not to be set at a level that provides sufficient prudence, the TF believes that is necessary to consider them together with the solvency margin and, if the amount is not sufficient anyway, extra provisions in some forms should be established.
12. The TF considered that the Solvency II framework offers sufficient room for appropriate calculation of technical provisions: for VAs Solvency II general principles should be applied having in mind that: i) the use of stochastic modelling process will normally be necessary; ii) a dynamic behaviour of policyholder should normally be a necessary assumption in the calculation of the best estimate; iii) the use of replicating portfolio techniques for calculation of technical provisions may be possible but highly unlikely; iv) calculation should be consistent with market values of options and guarantees traded in the market.
13. On capital requirements in Solvency II, the TF considered the Standard Formula approach to the SCR is generally not sufficient due to the complexity of VA’s so that companies transacting VAs business should

usually be required to use an Internal model for the calculation of SCR, according to Article 119 of Solvency II Directive. The TF considered that Solvency II principles on internal models are fit also for VAs; on the specific point related to recognition of hedging efficiency, the TF believes that it is reasonable to allow insurers to recognise the role of hedging programme when using internal models, but subject to strict limitations as set out concerning hedging efficiency.

14. Section 3.3 complements the analysis of the technical and actuarial issues for those business models where insurers transfer the risk(s) related to VAs to a reinsurer or to an investment bank. Rarely VAs products are “naked”, i.e. they are not backed by a hedging programme, by a reinsurance contract or by a customized financial product: the TF considered that these situations deserve a very careful and stringent assessment by the insurer and by supervisors, as well as an appropriate assessment of risks, as illustrated in section 3.4.
15. **Chapter 4** deals with governance issues related to VAs, some of which are common to other kinds of insurance products. The TF considered that the Solvency II principle based approach appropriately addresses governance issues related to VAs; therefore the TF provided some recommendations, where appropriate, in order to better contextualize VAs issues in the general Solvency II context.
16. Concerning Solvency I, the TF considered that the relative lack of specific provisions on risk management and governance in the current Directives does not prevent Authorities in MS to enforce already those recommendations which are not specifically related to Solvency II items. In order to promote a timely and smooth transition to Solvency II, the TF identified a list of recommendations that could be considered by supervisors for possible earlier application, before Solvency II entries into force, provided that they are not against the national implementation of the current Directives.
17. **Chapter 5** illustrates how the features of technical and governance complexity as well as the relevant cross-border aspects of VAs business model challenge the current supervisory framework, in terms of cooperation among different supervisors involved. The analysis is envisaged for the cooperation for the supervision at solo level (General Protocol) and especially in the field of group supervision through the college of supervisors (Helsinki Protocol). The TF investigated group issues with reference to tasks/activities to be performed and with reference to actors to be involved.
18. On activities, the TF considered that the college of supervisors should establish a list of tasks so to ensure adequate and complete supervision on VAs business. In setting up the list, the college can profitably take advantage of the list provided by the TF, so to develop a supervisory framework tailored to the specific group and its VAs business. The same list could be applied for supervisory tasks to be performed at solo level, i.e. when VAs business model does not feature relevant group aspects.
19. On actors to be involved, the TF considered it useful that the college takes advantage of the knowledge of the supervisors of MS where VA business is sold, for example through free provision of services. In order to

enhance efficiency and effectiveness of cooperation among Home supervisor and Host supervisor(s), the TF considers that some form of permanent cooperation could be established, also in case where VAs business model does not feature relevant group aspects.

20. Recommendations on group issues do not substantially differ in a Solvency I and in a Solvency II context; the TF did however investigate on the specific tools available in the two frameworks, where different, so to provide concrete and detailed suggestions to promote supervisory cooperation and enhance the activity of colleges in this field.
21. **Chapter 6** provides some first considerations on systemic risk that might be entailed by VAs. Considerations are provided having in mind FSB general criteria on systemic risk as well some issues specific to VAs business model, such as the hedging programme. The TF considered that VAs do not currently pose a systemic risk for the wider financial system, due to the relative size of the market which could be estimated on the basis of current data available. To better ground this consideration, however, the TF noted that currently available data on the size of EU VAs market are not enough and considered it necessary to collect some data during the public consultation period.
22. However, regardless of the current size of the EU VAs market, the TF believes that CEIOPS should monitor its development level and recommended that CEIOPS should collect, compile and publish data on the size of the VAs market and related hedging programmes in Europe.
23. Finally the TF did some work on a list of data to be required to insurers for an effective supervision on VAs business, illustrated in **chapter 7**.

## **2. BACKGROUND TO THE REPORT**

### 2.1 Introduction

24. Variable annuities (VAs) are unit-linked life insurance contracts with investment guarantees which, in exchange for single or regular premiums, allow the policyholder to benefit from the upside of the unit but be partially or totally protected when the unit loses value.
25. Guarantees offered may vary considerably (death, withdrawal,...) since many different products may fall under the common wide name of VAs. These guarantees have a maturity and a complexity that are generally greater than those arising from liquid options, or options sold by investment banks. The most common VA guarantees are:
  - GMWB (guaranteed minimum withdrawal benefits): deferred or immediate, temporary or lifelong income stream even if the account value has fallen to zero;
  - GMAB (guaranteed minimum accumulation benefit): Minimum guaranteed capital after a predefined period;
  - GMIB (guaranteed minimum income benefit): Minimum guaranteed lifetime or term annuity starting at a predefined age on a defined benefit base;
  - GMDB (guaranteed minimum death benefit): Minimum benefit in case of death.
26. Guarantees offered to policyholders imply an increase of risks for insurers. Insurers can manage those risks in different ways, which have varied across time, countries and market players; the most common ways are:
  - Hedging programme: insurers manage VAs risks through financial instruments used for replicating cash flows representing the changes in market value of liabilities. Hedging programmes can have different degrees of complexity, be static or dynamic;
  - Reinsurance or purchase of complex and customized structured product: the insurer transfers the risk(s) related to VAs to a reinsurer or to an investment bank.
27. The possibility for policyholders to benefit within a single product from gains in the financial markets while being protected against falling markets has made these products very popular in the US as well as in some other markets such as Japan. However, particularly in the US the recent financial crisis caused severe losses for some important insurers.
28. In Europe, VAs are becoming increasingly widespread. Usually VAs are sold by large European insurance groups either by their local subsidiaries or by specific subsidiaries dedicated to that business underwriting in

several Member States, through freedom of establishment or freedom of service<sup>1</sup>.

29. These recent developments and increased complexity raise new kinds of issues for insurers and supervisors, and also for policyholders.

## 2.2 Mandate and Scope of the Task Force

### *Mandate*

30. EIOPA Members decided to set up a Task Force on variable annuities (TF) acknowledging the importance of considering issues such as marketing and communications in their own right. Mandate for a Task Force on variable annuities provided by insurers CEIOPS-SEC-06/10 was approved on 12 March 2010 in a written procedure.
31. The TF was mandated to provide EIOPA Members with common EU guidelines for supervisors that would foster convergence and spread best practices; those guidelines should then be adapted by each supervisory authority to fit the exact features of each variable annuity.
32. Those guidelines should include recommendations that can be put immediately in place but that will also be relevant for the upcoming Solvency II supervisory regime. For those issues that are relevant for Solvency II, TF should take as a basis the work already undertaken by EIOPA and seek to determine and propose additional guidance where needed.
33. The TF was mandated to present a report for public consultation at the November 2010 EIOPA Members Meeting for a 10 weeks consultation period and come with revised recommendation on the treatment of variable annuities for the March 2011 EIOPA Members Meeting.

### *Scope*

34. Guidelines should aim at building a supervisory standard for an effective and comprehensive supervision on issues related to VAs business, with the aim of:
  - ensuring a sound management of insurance undertakings (groups) concerning the underwriting of guarantees they might not be able to afford/or hedge;
  - ensuring an adequate level of protection of policyholders;
  - ensuring appropriate competition while avoiding market disruptions affecting the possibility to hedge guarantees provided.
35. The mandate identified two main areas of interest for the TF, i.e. *i)* technical and actuarial issues and *ii)* Governance and colleges. The TF should also give a preliminary analysis of whether more widespread variable annuities may be the source of a new systemic risk or generate pro-cyclicality in the case of a market downturn. The issue of selling practices is not in the scope of the Task Force.

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<sup>1</sup> In a typical business model for EU VAs, a local subsidiary A of an insurance group offers VA-products in different countries via branches. In each such country there may be another subsidiary B that provides services to A in marketing, administration and product design.



36. **On technical and actuarial issues**, the TF should aim at defining common principles and methods for:
- the assessment of the efficiency of the hedging techniques used for the guarantees provided including inter alia:
    - possible hedging inefficiencies i.e. identification of remaining risks, and
    - when relevant, properties that the method used to determine and assess the hedging strategy should have.
  - the calculation of technical provisions and capital requirements under Solvency I and under Solvency II either for the standard formula or internal models.
37. **On governance and colleges**, the TF should define common principles and best practices regarding governance including internal controls. In that respect, the recommendations should include principles inter alia on:
- Appropriate governance structure that ensures a clear and adequate allocation of tasks within the group, namely the tasks related to the definition of the product, calculation of technical provisions, marketing of the product, etc;
  - Appropriate risk framework for variable annuities, including management of operational risk and legal risk stemming from mis-selling practices or inadequate information provided to the policyholder
  - Specific measures needed for Colleges as regards coordination for the supervision of insurance undertakings and groups providing variable annuities including issues such as:
    - Observed changes in the structures of groups to market variable annuities (creation of subsidiaries or branches);
    - Increasing role of branches within insurance groups (even if there is already a subsidiary in the same country).

### 2.3 Initiatives at EU and international level, including contacts with the market

38. When carrying on its work, the TF took into account also some related initiatives ongoing within the supervisory community, as well as within the industry and academics:
- the work already done by one European group's college of supervisors, of which a working subgroup gave its conclusions on Variable Annuities in October 2009, which raised important issues;
  - draft discussion paper by the Irish supervisor currently under consultation;
  - the "Actuarial Guideline XLIII - CARVM for Variable Annuities"<sup>2</sup>, a draft guideline on which Life and Health Actuarial Task Force of the National Association of Insurance Commissioners' (NAIC) is working on

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<sup>2</sup> Which relies on Conditional Tail Expectation (CTE), which is a type of TailVaR. Latest draft is there [http://www.naic.org/documents/committees\\_models\\_ag43.doc](http://www.naic.org/documents/committees_models_ag43.doc)

39. During its work, the TF held also some contacts with some interested stakeholders.

#### 2.4 Size of the VAs market in EEA

40. In winter 2010-2011 EIOPA has conducted a survey, concentrating on larger insurance groups, with the aim of ascertaining the size (measured in premiums written and in technical provisions) and the characteristics of the VA market in EEA.
41. From the first results of this survey, the EEA VAs market volume measured in technical provisions amounts to € 168 bn. at year end 2009 and to € 188 bn at the end of H1/2010 in aggregate, indicating a 24 % year-on-year growth for the groups participating in the survey; overall the EEA technical provisions figure in VA of some € 50 bn compares with overall life insurance provisions (comparable in scope with this study) of some € 640 bn.
42. EIOPA will further analyse data stemming from the survey highlighting results in other publications on financial stability, e.g. Financial Spring Report (FSR).

### 3. TECHNICAL AND ACTUARIAL ISSUES

#### 3.1 General issues –features of VAs

##### 3.1.1 Scope of application

43. Defining precisely what a VA is can present problems. There are a number of features that taken together would clearly indicate that a company is transacting VA business. However it is not clear which (if any) features are absolutely necessary for the term VA to apply. Some more traditional forms of participating or non-participating business may share VA features.
44. The existence of some forms of guarantees might be helpful in classifying unit-linked products as VAs. In VAs the guaranteed level is generally determined as:
- Return of Premiums: the sum of the paid premiums (gross or net of loadings);
  - Roll-up: the sum of the paid premiums (usually net of loadings) at a pre-defined interest rate;
  - Ratchet: the highest between all values of the underlying funds throughout the insurance period, evaluated in correspondence to a set of a pre-defined time frames (ratchet anniversary);
  - A combination of the previous ones, although other guarantees might exist.
45. A common form of VA involves a guarantee given and charged for by deduction of a regular fee (for example, as a percentage of assets or a fixed monetary amount). In the initial period of this policy the value of the guarantee less future charges to be made will be highly volatile. It would be expected that this will change back and forth from net asset to the company to net liability as financial market parameters change.
46. The main guarantees already widespread in the market are illustrated in paragraph 25 above, however other similar ones could already be existing under other "labels" and other similar ones could also arise in the future. In order to ensure a common protection of policyholders, to enhance level playing field among different market players and to avoid supervisory arbitrage, the TF considers it important that technical and actuarial considerations on the issue of VAs are not markedly different according to the form of the product (i.e. "substance over form").
47. However, the TF considers it appropriate that efforts for harmonisation are carried out to the benefit of policyholders and for level playing field among different insurers. Therefore, the TF proposes a list of possible relevant features of the guarantee in order to identify a product as VA. The list is considered as non-exhaustive, i.e. the TF does not believe it appropriate to have a close predefined list of features for the definition of VAs.
48. It is also to be noted that the "Actuarial Guideline XLIII - CARVM for Variable Annuities" basically provides for an open definition of the contracts

in its scope by defining some guarantees<sup>3</sup> that can be included in the contracts within its scope and by making an additional reference to contracts that contain guarantees “similar in nature” to those already defined. The Guideline explains that the “similarity in nature” is intended to capture both current products and benefits as well as products and benefits designs that may emerge in the future.

49. The TF also considers that an open list of features for defining VAs does not give room to a disproportionate supervisory framework, i.e. it does not set out too a wide scope of application of the present guidelines. This because the TF considers that the proportionality principle as envisaged in Solvency II does fit also in VAs context, so that supervisors would consider nature, scale and complexity of the business when applying the present guidelines.

50. Considering currently existing policies, the TF considers the following as some possible relevant features for VAs guarantees:

- guarantees are usually linked to a fund (i.e. unit-linked product);
- guarantees are generally external: this means they are not a fund characteristic, i.e. guaranteed and protected funds should not be considered. Funds managed through CPPI techniques should not be considered as well;
- guarantees are individual: the investment position of the single client is guaranteed, not the value of the fund unit;
- guarantees are explicitly and separately charged, e.g. through an additional charge on premium or a management fee.

### **Recommendation**

51. *The relevant body of the company should thoroughly examine their current and foreseen products with investment guarantees and assess whether they are classed as VA's, also by taking into account the list described above. The TF considers it appropriate that the list is left open, i.e. a non exhaustive list.*

52. *The assessment should be communicated to the supervisor of the insurer. The supervisor should challenge this assessment and, if appropriate according to the VAs business model of the insurer, share views on it within the college (see chapter 5 on group issues).*

### 3.1.2 Hedging programmes

53. The majority of VAs liabilities are backed by extensive hedging programmes<sup>4</sup>.

54. Some undertakings/groups use a static hedge, i.e. the strategy is to hold a portfolio of assets that closely matches liabilities. It might either be a “true” static hedge, in which widely available standard products are used and kept

<sup>3</sup> Those guidelines give a definition of GMDB (Guaranteed Minimum Death Benefit) and of VAGLB (Variable Annuity Guaranteed Living Benefit)

<sup>4</sup> Insurers have developed platforms that aim to transfer equities, interest rates and volatility risks to the financial market by implementing dynamic or static hedging programs. These programs consist in adjusting (on a frequent basis mainly using financial derivatives) their market position on assets whose price variations follow the variations of their liabilities in order to neutralize the abovementioned risks.

during the whole life of the liabilities, or a “custom” static hedge, in which a special asset structured by a bank is used.

55. Many undertakings dealing with VAs business decide to back liabilities using dynamic hedging programmes, i.e. the strategy is to have a portfolio of liquid assets which attempts to match movements in liabilities just for a short period. In that case the portfolio is rebalanced frequently. Decision of frequency takes into account trading costs, and adequacy and correctness of the hedge.
56. The efficiency of hedging programme<sup>5</sup> backing VAs business is a key-point to be assessed, firstly by insurers and consequently by supervisors. Two key points in this assessment are *i)* the identification of risks that are included in the hedging programme (and eventually the remaining ones that are not included thereof) and *ii)* the properties that the hedging strategy should have.

### **Recommendation**

57. *The TF believes that the efficiency of the hedging programme should be assessed by insurers:*

- *insurers must be carrying out a regular timely, periodic analysis of hedge effectiveness. This analysis must successfully attribute any hedge inefficiency to a cause. Inefficiencies must be quantified, documented, reviewed, assessed and implications considered for improving effectiveness and efficiency of the hedging;*
- *the analysis should be made according to an appropriate predefined method that has to be set up within the risk management/internal control system;*
- *both in a qualitative and a quantitative way, through appropriate metrics;*
- *with appropriate frequency. The TF considers that this should be done at least monthly; if appropriate (and proportionate) it should be done also more frequently, e.g. daily. The TF notes that different frequencies entails different assessments, e.g. an assessment done on a daily basis is likely to be automatic, whilst a less frequent one likely involves also human resources;*
- *insurers must carry out and (at least) annually refresh a study of how hedge effectiveness would work in stressed conditions. Comparison to recent market turbulences should be carried out.*

58. *The TF believes that the efficiency of the hedging programme is to be assessed also by supervisors through:*

- *the evaluation of the assessment made by the insurer itself. In a Solvency I context this might be done through on-site inspections or – if already applicable in a Solvency I context<sup>6</sup> – by exercising supervision*

<sup>5</sup> Hedge effectiveness here referred to is related to capital requirements and technical provisions. It is not P&L hedge or hedge of GAAP earnings.

<sup>6</sup> As illustrated in para 238 in chapter 4 on governance, situations may vary in different MS, due to different degrees of complexity of governance requirements currently in force throughout MS. This, since some MS have been putting in place a smooth transition to Solvency II by making some

*on requirements related to internal control/risk management. In a Solvency II context, this would be done through the supervision on the ORSA<sup>7</sup> performed by insurers.*

- *their own evaluation:*
  - *in a Solvency I context, depending on the framework of the MS as mentioned above, supervisors could envisage either a regular communication from the insurers on this point or a communication on an ad-hoc basis;*
  - *within a Solvency II context, this assessment would be included in the Supervisory Review Process (SRP) as envisaged by art. 36 of the Solvency II Directive, so it would follow requirements and frequency as of SRP itself.*

59. Once assessed the efficiency of its hedging programme, questions might arise on whether and to what extent the insurer should fully take it into account for its internal purposes, e.g. in assessing its own capital needs.

### **Recommendation**

60. *The TF believes that recognition of the effects of the hedging by the company on capital needs (for internal purposes) should be subject to strict limitations, i.e. that qualitative aspects and quantitative limits are set up and complied with:*

*A. On the **qualitative aspects**, the TF believes that, before this can be assumed, the following criteria must be met:*

- a) insurers must be following a clearly defined hedging strategy, including in cases where operational or market situations make it difficult to pursue normal operations;*
- b) insurers must be carrying out a regular timely, periodic analysis of hedge effectiveness. This analysis must successfully attribute any hedge inefficiency to cause. Inefficiencies must be quantified, documented, reviewed, assessed and implications considered.*
- c) insurers must carry out and (at least) annually refresh a study of how hedge effectiveness would work in stressed conditions. Comparison to recent market turbulences should be carried out.*

*B. on the **quantitative limits**, the TF believes that the effect of the hedging programme on any numerical computation<sup>8,9</sup> (e.g. for internal purposes and for regulatory purposes):*

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amendments/updates to Solvency I requirements having in mind forthcoming Solvency II requirements.

<sup>7</sup> Own Risk Solvency Assessment as provided by art. 45 of the Solvency II Directive

<sup>8</sup> Reference is made to internal models that the insurer could have in place for any reasons, e.g. for internal purposes of assessing capital to be held. Pending the entry into force of Solvency II, it should be noted that existing models do not need to be strictly compliant with the several requirements envisaged for internal models in a Solvency II context. In order to avoid unnecessary confusion, the TF decided to make reference to "internal models" only when clearly in a Solvency II context; when dealing only with Solvency I or when referring to both SI and SII, reference is made to a more general wording such as "computational process" or "model" or "numerical computations".

- a) *must not exceed the level of efficiency that has been demonstrated by the hedge effectiveness strategy;*
- b) *must not exceed the level of efficiency that can be demonstrated that would apply in stressed circumstances (either by reference to actual experience or by modelling based on case studies and scenario testing);*
- c) *must not include an offset in respect of hedging that is not currently done;*
- d) *must not include an offset for future trades unless the relevant instrument is from a market that is sufficiently deep and liquid to give reasonable assurance that the company will be able to invest in that asset in the future.*

61. *Once verified that the qualitative aspects and quantitative limits are complied with, the TF believes that the numerical computations should take into account the hedging actions. For computational reasons, it might be impracticable to make exact simulations; if approximations or simplifications are necessary, they will have to be justified.*

62. *In either case the abovementioned limits should be applied. This may be by explicit parameters inserted into the calculations engines. Alternatively the value with and without the hedging may be calculated and then interpolated between.*

63. Moreover, question might arise on how and to what extent the recognition of the hedging should take place for supervisory purposes. Chapter 4.2 further deals with how and to what extent the hedging can be recognised for supervisory purposes within a Solvency I and Solvency II context.

#### 3.1.2.1. Assessing risk(s)

64. When assessing efficiency of their hedging programme, insurers should consider the risks they had intended to hedge and assess the extent to which the hedging has worked properly. They should consider as well that they might have not hedged partially or fully some risks, and that there are risks not hedgeable at all: in these cases they should address those risks otherwise (i.e. not through an hedging programme). To this regard see also para 207 on governance issues.

65. CEIOPS has already worked extensively on the several risks affecting insurance business; the TF considers that, generally speaking, those risks are applicable also to VAs business. However, due to its highlighted features and entailed complexity, the TF has considered it worthwhile highlighting below some specific points which might deserve additional considerations by insurers and supervisors, especially when assessing hedging efficiency.

66. The TF considers that insurer should take into account at least each of the factors listed below:

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<sup>9</sup> Different "numerical computation/models" might be in place in an insurance undertaking at the same time for different purposes. The TF believes that in this case, when relevant, assumptions and results thereof are coherent.

*a) Basis Risk*

67. Basis risk can arise in different forms in VAs business. The first is that a VAs programme may involve use of instruments in traded markets to hedge risks in specific funds which may not perform exactly as the markets do.
68. The second is that assets held on the basic unit linked product may not reflect the liabilities as specified in the policy condition<sup>10</sup>. This should be avoided as part of good governance.
69. In either case basis risk must be carefully examined. Correlations between assets actually held and assets theoretically required must be examined and differences assessed. This difference in performance may vary more dramatically in stressed conditions than in benign conditions. Concentration on one stock, even one apparently well correlated to the market, poses risk.

*b) Market risks*

70. Amongst the market risks usually assessed by insurers for their activities (e.g. interest rate risk, equity risk,...), writers of VAs should take particular care to assess interest rate volatility and equity volatility. Generally hedging programme, especially dynamic ones, rely on calculation of the sensitivity of the price of derivatives to changes in underlying variables. These risk sensitivities (delta, gamma, rho, vega, theta, rho convexity, etc.) are called 'greeks'.

<b>Delta - sensitivity of value to change in value of underlying asset</b>
<b>Gamma - sensitivity of value to change in delta</b>
<b>Rho - sensitivity of value to change in interest rates</b>
<b>Vega - sensitivity of volatility</b>
<b>Theta - sensitivity of value to passage of time</b>

71. Decision on greeks need to reflect an expected adequacy of hedging, guarantees and the rebalancing period. For example interest rate exposure can be significant in case of GMIB and GMWB (so rho would be relevant for them). When rebalance is done infrequently undertakings/groups who aim to implement an efficient hedging strategy would want to hedge second-order effects.
72. Moreover other factors also can change the option value due to the market assessment of the volatility of the underlying. And even if undertaking will use rho to hedge changes in interest rates, vega to hedge changes in volatility and/or theta to compensate the decline in option value as time passes, the dynamic hedge can never fully eliminate risk.

<sup>10</sup> See art.25 of the Life Directive 2002/83



c) *Non market risks*

73. Other risks might be relevant for VAs:

- *Liquidity Risk*: especially during market turbulences extensive derivative trading may require significant liquidity for possible margin calls;
- *Path dependency*: VAs may include features such as ratchets, which are path dependent. Policyholder actions or management actions may also be path dependent;
- *Demographic risk*, with particular reference to longevity risk;
- *Lapse risk - policyholder behaviour*: experience has shown that policyholder behaviour can be significantly affected by policyholders' perceptions of the value of their policies and these changes can be quite rapid. If the contract is of long duration then even a small change in the per annum persistency rate can make a substantial difference in the number of policyholders expected to be subject to a maturity guarantee. Therefore the hedging program may be sensitive to persistency assumptions. In addition, the potential emergence of a secondary market, should guarantees become valuable, may reduce lapsation in such circumstances even further.

74. The abovementioned risks are usually included in a hedging programme. The TF believes that, when assessing the efficiency of the hedging, the following considerations should be taken into account:

- Demographic risks and policyholder dynamic behaviour are very difficult to effectively hedge;
- *Long Term trends*: There are two types of approach to time horizons in modelling. Classic actuarial analysis uses lifetime projections whereas Solvency II uses a one year projection but with projection of market consistent values. The change in values on options and guarantees over one year captures the same features as the lifetime projection in theory. However, it is possible that some features that are easily modelled using lifetime projections may not be picked up in the one year approach. Examples of this would be mortality improvements, in which small but consistent changes over a long time may have significant impact; or investment practices on unit-linked funds may cause increasing basis risk compared to hedge assets. The need for lifetime projections should be investigated;
- Special attention is needed to the possible existence of interactions between all the risks mentioned above and to the possibility that the hedging programme does not cover these interactions adequately.

75. There are some other risks that the TF considers particularly significant for VAs business and that, most likely, are not included in the hedging (so that they should be assessed otherwise):

- *Counterparty risk* from assets and from reinsurance: the TF considers that those risks play a major role especially – but not only – when the insurer has no hedging programme but deals with VA business

through reinsurance or through the purchase of customized financial products (see section 3.3)

- Operational and Model Risk: There are always going to be differences between the world as modelled in the hedging and reality. The TF believes that the following causes of this should be considered since their effects tend to be greater than the operational risk that exists for more traditional companies:
  - Turbulence: the risk that normal relationships between market parameters may break down in extreme financial conditions;
  - Delay Risk: the risk that in the time that is necessary to carry out hedging analysis, make hedging decisions and then make trades prices move sufficiently to make those trades incorrect;
  - Model Risk: No model is perfect and models that reflect behaviour at some periods may cease to have validity as markets change;
  - Granularity: Market prices are not smooth functions when looked at in close detail but move as jumps from moment to moment;
  - Error in operation of hedging programs: running hedging programs is complex. It is often done across several locations and in different time zones and possibly across different first languages;
  - Legal risk: if products are marketed into areas where the company lacks draft of expertise or are drafted in a foreign language, there is a risk that the ultimate outcome may be different from that the company expects (this point is further clarified in section 3.1.3 below).

#### **Recommendation**

76. *As a general recommendation, the TF believes that the insurer has to carry out a full assessment of risks stemming from its VAs business. To this regard, the TF believes that at least the risks mentioned in paras 66 to 75 above should be considered, under the caveats highlighted in para 74.*

77. *The TF considers that the identified risks should be all adequately covered by the modelling process backing VAs business. If this is not the case, i.e. the risks from the factors are not all adequately covered by the modelling process, then supplementary calculations must be made and actions taken further to this (e.g. additions made either to technical provisions or solvency capital or to both).*

78. *Specifically on policyholder behaviour, the TF expects that models should allow for dynamic lapsation/surrender behaviour; if not the case, insurance undertakings should justify the reason why. Under this lapse/surrender of policies should be assumed to be at lower rates when guarantees are "in the money" and higher when "out of the money", thus reflecting likely economic reality, and rational policyholder behaviour. Calibration of these is difficult as data is sparse but the TF considers that*

*in the money guarantees may well experience very low lapse/surrender rates and therefore this warrants close attention.*

79. The TF also considers that governance issues are particularly relevant for addressing this point, in particular when hedging tasks are outsourced by the insurer (see chapter 4).

### 3.1.2.2 Modelling process – characteristics

80. Insurers usually utilise a modelling process for the managing of VAs business, so to appropriately reflect the risks that affect their cash-flows. This may include simulation methods or deterministic techniques.

#### *Stochastic modelling*

81. Rather than considering all possible future scenarios, (re)insurance undertakings can choose a suitably large number of scenarios which are representative of all possible future ones. This approach is referred to as a "simulation technique".

82. An example of simulation techniques is the Monte-Carlo simulations: the value of the liabilities is calculated in a large number of scenarios where one or more assumptions are different in each scenario. By simulating the behaviour of the random variable(s) in a very large number of scenarios, the model produces a distribution of possible outcomes so that a probability weighted average can be calculated ("mean of the distribution").

83. Stochastic modelling has the advantage of allowing a wide variety of simulated outcomes. However, modelling techniques are complex and there is danger that the model chosen may not reflect actual risks. Some market models, chosen for their simplicity and ease of use, may not be sufficiently prudent. It is doubtful whether any modelling process can reflect all possible features of financial markets. Runtime considerations may also force approximations to make stochastic analysis feasible.

84. The strength of stochastic modelling is highly dependent on the strength of the economic scenario generator (ESG) that supports it. There must be consistency in the choice and use of parameters within the ESG and the model.

#### *Deterministic approach*

85. The (re)insurance undertaking may also use a technique where the projection of the cash-flows is based on a fixed set of scenarios. This is referred to below as a "deterministic approach". In order to assess hedge efficiency, the deterministic method tests how liabilities and hedging assets react to given scenarios.

86. Deterministic modelling is less complex, and more easily understood, than stochastic simulations. It is possible to choose realistic financial trajectories, and use fewer approximations since more computation power will be left available. It solves theoretical discussions by using real examples. However, only a few selected trajectories will be used, and thus this method will not cover all possible evolutions of financial markets. It is

thus recommended to use this method in conjunction with stochastic modelling, and not alone.

### **Recommendation**

87. *The TF believes that:*

- a) *insurers should have a modelling process in place so to manage VA business and properly assess/manage the risk(s) thereof;*
- b) *the modelling process has to be fit for the purpose(s) it is used for. For example if a company was trying to set a 99.5% VAR on the cost of an unhedged GMDB on a unit linked bond, then the important market feature to test for capital adequacy calculation would be the volatility of the bond assets while the volatility of volatility might not be important for the purpose; however if the benefit is delta hedged the basic volatility may become less critical and second order effects become more important;*
- c) *insurers should use scenario testing to support modelling work;*
- d) *the model must be chosen to test both the actual guarantees given and the hedging program used to offset the risks;*
- e) *the model and the modelling process must be sufficiently accurate, i.e.:*
  - *Modelling accuracy: for stochastic modelling, it is usual to represent the in force portfolio of policies by smaller numbers of representative policies weighted appropriately to give similar values for technical provisions, premiums and numbers of policies as the full portfolio. In practice, policies may exhibit very similar behaviour independent of age of policyholder, size of premium or gender (though this is not always the case). Other factors such as duration in force, moneyness, outstanding term or choice of investment media may be less benign. This modelling process must be subject to detailed examination and justification;*
  - *Sufficient Iterations:*
    - *calculations using stochastic methods need sufficient iterations to give a reliable result. The number needed depends on the complexity of the product being modelled and the type of calculation being made. Calculations of central values generally need fewer iterations than calculations of VAR levels. Generally, the higher the percentage of VAR required, the higher number of iterations. TVAR calculations often need even more iterations;*
    - *appropriate convergence of the modelling result must be demonstrated, as a given number of iterations will not yield the same precision for different contract purposes;*
  - *Consistency with Traded Instruments: for market consistent models, it is necessary that the model does indeed demonstrate its market consistency by comparison to market values of traded instruments;*

- *Time Steps: the time step of the model must be sufficiently small to capture the essential features of the product and the hedging strategy. It is up to the company to prove that the chosen time step is an adequate approximation.*

### 3.1.3 Legal risk<sup>11</sup>

88. VAs products are usually marketed as a way to benefit from the performance of unit-linked funds with a total or partial protection against downturns of markets.
89. Some products are very simple; others are complex, with a wide choice of guarantees and options (ratchets, roll-up guarantees, etc.). Some products are sold by a local insurer, others are sold cross-border. Some products have well-established features (like a simple GMDB), others are very innovative.
90. In the case of any complex new products, there are several risks associated with the marketing and selling of these products. Possible mis-selling practices or inadequate information provided to the policyholder could in turn create legal risk.
91. A case-by-case analysis is necessary to determine whether the VA product is more or less complex than a traditional life insurance product, and whether legal risk could stem from the insurer's selling practices of the product or from inadequate information provided to the policyholder.
92. The mandate of the TF (see above, para 35) does not include specific issues related to mis-selling. The TF highlights here some legal issues that might affect the risk profile of the insurer and that should therefore be considered appropriately when assessing technical aspects (as well as governance issues), because this legal risk could have significant financial impacts on the company that bears the risk. In some countries, in some cases, legal risks lead to the necessity for prudent legal provisions: it might happen that when the company or one of its competitors has been held liable by a court for a similar product, a legal provision should be constituted mandatorily.
93. The issue is relevant also for supervisory purposes, so to improve efficiency of the supervision. When products are sold cross-border through freedom of services or freedom of establishment, rules applicable might vary and close cooperation between home and host supervisors should be organized for example within the supervisory college (see chapter 5).
94. For instance, the complexity of some products is such that it is unclear whether most policyholders can understand what they are buying; if they are disappointed in the product (in particular, if they realize that the cost of the guarantee is impeding the performance of their account value), they could argue that they were not informed correctly. A court could then rule that, given the information and advice given to the policyholder:
  - the guarantees sold by the insurer are greater than the insurer thought;

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<sup>11</sup> One member of the TF considers that legal risk as illustrated in this chapter is not a risk specific to VAs.

- or the contract is void and therefore the insurer should pay back the initial premium to the policyholder who wishes it (in the case of products sold when markets are up, this creates significant financial risk when markets are down).
95. Another issue is that in some cases the description of guarantees in plain text might be ambiguous or unclear, which could lead to misunderstandings, and a mismatch between the way the guarantee is spelled out in the contract and the way it is modelled for hedging and reserving.
  96. The ambiguity or lack of clarity of the description of guarantees in some contracts could also lead to reasonable expectations by the policyholders, leading to greater guarantees than the insurer thought.
  97. In some products, the policyholder gives a mandate to the insurer to choose the funds, or there is only one fund of funds available: it seems not in the interest of the policyholder for the insurer not to mention that the fund selection will not only answer to a goal of performance but also to a goal of being easily replicated. A court could then rule that there is a conflict of interests of which the policyholder should have been informed, and void the contract or condemn the insurer to pay damages.
  98. In some countries there seems to be some incompatibility between some dispositions of insurance contract law and the way VAs work, which make it very difficult for companies to describe the guarantees in way that will comply with regulations; in those cases, there are legal risks that the contract might be considered unlawful by a court.
  99. Sometimes there can be a risk that a Withdrawal Benefits for life be requalified as an annuity by the fiscal authorities, with significant fiscal consequences for the policyholder, who could then sue the insurer who misled him. The insurer could be forced to pay damages to the policyholders.
  100. In a Solvency II context, legal risk as described above could fit into the assessment of the insurer's global risk profile, for example as operational risk (see above, para 75), as well as risk of not being compliant with rules on consumer protection, which both could give rise to an increase of capital to be held by the insurer.

### **Recommendations**

101. *The TF recommends that the legal risk especially related to misselling as illustrated above is appropriately considered when assessing the risk profile of the insurer so that the insurer itself can take appropriate corrective actions.*
102. *This assessment is required in a Solvency II context but, in the light of the forthcoming application of the new regime, the TF considers it useful that the assessment is done also before the entry into force of Solvency II so to help a smoothing of the transition.*
103. *To assess these legal risks, the TF deems it essential for the insurer to have sufficient knowledge of local rules concerning insurance contracts and policyholder information, as well as of local jurisprudence.*

104. *The assessment is considered necessary also within the supervisory context so to enhance effective and efficient supervision through an improved cooperation between home and host supervisors.*

### **3.2 Supervisory considerations on the calculation of technical provisions and capital adequacy**

#### 3.2.1 General issues

105. Both in Solvency I and in Solvency II, supervisory quantitative charges for addressing insurer(s)' risk exposures basically build on two components: technical provisions and own funds. However, the balance between the two components is different in the two contexts, since Solvency I relies substantially on technical provisions that have to be "sufficiently prudent" (to be noted that they might also be sufficiently prudent in an implicit way) while in a Solvency II context, prudence is made explicit and substantially addressed through capital adequacy.
106. For the sake of clarity and compliance with EU legislative framework, this chapter addresses separately issues and considerations related to the two components this includes considerations on how the overall need of resources required to cope with VAs business is split within the two components. It has to be noted, anyway, that some EU countries<sup>12</sup> follow a sort of "holistic" approach and challenge insurers' exposure to risks related to VAs against the sum of the two components taken as a whole.
107. Another general overarching point is that Solvency II is close to come into force. Therefore, the TF investigated on desirable supervisory treatment of VAs in a Solvency I context in the view of opportunity of a smooth transition from Solvency I to Solvency II.

#### 3.2.2 References and considerations on Solvency I

##### *Calculation of Technical Provisions*

108. Life Directive (art. 20 2002/82) states that insurance undertakings shall establish sufficient technical provisions for their entire business and sets out principles<sup>13</sup> for the calculation of technical provisions; some options for Member States are also envisaged so that the current practice of calculations may vary by Member State and by product.
109. Art. 25 of the same Life Directive envisages some specific features<sup>14</sup> for contracts whose benefits are linked to UCITS and share index, including

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<sup>12</sup> This is the case for example of the Irish discussion paper mentioned in paragraph 38 above.

<sup>13</sup> Inter alia, art. 20 states that:

- TP shall be calculated by a sufficiently prudent prospective actuarial valuation, taking into account all future liabilities as determined by the policy conditions for existing contracts including, inter alia, all guaranteed benefits and all option available to the policyholder under the terms of contracts;
- a prudent valuation is not a "best estimate" valuation but shall include an appropriate margin for adverse deviation of the relevant factors.

<sup>14</sup> Inter alia, art. 25 states that:

- technical provisions in respect of the benefits of those contracts must be represented as closely as possible by the units (of the UCITS or of the internal fund or of the reference value) or, in the case where units are not established, by those assets or by assets of

unit-linked. In a Solvency I context, technical provisions related to VAs business should therefore be the sum of the value of the units and of the additional technical provisions representing guaranteed benefits. Those additional technical provisions are estimated by the abovementioned modelling process, which might in principle be based either on a deterministic calculation process or on a stochastic one.

#### *Calculation of capital requirements (solvency margin)*

110. Art. 28 of the Life Directive sets out rules for the calculation of the required minimum margin, according to the classes of assurance underwritten. Art. 28.7<sup>15</sup> basically sets it out as 4% of Technical Provisions (for investment risk borne by the insurer), plus other amounts, inter alia, 0.3% of Sum at Risk (for demographic risk borne by the insurer).

#### **Recommendation (Solvency I)**

111. *The TF believes it essential that technical provisions under Solvency I are sufficiently prudent. In calculating the additional technical provisions in a Solvency I context, as both stochastic and deterministic methods have shortcomings, the TF believes that a combination of the two may prove more robust, provided that it is allowed in the legal situation of the MS: while the numerous scenarios of stochastic approaches allow for a wide range of future evolutions, the deterministic approach allows for more fully compatible with reality scenarios and events.*

112. *In a stochastic method, the company may compute provisions as a prudent quantile of the distribution of results over the life of the policy.*

113. *In a deterministic method, the company will determine its provisions as the maximum, for a small set of pre-determined scenarios, of the losses over the life of the policies. The TF believes these scenarios might depend on the specific business and the economic conditions. However, the TF believes that those scenarios have to be both realistic –e.g. historic– and testing.*

114. *If for whatever reasons (e.g. for accounting or tax rules) in some countries, technical provisions need not to be set at a level that provides*

appropriate security and marketability which correspond as closely as possible with those on which the particular reference value is based;

- where the benefits of those contracts include a guarantee of investment performance or some other guaranteed benefit, the corresponding additional technical provisions shall be subject to Articles 22, 23, and 24

<sup>15</sup> Life Directive art.28.7: “For assurances covered by Article 2(1)(a) and (b) linked to investment funds and for the operations referred to in Article 2(2)(c), (d) and (e), the required solvency margin shall be equal to the sum of the following:

- a) in so far as the assurance undertaking bears an investment risk, a 4 % fraction of the technical provisions, calculated in compliance with paragraph 2(a) of this Article;
- b) in so far as the undertaking bears no investment risk but the allocation to cover management expenses is fixed for a period exceeding five years, a 1 % fraction of the technical provisions, calculated in compliance with paragraph 2(a) of this Article;
- c) in so far as the undertaking bears no investment risk and the allocation to cover management expenses is not fixed for a period exceeding five years, an amount equivalent to 25 % of the last financial year's net administrative expenses pertaining to such business;
- d) in so far as the assurance undertaking covers a death risk, a 0,3 % fraction of the capital at risk calculated in compliance with paragraph 2(b) of this Article”.



*sufficient prudence, it is necessary to consider them together with the solvency margin and, if the amount is not sufficient anyway, extra provisions in some forms should be established.*

### 3.2.3 References and considerations on Solvency II

#### *Considerations on technical provisions*

115. Technical provisions correspond to the current amount undertakings would have to pay if they were to transfer their insurance obligations immediately to another undertaking.
116. Under the Solvency II regime, the general rule set out is that the value of technical provisions should be equal to the sum of two explicit components which are the best estimate plus an appropriate risk margin. Both components should be valued separately.
117. However, where future cash flows associated with insurance or reinsurance obligations can be replicated reliably using financial instruments for which a reliable market value is observable, the value of technical provisions associated with those future cash flows should be determined on the basis of the market value of those financial instruments. In this case, separate calculations of the best estimate and the risk margin should not be required.

#### Best estimate

118. The QIS 5 Technical Specifications state that the Best Estimate (BE) calculation should allow for the uncertainty in the future cash-flows. The calculation should consider the variability of the cash flows in order to ensure that the best estimate represents the mean of the distribution of cash flow values. Allowance for uncertainty does not suggest that additional margins should be included within the best estimate.
119. The best estimate is the average of the outcomes of all possible scenarios, weighted according to their respective probabilities. Although, in principle, all possible scenarios should be considered, it may not be necessary, or even possible, to explicitly incorporate all possible scenarios in the valuation of the liability, nor to develop explicit probability distributions in all cases, depending on the type of risks involved and the materiality of the expected financial effect of the scenarios under consideration. Moreover it is sometimes possible to implicitly allow for all possible scenarios, for example in closed form solutions.

#### *a) Cash flow characteristics*

120. Cash-flow characteristics that should, in principle and where relevant, be taken into consideration in the application of the valuation technique include the following:
  - i. Uncertainty in policyholder behaviour. In particular, regarding VAs contracts, the policyholder behaviour can have a substantial impact upon the value of the VAs guarantees. For example, when reserving (and pricing as well) it is necessary to make assumptions regarding: choice of whether to continue paying premiums, choice

of whether to switch funds, choice of whether to surrender or not, choice of whether to exercise formal options available (e.g. GMWB) or not.

- ii. Potential future actions by the management of the undertaking (management actions). The undertaking should consider the changes in asset allocation, as management of gains/losses for different asset classes in order to gain the target segregated fund return; management of liquidity according to the asset mix and duration strategy; actions for the dynamic rebalancing of the assets portfolio according to movements in liabilities and changes in market conditions. Moreover, the assumptions on future management actions used in the calculation of the technical provisions should be determined in an objective manner, should be realistic and consistent with the insurers current business strategy unless there is sufficient evidence that the (re)insurer will change its practices. They should be consistent with each other, and should take into account the time needed to implement it and any expenses caused by them;
- iii. Path dependency, where the cash-flows depend not only on circumstances such as economic conditions on the cash-flow date, but also on those circumstances at previous dates. A cash-flow with path-dependency would need additional assumptions as to how the level of the equity market evolved (the equity market's path) over time in order to be valued;
- iv. Uncertainty in the amount of expenses or fees (for example a common form of VAs involves a guarantee given and charged for by deduction of a regular fee, either as a percentage of assets or a fixed monetary amount;
- v. Interdependency between two or more causes of uncertainty.

*b) Options and guarantees*

- 121. Undertakings should identify all material contractual options and financial guarantees embedded in their contracts. They should take into account the value of financial guarantees and any contractual options included in the contracts when calculating technical provisions.
- 122. A contractual option is defined as a right to change the benefits<sup>16</sup>, to be taken at the choice of its holder (generally the policyholder), on terms that are established in advance. Thus, in order to trigger an option, a deliberate decision of its holder is necessary.
- 123. A financial guarantee is present when there is the possibility to pass losses to the undertaking or to receive additional benefits as a result of the evolution of financial variables (solely or in conjunction with non-financial variables) (e.g. investment return of the underlying asset portfolio, performance of indices, etc.). In the case of guarantees, the trigger is

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<sup>16</sup> This should be interpreted as also including the potential for reduction of the level of premiums that would be charged in the future.

generally automatic (the mechanism would be set in the policy's terms and conditions) and thus not dependent on a deliberate decision of the policyholder. In financial terms, a guarantee is linked to option valuation.

c) *Actuarial and statistics techniques*

*Stochastic techniques*

124. Undertakings should use actuarial and statistical techniques for the calculation of the best estimate which appropriately reflect the risks that affect the cash-flows. This may include simulation methods or deterministic techniques.
125. Rather than considering all possible future scenarios, (re)insurance undertakings can choose a suitably large number of scenarios which are representative of all possible future ones. This approach is referred to as a "simulation technique".
126. For certain life insurance liabilities, in particular for the contracts with embedded options and guarantees, simulation may lead to a more appropriate and robust valuation of the best estimate liability.
127. An example of simulation techniques is the Monte-Carlo simulations: the value of the liabilities is calculated in a large number of scenarios where one or more assumptions are different in each scenario. By simulating the behaviour of the random variable(s) in a very large number of scenarios, the model produces a distribution of possible outcomes so that a probability weighted average can be calculated ("mean of the distribution").

*Deterministic approach*

128. The (re)insurance undertaking may also be able to use a technique where the projection of the cash-flows is based on a fixed set of assumptions. The uncertainty is captured in some other way for example through the derivation of the assumptions. This is referred to below as a "deterministic approach".
129. There are a number of opportunities to use deterministic techniques, examples include:
  - a. Stress and scenario testing; for example, adjusting data for inflation and allowing inflation to vary, thus producing sensitivities around this parameter;
  - b. Systematic as well as other random features being captured through sensitivity testing, diagnostics or other techniques (this could be stochastic);
  - c. The use of relevant assumptions or other external/portfolio specific data as an input to the calculation when there is lack of data or as a benchmark for comparison;
  - d. Embedded options may be captured by considering different scenarios chosen to capture, as far as possible, the full range of future scenarios. An appropriate average or worst-case technique could be used to derive an initial estimate of the value of options embedded in the life insurance portfolio. A deterministic-to stochastic

adjustment could then be applied. This adjustment may be derived from any standardised method including flat benchmarked percentages.

#### *Cash flow-projection*

130. Relative to the cash-flow projection, the best estimate should be calculated gross, without deduction of the amounts recoverable from reinsurance contracts and special purpose vehicles. Recoverables and special purpose vehicles should be calculated separately. The same treatment is applicable to hedging programmes eventually in place for insurance products.

#### *Time horizon*

131. With regard the time horizon of the projection horizon used in the calculation of best estimate, it should cover the full lifetime of all the cash in- and out-flows required to settle the obligations related to existing insurance and reinsurance contracts on the date of the valuation, unless an accurate valuation can be achieved otherwise.
132. The determination of the lifetime of insurance and reinsurance obligations should be based on up-to-date and credible information and realistic assumptions about when the existing insurance and reinsurance obligations will be discharged or cancelled or expired.

#### *Risk margin*

133. The risk margin (RM) is a part of the technical provisions in order to ensure that the value of technical provisions is equal to the amount than an insurer would be expected to require to take over the insurance obligations.
134. The RM component should be calculated by determining the cost of providing an amount of eligible own funds equal to the SCR necessary to support the insurance and reinsurance obligations over the lifetime thereof. The rate used in the determination of the cost of providing that amount of eligible own funds is called Cost-of-Capital rate. Under QIS5, for life business, there is a hierarchy of calculation methods from a full calculation to a duration based approximation. In calculating the risk margin it is important that all material non hedgeable characteristics of the undertakings risk profile and its run off are captured.

#### *Technical provisions as a whole (Replicating portfolio)*

135. Where future cash flows associated with insurance or reinsurance obligations can be replicated reliably using financial instruments for which a reliable market value is observable, the value of technical provisions associated with those future cash flows should be determined on the basis of the market value of those financial instruments. In this case, separate calculations of the best estimate and the risk margin should not be required.
136. For the purpose of determining the circumstances where some or all future cash flows associated with insurance or reinsurance obligations can be replicated reliably using financial instruments for which a reliable

market value is observable<sup>17</sup>, undertakings should assess whether all the criteria set out in annex II are met. In this case, the value of technical provisions associated with those future cash-flows should be equal to the market value of the financial instruments used in the replication.

137. The cash-flows of the financial instruments used in the replications should replicate the uncertainty in amount and timing of the cash-flows associated with the insurance or reinsurance obligations, in relation to the risks underlying the cash-flows associated with the insurance and reinsurance obligations in all possible scenarios (i.e. the cash-flows of the financial instruments must not provide only the same expected amount as the cash-flows associated with insurance or reinsurance obligations, but also the same patterns of variability)<sup>18</sup>.

#### Considerations on Solvency II capital requirements

138. The Solvency II framework sets out two different levels of capital requirements; an upper level, the Solvency Capital Requirement (SCR) and a lower bound, the Minimum Capital Requirement (MCR).
139. The MCR is designed to correspond to a solvency level, below which policyholders and beneficiaries are exposed to an unacceptable level of risk, if the insurer were allowed to continue its operations. The calculation of the MCR is a linear function of a subset of the company's technical provisions, written premiums, capital-at-risk, deferred tax and administrative expenses.
140. The SCR is based on the Value-at-Risk of the basic own funds of an insurer subject to a confidence level of 99.5 percent over a one-year period. In other words, the SCR aims to reflect a level of eligible own funds that enables insurers to absorb losses to a confidence level of 99.5 percent over one year.
141. The SCR evaluation should include all material risks facing the company at least: underwriting risk, credit risk, market risk and operational risk. The evaluation should take into account risk mitigation techniques and risk diversification across product lines, asset classes and risk categories. The main sub-risks defined under the market risk module of the standard formula are: interest rate risk, equity risk, property risk, spread risk, concentration risk, currency risk and illiquidity risk.
142. Solvency II states that to calculate the SCR, an undertaking can use either the standard formula or a full or partial internal model, as approved by the relevant supervisory authorities. Partial internal models can be integrated with the standard formula to calculate the SCR for one or more risk modules or sub-modules and/or for one or more major business units.
143. The structure of the standard formula as defined in the Level 1 text follows a modular approach. The overall risk which the insurance or reinsurance undertaking is exposed to is divided into sub-risks. For each sub-risk a capital requirement SCR sub-risk is determined.

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<sup>17</sup> QIS 5 Technical Specifications reported some examples (Annex I) to identify when the obligations be replicated reliably using financial instruments for which a reliable market value is observable

<sup>18</sup> CEIOPS advice 35-09, former CP41 §4.22

144. The capital requirements on sub-risk level are aggregated in order to derive the capital requirement for the overall risk. A simple technique to aggregate capital requirements is the use of correlation matrices. The capital requirement for the overall risk is calculated as follows:

$$SCR_{overall} = \sqrt{\sum_{i,j} Corr_{i,j} \cdot SCR_i \cdot SCR_j}$$

where  $i$  and  $j$  run over all sub-risks and  $Corr_{i,j}$  denotes the entries of the correlation matrix, i.e. the correlation parameters.

145. For the standard formula, correlation matrices are used to aggregate the losses arising from the sub-risks, to give an overall risk figure including a diversification benefit.

146. The standard formula approach makes a number of assumptions which are not borne out in reality, for example:

- the dependence between the distributions is not linear; for example there could be tail dependencies or policyholder behaviour;
- the assumptions implicit in the correlation matrix approach on the shape of the marginal distributions can be significantly different from the reality.

147. Unfortunately, both of these characteristics are shared by many risks which an insurance or reinsurance undertaking is exposed to. Tail dependence exists both in underwriting risks (e.g. catastrophe events) and in market and credit risks.

148. Moreover, regarding the second problem, it is known of the relevant risks of an insurance or reinsurance undertaking that the underlying distributions are not Gaussian. They are usually skewed and some of their loss functions are truncated by reinsurance or hedging.

149. For several sub-modules of the standard formula, the calculation of the capital requirement is scenario based. The capital requirement is determined as the impact of a specified scenario on the net asset value of the undertaking (NAV). The net asset value is defined as the difference between assets and liabilities. The liabilities should not include the risk margin of technical provisions. The change of NAV resulting from the scenario is referred to as  $\Delta NAV$ .

150. The future management actions should be taken into account in the scenario calculations in the following manner:

- to the extent that the scenario stress under consideration is considered to be an instantaneous stress, no management actions may be assumed to occur during the stress.
- however it may be necessary to reassess the value of the technical provisions after the stress. Assumptions about future management actions may be taken into account at this stage. The approach taken for the recalculation of the best estimate to assess the impact of the stress should be consistent with the approach taken in the initial valuation of the best estimate.

151. Where it is inappropriate to calculate the SCR in accordance with the standard formula, because the risk profile of the insurance or reinsurance undertaking concerned deviates significantly from the assumptions underlying the standard formula calculation, the supervisory authorities may, by means of a decision stating the reasons, require the undertaking concerned to use an internal model to calculate the SCR, or the relevant risk modules thereof (Art. 119).

## **Recommendation (for Solvency II)**

### Calculation of technical provisions

152. *The TF notes that the framework provided by Solvency II principles on calculation of technical provisions offers room for appropriate calculation of technical provisions for VAs business. The TF believes that those principles should be applied to VAs according to the following suggestions.*
153. *As VA's often have complex guarantees, use of stochastic modelling process will normally be necessary.*
154. *Since the SCR corresponding to such a risk will be very dependent on both market conditions and portfolio size, and nature, approximations and simplifications in the computation of the risk margin have to be carefully considered and justified.*
155. *The TF believes that a dynamic behaviour of policyholder should be a necessary assumption in the calculation of the best estimate. Not assuming any dynamic behaviour is not a neutral assumption, but instead a strong and potentially imprudent assumption that policyholders are not at all rational. It does not seem advisable to base assumptions entirely on past experience as this ignores the possibility that policyholder awareness of the value of options may increase over time (e.g. due to regulatory transparency requirements, activity of journalists or the development of a secondary market).*
156. *The TF considers that the use of replicating portfolio techniques – computing technical provisions as a whole– may be possible but highly unlikely, because the replicating portfolio must exactly replicate the cash flows and approximation techniques are not acceptable.*
157. *The TF believes that technical provisions related to VAs business will need to be calculated in a way that is consistent with market values of options and guarantees that are traded in the market.*

### SCR

158. *The TF believes that the Standard Formula approach to the SCR is not sufficient due to the complexity of VAs. Under Article 119 of Solvency II Directive, authorities are permitted to require companies to use an Internal model for the calculation of SCR. The TF believes that this should be exercised in respect of companies transacting VA business.*
159. *This because, the VAs are contracts mainly characterized by:*
- a. *SCR modeling: the undertaking selling VAs contracts are exposed at some risks that are not envisaged in the standard formula and*

*which are material for these kind of contracts (e.g.: liquidity risk, interest rates volatility, equity volatility, other greeks, etc.);*

- b. dynamic hedging strategies: dynamic hedging strategies are often used within portfolios which have complex guarantees, such as VAs. Often the undertaking uses a delta-hedge, but frequently other greeks are dynamically hedged as well. The risks and benefits of these strategies are not adequately captured in the standard formula. Most undertakings use outside expertise to help design or review hedging programs and this can lead to additional operational risk;*
- c. future management actions: VAs often embed a dynamic hedging strategy which needs to comply with limits taken into account in the internal model;*
- d. policyholder behaviour: can have a substantial impact on the value of the VA guarantees. Dynamic policyholder behaviour is not captured under the standard formula to the level of detail that would be expected in the case of most VA business;*
- e. operational risk: the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. Selling VAs guarantees often exposes the undertaking to operational risk whether that be in respect of outsourcing arrangements, hedging strategy, or for other reasons outlined in this paper. For the quantitative assessment of the operational risk, it is unlikely that the standard formula calibration would provide an adequate and appropriately risk sensitive calibration;*
- f. liquidity risk: as policyholder behaviour is extremely difficult to predict for VAs and often correlated with the external economic environment, some VA writers may consider they are exposed to liquidity risk, which is not included in the standard formula.*

*160. The TF believes that CEIOPS works/advice already released on internal models are fit also for VAs.*

*161. If for any exceptional reason the standard SCR calculation is being made, an add-on based on a stress test of changes in volatility should be considered. Exceptional reasons for which the SCR may be calculated with the standard formula include:*

- o the Company's internal model is not yet approved (in which case capital add-ons might be made in addition to the standard SCR);*
- o materiality, i.e. VAs business do not materially affect the risk profile of that insurer/group.*

*162. The required internal model could also be a partial model and in this case it should include all material risks of all VAs business sold by the insurer.*

*163. Failure to produce an internal model that is capable of being approved under Solvency II may expose the insurance company to the possibility of capital add-ons.*



### Features of the internal model for SCR purposes

164. According to Solvency II approach, the Internal model should calculate the SCR as the change in own funds according to risks at a 99.5% VAR level of prudence (Article 101 (3)) over 1 year. However, art. 122 (1) of the Solvency II Directive envisages the possibility for internal modelling purposes of using a different time period than one year, provided the level of protection for the policyholder is the same. The TF believes that article 122 provides a valid alternative approach which can be considered when modelling VAs (as well as other business).
165. The step size for projection should be sufficient to capture any issues caused by seasonality. Moreover, when it is present, dynamic hedging will subject the insurer to daily financial variations, similar to those experienced by investment banks. It is necessary to take into account this specificity in the internal model to this specificity. Short term movements should be realistic.
166. The results of the calculation should be checked against the results of Stress and Scenario tests. To this regard, the TF considers appropriate already existing CEIOPS Guidance on Internal model<sup>19</sup>.
167. The computation of the SCR is often done by stochastic methods. However, since deterministic and stochastic methods each have different shortcomings the TF suggests that both techniques may be used in conjunction.

### Hedging recognition in SCR

168. Under Solvency II standard formula, no allowance may be taken for future actions with regard to hedging. For internal models (Solvency II - art 121.6), insurers may take full account of risk mitigation techniques, as long as risks arising from the use of mitigation techniques are properly reflected in the model itself.
169. Concerning VAs, given the complexity of the hedging program, the TF believes that it is reasonable to allow insurers to recognise the role of hedging programme when using internal models, but subject to strict limitations as set out concerning hedging efficiency (qualitative aspects and quantitative limits – set out in para 60 above). In no event should credit for hedging be given if the internal model does not pass all tests prescribed under Solvency II (Articles 120 to 126).
170. If credit is given for the hedging strategy, it has to exclude any inefficiencies/unhedged risks the hedging assessment might have highlighted.

### **3.3 Using reinsurance or customized financial products**

171. Some insurers use a reinsurance program, or an *ad hoc* structured product for the management of some risks stemming from VAs, i.e. for the management of the guaranteed benefits. These techniques could be

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<sup>19</sup> Reference is made to CEIOPS DOC 48/09 – former CP 56 - paragraphs 8.166 to 8.173

beneficial for the hedging process in terms of cost efficiency, risk bundling and access to hedging instruments.

### 3.3.1 *The use of reinsurance*

172. The TF notes that the benefits arising from the mutualisation of several portfolios will probably be lower than in other uses of reinsurance, since all markets are much correlated, and thus claims will also be. Unlike catastrophe reinsurance, for instance, in which the total risk after reinsurance is lower than the sum of the risks of the ceding companies, VAs reinsurance is unlikely to make financial risks much lower than their sum. That effect is more important if the risk accepting reinsurer is accepting only VAs risk: then, it may not be subject to significant diversification benefits even if the business is being ceded from many different companies.

#### **Recommendation**

173. *As a consequence, the TF believes that attention should be given to the use of reinsurance for VAs: the use of such reinsurance should not be regarded with suspicion per se as there may be other benefits from reinsurance but, if the solvency of a direct writing entity depends on the performance of a reinsurer, then careful examination of the strength of the reinsurer is required, no matter what country it is located in.*

174. *In particular it should be expected that the direct writing company will have assessed and evaluated very carefully the reinsurers' exposures, provisions and capital, with reference to VAs business. In examining the credit risk exposure of the direct writer the question of whether the reinsurer can withstand adverse experience across its full VAs book needs to be considered.*

175. *For VAs reinsurance, exposure to reinsurers' credit becomes critical only in adverse investment conditions. Therefore, the models should take into account the link between investment market risks and reinsurer credit risk.*

176. *Since guarantees transferred to the reinsurer might have a longer duration than the reinsurance contract itself, the insurer should pay attention to a potential mismatch in the duration of guarantees offered to policyholders and the duration of the corresponding reinsurance coverage.*

177. *In addition, also under reinsurance contracts in force, the reinsurer might refuse the underwriting of additional policies: the insurer could therefore be exposed to guarantees which he thought were to be covered by the reinsurance treaty: to deal with this (or with a similar) event, a contingency plan should be in place (see also chapter 4 on governance issues).*

178. *The ceding undertaking is not exempted from any of its general obligations. This notably concerns technical provisions, capital requirements, and governance.*

179. *In the case of reinsurance within a group, the requirements placed on the ceding company may become more critical if there is less external scrutiny of the reinsurer (e.g. from credit rating agencies).*

180. *It is worthwhile noting that in case of intra-group reinsurance, implications related to group supervision are also to be considered:*

- *the insurer as a single entity has transferred the risk but the group as a whole still bears it;*
- *depending on the structure of the group and on where the reinsurer is situated, there might be differences in the capital requirements at group level, for example if the reinsurer is situated in a non-Member State. To this regard, issues related to equivalence might play a relevant role.*

### 3.3.2 *The use of customized financial products*

181. In some cases, the insurance company might buy an ad hoc structured financial product from an investment bank. However, it is to be noted typically, reinsurance contracts provide a wider cover for VA portfolios (including a cover for biometric risk and certain policyholder behaviour) whereas structured capital market products in most cases only give a capital market guarantee based on fixed cash flow pattern.

#### **Recommendation**

182. *Most of the consideration outlined in section 3.3.1 are valid also in this case. As is the case for reinsurance, the link between markets and default of that asset must be taken into account. In addition, issues related to policyholder behaviour and specific demographical risks should be paid particular attention to, given the likely lack of specific knowledge and experience of investment bank in comparison to reinsurers*

### **3.4 Naked Products**

183. Insurers can in principle sell VAs products which are not backed by an hedging programme, nor related guarantees are managed via reinsurance or via a customized financial products. In those cases, insurers do treat VAs business as any other insurance business. This might happen for example for the VAs business is very limited or for it is at an early stage of its development.

#### **Recommendation**

184. *The TF considers that those situations deserve a very careful and stringent evaluation first by the insurer itself and by the supervisor, as well as an appropriate assessment of risks. Risks entailed in this business, if not properly assessed and understood might significantly affect the financial and solvency position of the insurer, and consequently potentially undermine the stability of the insurance market.*

185. *To this regard, the TF considers that the early stage of development of the business should be carefully evaluated as a possible reason for selling naked product, since the business could grow very rapidly and let the insurer be exposed to unexpected and potentially unmanageable risks.*

## **4. GOVERNANCE ISSUES**

### *4.1 General issues*

186. Generally all the requirements for insurance and reinsurance undertakings on governance system are also applicable to undertaking offering VAs products. Nevertheless due to the complexity of the products and specific organisational structure required by VAs business, following aspects need further consideration. Some of the issues listed below are not really specific to VAs only but are common to other kind of products as well: the TF considers it important to highlight them, due to the relevant impact that VAs can have on the group's or undertaking's financial position.
187. In a typical business model for VA the group dimension is essential. Usually, a local subsidiary A of an insurance group offers VAs products in different countries via branches. In each such country there may be another subsidiary B that provides services to A in marketing, administration and product design. The majority of VAs liabilities are backed by extensive hedging programmes; these programmes are often run across border, with a central hedging centre serving a number of business units. There may be unique group wide standards and guidelines regarding product design and risk management that are defined by the risk management of the group and must be adopted by each local entity that offers VA. All the different entities operate via Service level agreements and may rely on the group IT-infrastructure.
188. In another quite typical VAs business model the group or solo company, instead of putting in place an own hedging programme, may reinsure the VA-business. In this case the reinsurer may execute hedging calculations and provide services in product design and pricing. Sometimes, for the same purpose, the insurer purchases a customized financial product by an investment bank.
189. Another quite typical feature of VAs business is outsourcing. Sometimes, also relevant activities, such as the trading of hedging instruments may be outsourced to one more entity within the group or to an external service provider.
190. Rarely, VAs business is "naked", i.e. it is not backed by hedging programme or reinsurance or customized financial product.
191. In all cases a proper understanding and managing risks inherent in a VAs business require the implementation of an effective governance system.

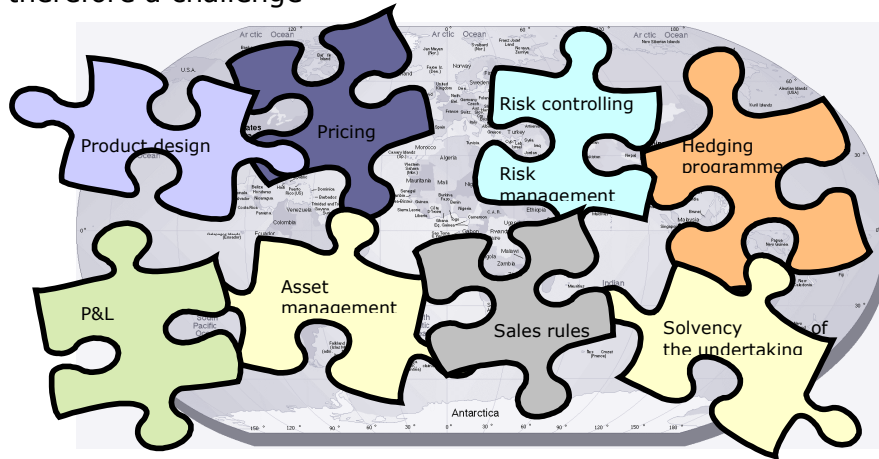
#### 4.1.1 Organisational structure

##### *Tasks and responsibilities*

192. VAs business employs complex risk management processes, hedging processes, high levels of capital and need of qualified staff. To deal with the above in efficient way, groups try to take advantage of single location by using single hedge platform, possible diversification of risks, centralised risk management, centralised measurement systems and selling products across EEA. Moreover such solution allow for dealing with single prudential supervisory regime. Undertakings should have well defined, transparent and consistent lines of responsibility with clear and

appropriate segregation of duties and responsibilities and effective reporting. All reasonable steps should be adopted to avoid conflicts of interests.

193. Creation of organisational structure that would fit to VAs business is therefore a challenge



194. Organisation of centralised units/functions/teams (or even possibly to a single person), which is characteristic to VA business i.e. one team dealing with the ALM, derivatives trading etc., may lead to a key-team risk (rarely, key-man risk).
195. Conversely, if there are too many actors (group, local entity, hedging platform, asset management), allocation of tasks and responsibilities may be unclear. This could lead to incorrect decisions and eventually incomplete or late information delivery to the board or other relevant persons.
196. Apart from general good practices of system of governance, organisational structure and allocation of tasks and responsibilities should reflect specificities of VA business. This is particularly relevant when, as it is in VA business, many actors are involved in the process. For example as derivative trading requires verification if positions not exceed established limits, it is important to introduce clear split of tasks between those taking risk positions and those building the models. Moreover adequate controls should be established.

#### *Skills expertise and knowledge (fit and proper)*

197. VAs business requires extensive additional skills and knowledge compared to traditional life insurance. Insurers could fail to build sufficient skills and knowledge. Also in this case, this could prevent the insurer from fully understanding all risks it is exposed to. Due to the frequent recourse to outsourcing the fit and proper requirements should apply to the key persons performing the outsourced functions.

#### *Information flow*

198. The great number of actors complicates the information exchange and interaction between all of them, increasing the need for an efficient information flow, both among different involved subjects and to the management. Furthermore a great number of subjects makes it difficult to implement sufficient controls around the whole process including the

interaction between all involved entities: this may lead to incomplete or late information to the board and the senior management.

199. Efficient information flow is extremely important in case of VAs. For example, adjustments of the hedge portfolio and of the pricing to current market conditions may require very fast transactions and the resulting need for efficient and fast information exchange may be hampered by a too complex business model.
200. The group functions /units may not fully understand the risks taken by the solo entity, possibly as a result of poor information management. In a consequence at group level, risks may not be managed effectively.
201. Alternatively, where the VAs programme is run by the group, the solo entity may not understand all of the risks that it is running, i.e.:
  - the scale of specific market risks such as interest rate risk, interest rate and equity volatility risk being taken on.
  - the duration of the guarantees.
  - the cost of a mass surrender scenario under conditions that are adverse for the firm.
  - the complexity of the hedging required.

#### 4.1.2. Hedging programmes

202. The majority of VAs liabilities are backed by extensive hedging programmes. Some undertakings (groups) use a static hedge. The strategy is to hold portfolio of publicly traded assets that closely match liabilities. Rebalance in that case is done infrequently. To de-risk the business and to achieve better matching undertakings usually purchase over-the-counter from an investment bank structured derivatives.
203. In case the change in the price of an option is not linear with the change in the value of the underlying asset, static hedge often doesn't match closely assets and liabilities unless i.e. an exotic option with a portfolio of vanilla options is used. Therefore many undertakings dealing with VAs business decide to back liabilities using dynamic hedging programmes. Here the strategy is to have portfolio of liquid assets which matches movements in liabilities just for a short period. In that case the portfolio is rebalanced frequently. Decision of frequency takes in to account trading costs and adequacy and correctness of the hedge.
204. These programmes are often run across boarder, with a central hedging centre. In addition to this, variable annuity business may be written in one country through a branch of another country. The hedging centre might:
  - provide hedging calculations to local entities
  - advise on product design
  - operate within the group via Service Level Agreements
  - rely on the group IT infrastructure
205. Even if use of central hedging platform seems to be cost effective, some problems may here arise, i.e.: there may be insufficient accountability for hedging inefficiencies or problems. Potentially there could be lack of the interaction between each entity, the group, the hedging centre and the asset managers. Some examples:

- a) The hedging centre might not be accountable in the sense that it doesn't have to compensate the local subsidiary in the event of losses caused by errors in hedging calculations or inappropriate advice regarding the hedging strategy or product design. This may lead to principal agent problems which increase the risk of insufficient controls within the hedging centre.
- b) If hedging calculations and management of VAs risks are centralized in a group, the solo entities may rely on the group risk management and/or the hedging centre without sufficient analysis how their risks are affected by the specific features of their local products. Vice versa the group risk management may rely on local entities for such an analysis. As consequence both – the group and the solo entity – may fail to fully understand the risks they are exposed to.

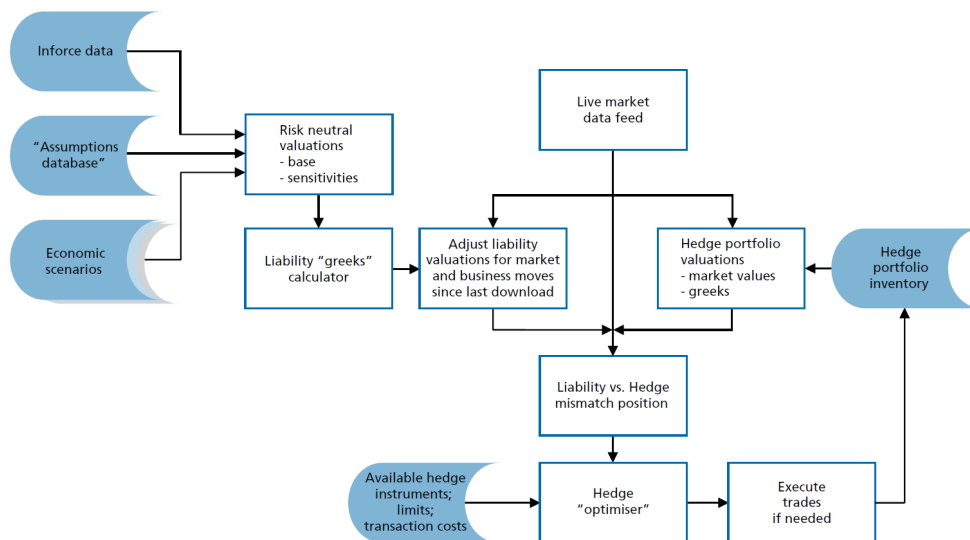
206. Before setting the hedging programme, the undertaking need to be clear on the objectives, namely what measures and which risks should be hedged. The portfolio is rebalanced to achieve a desired exposure. An acceptable level of retained risk needs to be defined and set in undertaking's risk policy.

*Unhedged risks*

207. An extensive hedging programme may produce a wrong sense of safety. There may be significant risks that remain unhedged. The management couldn't be sufficient aware of these risks. For example,

- a) there may be a time lag between the closure of VAs contracts and their inclusion in the hedging model, so that new business may remain unhedged for a limited period of time. This might be a problem if there is an inadequate limit for new business.
- b) some risks may be meant to be fully or partially unhedged. The absence of adequate methods for the measurement of this risk and/or adequate limits could lead to risks that exceed the overall risk appetite of the insurer

*Example of functioning of the hedging programme*



Source: OLIVER WYMAN, VA Voom, Variable annuities are in pole position to meet the requirements of the European asset protection market, 2007, p.10

### *Hedging risks*

208. When an hedging programme is in place and risks are partially or fully hedged, careful attention should be put to assess possible hedging (in)efficiencies (see also chapter 3.1.2); to this regard, a proper documentation of the assessment of hedging efficiency is relevant. The risk of losses caused by hedging-inefficiencies is a new risk-category compared to traditional business. Therefore companies could fail to properly assess and manage these hedging risks. Some examples below.

#### *Risk caused by incomplete hedging of sensitivities/greeks*

209. Generally dynamic hedging relies on calculation of the sensitivity of the price of derivatives to changes in underlying variables. As already mentioned in para 70, these risk sensitivities (delta, gamma, rho, vega, theta etc.) are called 'greeks'. Decision on greeks need to reflect an expected adequacy of hedging, guarantees and the rebalancing period. However, perfect hedging strategy doesn't exist. Therefore undertaking should be able to predict mismatches, as they may have huge impact on undertaking solvency and financial position.

#### *Basis risk*

210. Another difficulty arises on how to properly identify a portfolio of assets that closely match liabilities. Difficulty comes from the fact that each asset has its own greeks. In case of dynamic hedging with frequent rebalancing the choice will be simpler as the most important issue is that the assets need to be publicly traded and liquid. The less frequent rebalancing is done, the more important close matching become.
211. Funds number could be reduced for modelling purposes using representative funds which reflect market indices. The regression techniques can be used. Advantage of such method is that after identification of accurate index it facilitates to select hedging assets.
212. By variance reduction methods, undertaking could reduce the number of simulations to a manageable scale. However loss of adequacy should be considered then. Variance reduction methods should be tested in the most extreme situations for sufficiency and completeness.

#### *Timing risks*

213. The modelling underlying dynamic hedging is a challenge, as it needs to be done fast, and need to be robust. Effectiveness of the trading strategy depends very much on that. Some groups decided even for daily, or even intradaily, rebalancing. Too slow rebalancing may cause huge losses in the event of market turbulences, rebalancing the hedge portfolio very often may cause high transaction costs leading to more capital required for transactions than budgeted
214. Due to the importance of time in that process automation is needed. Things like extraction, formatting and verification of data, and an economic scenario generator (ESG) don't need so much manual intervention. Nevertheless regular reviews need to be done.



215. Grouping of different features embedded into products (different choices of policyholders) could fasten the calculation. However, it has some drawbacks as it may lead to under-estimation or over-estimation of the liability cost (i.e. when averaging across in- and out-of-the-money guarantees is made). Although using full data would be preferable, there are doubts that calculation would not be done within appropriate time.

#### *Behaviour risk*

216. Assumptions concerning policyholder behaviour may turn out to be inappropriate and may lead to high losses caused by mass surrender. In addition, as mentioned under para 73, behaviour risk is very likely not be fully hedgeable, or not hedgeable at all.

#### 4.1.3 Product design

217. Hedging programme needs to part of decision taken during product design stage. There is market expectance of extensive range of funds you can choose and of product features. On the other hand simpler products, with less available features (and therefore less risky), are easier to hedge.

218. With regard to product design insurance and reinsurance undertaking should avoid situations which could lead to i.e.:

- weak analysis of the risk introduced by each product feature
- insufficient stochastic modelling leading to a mis-estimation of the profitability of the product
- insufficient analysis of capital requirements
- the controls may not be applied consistently throughout a Group
- inconsistency between product design and hedging possibilities
- possible conflict between marketing ideas and the stability of the company, e.g. for marketing reasons policyholders can choose between a wide range of different funds: this may lead to a significant basis risk that endangers the financial health of the company.

#### 4.1.4. Risk management, including operational risk and liquidity risk

219. Complexity of the product and organizational structure in the group may lead to the problem in identification and management of all VAs specific risks (e.g. basis risk, surrender risk, volatility risk, improper product design (the product requires too exotic hedging instruments)), in addition to those that are managed through the hedging programme mentioned above.

220. The insurer should assess that all risks are appropriately covered, either through the hedging programme or by additional tools. For example the hedging programme might not be able to take into account properly policyholder behaviour and other demographic risks, or the interactions amongst different risks.

221. The risk management should also take care of testing the efficiency of the hedging programme (see also para 208 above).

222. These assessments should be made both under a qualitative and quantitative point of view. To this regard, the TF considers that Solvency II requirements, such as ORSA, are also fit for VAs business. Of course,

when assessing the own risk profile, the insurer should take into account appropriately and through an appropriate level of detail, risks specific to VAs business model.

#### *Operational risk*

223. Compared with traditional business the VAs business bears new or increased operational risks. For examples:

- a) hedging requires very short reaction times to market fluctuations. Therefore the potential impact of system failures, trading errors, software errors or inaccessibility of key team/man is increased;
- b) more complicated calculation of technical provisions increases risk of miscalculations;
- c) operational risks may significantly be increased due to additional complexity brought about by extensive outsourcing;
- d) contracts sold in other MS and written in foreign languages might hamper a proper understanding of the commitments the insurers are subject to (legal risks as described in section 3.1.3).

#### *Liquidity risk*

224. Especially during market turbulences extensive derivative trading may require significant liquidity for possible margin calls. Liquidity management could fail to address this problem appropriately.

#### 4.1.5. Internal control system and audit

225. The internal audit function should assess, monitor and regularly review the processes and procedures related to the issuing of VAs. The compliance function should regularly assess, monitor and report the compliance with the internal policies concerning the issuing of VAs.

226. Definition of process and procedures, and compliance thereof, is of particular relevance in case of a business involving many actors and entailing some complex features as explained above. For example, a backlog of policies might not be included in a calculation process/internal model or might be included but not yet hedged, giving raise to unexpected/unhedged exposures.

#### 4.1.6. Outsourcing, including derivative trading

227. Activities related to VAs business are often outsourced. According to the framework for outsourcing as designed by Solvency II, an undertaking that outsources both internally to other entities of the group or to external services providers should develop a written policy for outsourcing which should be approved and regularly reviewed by the administrative, management or supervisory body. The sub-outsourcing (or chain outsourcing) should be explicitly permitted by the contract agreed with the insurance undertaking. This undertaking should remain fully responsible for the activity/function outsourced.

228. The TF considered that the Solvency II framework for outsourcing, as described above, is fit also for VAs. In particular, for VAs business careful attention should be paid for specific features such as the definition of the hedging programme or the trading activity backing the programme itself. To this regard, there may not be a sufficiently clear mandate from the

insurer to the investment manager with respect to VA business. There could also be a lack of appropriate control on the trading activity carried on in outsourcing by the investment manager. Other potential problems are insufficient accountability for losses caused by outsourced activities and a general lack of interaction between the undertaking and service providers.

229. Moreover, outsourcing contracts might be short in time. A contingency plan might be needed, in case those contracts are closed whilst the hedging program or the guarantees have to be managed anyway with short time reactions.

#### 4.1.7. The use of reinsurance or of customized financial products

230. Some insurers offer VAs products and deal with the related guarantees via reinsurance. In this case it may happen that certain risks - e.g. basis risk - don't fall under the scope of the reinsurance contract. If there is limited expertise in the company, senior management might not be sufficiently aware of the risks they are running.

231. Reinsurance contracts for VAs products may include services of the reinsurer in the areas of product design, pricing, hedging calculation and risk management. Reinsurance contracts therefore may be very complex. The reinsurer might have the right to cancel the contract at a certain point of time. Due to the complexity of the reinsurance contract it could be then difficult for the company to find another reinsurer while it is not able to handle the VAs risks itself, so that the establishment of an alternative plan should be considered as highly important.

232. A similar situation could be in place also in case the insurer manages the guarantees related to VAs business through the purchase of customized products by an investment bank.

233. In both cases, it should be noted that contagion could arise, due to the exposures in place between the insurer and the reinsurer (or the investment bank), therefore enhancing group risk.

#### 4.1.8 Others

234. It is to be also noted that many VAs products are traceable to consultants. This might give rise to some governance issues to be addressed properly, e.g. as combined aspects of product design, risk management and outsourcing, in the light of avoiding "black boxes"<sup>20</sup> and enhancing a proper understanding and assessment by the group/undertaking of risks underwritten. A systemic risk feature related to the limited number of consultants playing such role is also addressed in chapter 6 of this draft report.

## **4.2 Relevant Solvency I text and Solvency II text**

### *Solvency I*

235. Relevant requirements provided by EU Directives framework are as follows:

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<sup>20</sup> See para 223

- Directive 2002/83/EC concerning life assurance, i.e. Article 6.1 e)<sup>21</sup>: the undertaking must be run by persons with appropriate professional qualification or experience;
- Directive 1998/78/EC on the supplementary supervision of insurance undertakings in an insurance group, i.e. Article 5, 6<sup>22</sup> on availability and quality of information and on access to information: Adequate control mechanisms shall be in place for the production of data.

### *Solvency II*

236. Relevant requirement in Solvency II text as well in CEIOPS' advices are as follows:

- Directive 2009/138/EC on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II) – i.e. Articles 40-56, 75, 132, 246<sup>23</sup>
- CEIOPS Advice on System of Governance (formerly CP 33)<sup>24</sup>:
  - Policy on asset-liability management - Paragraphs 3.104-3.106
  - Investment policy – Paragraphs 3.131-3.135
  - Risk Management System
- CEIOPS level 2 Advice on Test and Standards for internal model approval<sup>25</sup>

## **4.3 Recommendations**

### 4.3.1 Some general considerations

237. The TF considers that the principle-based approach adopted by Solvency I addresses most of the general governance issues highlighted above. Therefore, the TF aims at highlighting how this framework could be used (or further detailed, if that is the case) for dealing properly with VA related issues, and provides below for some suggestions/details to better contextualize VAs in the framework offered by Solvency II.
238. On the other hand, the relative lack of text relating to risk management and governance in the Solvency I Directive compared to the Solvency II directive means that individual Member States have developed their own rules or guidance with respect to risk management and governance so that some differences among different MS might be currently in place.
239. Therefore the TF highlights below the recommendations deemed necessary and useful in a Solvency II context, and recommends an earlier application compatibly (as far as it is feasible in the legal framework of the MS) with the current framework in force under Solvency I rules in each MS, in order to promote a smooth transition to Solvency II to the extent possible. The TF considered indeed that the relative lack of text relating to

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<sup>21</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32002L0083:EN:HTML>

<sup>22</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1998:330:0001:0012:EN:PDF>

<sup>23</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:335:0001:0155:EN:PDF>

<sup>24</sup> <http://www.ceiops.eu/media/files/consultations/consultationpapers/CP33/CEIOPS-L2-Final-Advice-on-System-of-Governance.pdf>

<sup>25</sup> <http://www.ceiops.eu/media/files/consultations/consultationpapers/CP56/CEIOPS-L2-Advice-on-Tests-and-Standards-internal-model-approval.pdf>

risk management and governance in the current Directives does not prevent Authorities in MS to enforce in the recommendations illustrated below which are not specifically related to Solvency II items. In particular the TF considers the following recommendations for possible earlier application: general issues, organizational structure (i.e. roles and responsibilities, fit&proper requirements and information flow), need for internal control on the hedging program and on product design, limits on investments and outsourcing.

240. In addition, it is to be noted that the following recommendations are addressed to undertakings and groups. On their side, supervisors should ensure that undertakings and groups apply properly those recommendations.

#### 4.3.2 Recommendations

##### *Recommendation – general issues*

241. Insurance and reinsurance undertakings should have in place system of governance, adequate to their business profile. The system of governance should be subject to regular internal review.

242. Insurance and reinsurance undertakings should have in place adequate documentation and ensure proper implementation of strategy and written policies in relation to at least: risk management, internal control, internal audit and, where relevant, outsourcing. Policies should be approved by the administrative, management or supervisory body and reviewed at least annually.

##### **Recommendation**

243. *For VAs business, this general recommendation means that:*

- *the insurer should have in place an effective system of governance that enables the undertaking to identify, understand, manage and evaluate the specific risks arising from VAs business;*
- *where the VAs business is carried out on a group-wide basis, system of governance should include guidelines to be set up at group level and solo level, in a harmonised manner;*
- *the insurer has clear and documented processes for the management of the risks within the portfolio, including limits and hedging strategy, within the defined risk appetite, also for VAs.*

##### *Recommendation – organisational structure*

244. Insurance and reinsurance undertakings should have in place a clear and adequate organisational structure. Insurance and reinsurance undertakings should ensure clear allocation of tasks and responsibilities.

245. Persons who effectively run the undertaking or have other key role performed by undertaking should be fit and proper.

246. Insurance and reinsurance undertakings should have in place effective system ensuring quick and adequate information flow.

### **Recommendation**

247. For VAs business, this general recommendation means that:

- *the insurer has clear statement of tasks and responsibilities with no overlap and gaps between different functions involved in the VAs business, both at group and at solo level;*
- *the insurer clearly identifies the different roles and relevant persons involved in VAs business;*
- *the administrative, management or supervisory body and the senior management should have a role in approving, monitoring, managing and controlling activities related to the offer of VAs and in particular the issuing and the effects on the financial position of the undertaking;*
- *the insurer should ensure adequate personnel on every working level possessing sufficient qualifications, knowledge and experience in all areas concerning the business of variable annuities (both at solo and group level). Technical expertise to design, analyse, implement and monitor the hedging programme and detailed knowledge of greeks are also required;*
- *the insurer should ensure timely and full information exchange and management decisions; in particular, this must be ensured for every relevant task which is outsourced. Where necessary according to management of VAs business, information should also be fast/immediate;*
- *insurers shall ensure that all relevant information is available so they can measure all risk factors and perform adequate stress testing;*
- *the administrative, management or supervisory body should be provided of any information that is appropriate to make informed decisions regarding the issuing of VAs.*

### *Recommendation – investment policy and hedging programme*

248. The undertaking should define its investment policy in line with what a competent, prudent and expert manager would apply in order to pursue the investment strategy. CEIOPS advice sets out features of the investment policy to be put in place as per requirements on the use of derivative products (or any other financial instrument with similar characteristics), management of liquidity risk, quantitative limits and special procedures to be put in place in relation to investments that are not quoted in a market and to complex structured products. The insurer should develop written Asset Liability Management policies which especially have to take into account the possible effect of options embedded in the insurance products. The ALM policies shall be tailored to the needs of different products and business lines.

### **Recommendation**

249. For VAs business this general recommendation means that:

- *there is a clearly defined hedging strategy either carried out in house or outsourced;*

- *a written ALM-policy for VAs products should be developed. If a hedging program is implemented, a clearly defined hedging strategy shall be part of the ALM-policy*
- *the insurer should put in place appropriate controls on hedging programme, such as:*
  - *that all material features of the hedging program are captured in the modelling process;*
  - *limits are in place on unhedged risks;*
  - *that hedging calculations are done correctly and accurately taking into consideration the hedging strategy;*
  - *that trading activities for the hedge portfolio are performed correctly and lead to hedging positions that are within limits derived from the hedging strategy and the associated hedging calculations;*
  - *there are short reaction times on market fluctuations;*
  - *a liquidity management is in place due to possible margin calls because of an extensive derivative trading.*

*Recommendation – product design*

250. The firm shall ensure appropriate controls around design of products and hedging models to ensure that all material features of the product are captured by the model.

**Recommendation**

251. *For VAs business, this would mean in particular that insurers should:*

- *have an appropriate design of products that should be sustainable for the insurance company (in relation to hedging possibilities, and to the risk appetite). Particularly, it is critical that product design appropriately considers the availability of effective hedge instruments in the market, and that pressures from the marketing department does not lead to this principle being overwritten. This could happen, for example, in case of products designed for wealthy policyholders, who could be more interested in high yield than in guarantees;*
- *avoid black boxes, i.e. that the product is designed by a third party and is adopted by the insurance company without a proper assessment for the fitting into its risk profile/appetite. This especially in case the undertaking does opt for an external hedging programme;*
- *put in place appropriate controls on product design, such as:*
  - *controls regarding extra fund choices being offered and possibly lead to a new risk (for example: basis risk);*
  - *managing the volumes of new business written that is not included in the internal model or that is included but not yet hedged. In this case, it could be envisaged that specific controls are in place to stop writing new business so as to avoid back-logs;*
  - *that there is no inconsistency between product design and hedging possibilities or risk appetite and risk tolerance and limits (of the insurer and/or of the policyholder).*

*Recommendation – risk management*

252. The risk-management system shall be effective and well integrated into the organisational structure and in the decision-making processes of the insurance or reinsurance undertaking with proper consideration of the persons who effectively run the undertaking or have other key functions.

**Recommendation**

253. *For VAs business, this would mean, among others, that the risk management function shall ensure:*

- *undertakings carrying on VAs business should have a sound risk management system and should adopt policies and procedures to properly manage the risks. The risk management policies should for each relevant category and area of risks should have regard to the solvency needs, the regulatory capital requirements and risk tolerance limits of the undertaking;*
- *the supporting documentation should clearly define the risks included in the VAs and should be updated on a continuous basis;*
- *the establishment of a written policy for risk management of VAs business;*
- *full communication of VAs risks between solo entities and group (either other entities within the group involved in VAs as well as centralised function and parent undertaking) and throughout management structure;*
- *the risks are fully understood and managed by the undertaking/group, including assessment of possible unhedged risks;*
- *specific controls regarding product design and on hedging strategies are in place, as illustrated above;*
- *shall devise and maintain as part of their risk management framework a contingency plan for how they would respond if market volumes were limited to a turnover of a specific amount, and/or the cost of executing the required derivative protection were to increase suddenly.*

254. Within a Solvency II context, the TF acknowledges that the framework for ORSA is under development. The ORSA is a very important tool for the management body of the undertaking. It should provide it with a comprehensive picture of the risks the undertaking is exposed to or could face in the future. It should enable the management body to understand these risks and how they translate into capital needs or alternatively require mitigation actions. Internal model users have to comply, at the approval date and in an on-going basis, with the use test, statistical quality standards, calibration standards, profit and loss attribution test, validation standards and documentation standards. The ORSA should play an important role in this exercise.



**Recommendation**

255. *The TF expects that the assessment of overall solvency needs performed during the ORSA, include an appropriate assessment of VAs business, with an appropriate level of detail; details could include for example the assessment of the efficiency of the hedging programme as well as test and checks mentioned in chapter 3.*

*Recommendation – risk management specific to internal model*

256. Insurance and reinsurance undertakings shall ensure that tasks of persons performing risk-management (i.e. chief risk officer) cover at least:

- ensuring that undertaking have in place an effective risk-management system comprising strategies, processes and reporting procedures;
- ensuring identification, measurement, monitoring, management and reporting of the risks and their interdependencies, on a continuous basis, at an individual and at an aggregated level;
- design and implementation of the internal model;
- testing and validation the internal model;
- preparing adequate documentation of the internal model;
- providing analyses the performance of the internal model and to produce summary reports thereof;
- informing the administrative, management or supervisory body about the performance of the internal model, suggesting areas needing improvement, and up-dating that body on the status of efforts to improve previously identified weaknesses

**Recommendation**

257. *Concerning VAs business, the abovementioned requirements (stated by CEIOPS for Internal Model Adopter) are envisaged also for VAs business under the assumption that an internal model is used for this activity (as stated in chapter 4 of this report). The same for CEIOPS/EIOPA requirements set for Partial Internal Models Adopter.*

*Recommendation – internal control system*

258. Insurance and reinsurance undertakings should have in place an effective internal control system.

259. Insurance and reinsurance undertakings should employ appropriate and proportionate systems, resources and procedures to ensure continuity and regularity in the performance of their activities, including the development of contingency plans.

260. Insurance and reinsurance undertakings should perform an on-going assessment of the possible impact of any changes in the legal environment on the operations of the undertaking concerned and the identification and assessment of compliance risk. This task could be done by the compliance officer.

## **Recommendation**

261. For VAs business, this mean in particular that insurance undertakings:

- *the internal audit function should assess, monitor and regularly review the processes and procedures related to the issuing of VAs;*
- *the compliance function should regularly assess, monitor and report the compliance with the internal policies concerning the issuing of VAs;*
- *adequate processes and procedures are in place for testing hedging efficiency, and quantifying possible inefficiencies, as well as the necessary documentation;*
- *shall put in place appropriate controls around derivative hedging in insurance firms, in particular trading limits and interaction between the insurance company and the investment manager;*
- *shall ensure that they can measure all risk factors and that they can perform adequate stress testing;*
- *shall ensure that there is periodic independent (internal or external) review of both the VAs and their hedges, including valuation of VA-liabilities and hedge assets and the calculation of other parameters such as sensitivities (Greeks) that are needed for the execution of the hedging strategy;*
- *shall check with appropriate frequency the values of assets and liabilities. This is particularly important where asset prices are received from an external provider that may be using a mark-to-model approach for some of its prices. The TF considers that appropriate frequency for checks is not necessarily the same frequency for hedging, could be also lower, if deemed appropriate;*
- *shall ensure that the internal model for VAs captures all material features of the product;*
- *shall be able to demonstrate that the portfolio is continually managed according to the mandate on which it is sold and, more in general, in relation to the principle established in the mandate;*
- *shall have appropriate controls in place to identify the circumstances in which a risk limit has been breached;*
- *shall ensure that, to the extent to which policyholders are exposed to risk, they are fully and clearly informed at the point of sale. Moreover, to the extent that VAs may be sold from other jurisdictions, an appropriate management of legal risks should take care of providing an adequate and clear information to consumers on the differences existing between its national market and provisions versus the rules applicable under the VAs contract, e.g. in particular in case of complaints or in case of winding up of the insurer.*

*Recommendation – audit*

262. Insurance and reinsurance undertakings have in place an effective internal audit, which should evaluate the adequacy and effectiveness of the internal control system and other elements of the system of governance. The internal audit function should be objective and independent from the operational functions. Any findings and recommendations of the internal audit should be reported to the administrative, management or supervisory body which should determine what actions are to be taken with respect to each of the internal audit findings and recommendations and should ensure that those actions are carried out.

**Recommendation**

263. *In the context of VAs business, the process, the organizational structure, hedging, pricing, risk management and management information, as well as technical provisions, should be subject to regular audit.*

*Recommendation – Outsourcing, including derivative trading*

264. An undertaking that outsources to other entities of the group or to external services providers should develop a written policy for outsourcing which should be approved and regularly reviewed by the administrative, management or supervisory body. The sub-outsourcing (or chain outsourcing) should be explicitly permitted by the contract agreed with the insurance undertaking. This undertaking should remain fully responsible for the activity/function outsourced.

**Recommendation**

265. *In case of outsourcing of some activities related to VA business, insurance and reinsurance undertakings should ensure that this does not lead to:*

- *material impairment of the quality of the system of governance of the undertaking concerned;*
- *unduly increasing the operational risk;*
- *impairment of the ability of the supervisory authorities to monitor the compliance of the undertaking with its obligations;*
- *the mandate to investment manager details the areas of asset allocation and risk limits and ensures the possibility for the insurer to perform all the controls as mentioned above;*
- *undermine continuous and satisfactory service to policyholders;*
- *careful attention should be paid to the need of establishing contingency plans, also in relation to the possible early termination of the outsourcing contract.*

*Recommendation – reinsurance and customized financial products and naked products*

266. Undertakings who engage in reinsurance must ensure there has been an effective risk transfer under the arrangement. In its advice<sup>26</sup> CEIOPS

<sup>26</sup> [https://www.ceiops.eu/fileadmin/tx\\_dam/files/consultations/consultationpapers/CP52/CEIOPS-L2-Final-Advice-on-Standard-Formula-Reinsurance-mitigation.pdf](https://www.ceiops.eu/fileadmin/tx_dam/files/consultations/consultationpapers/CP52/CEIOPS-L2-Final-Advice-on-Standard-Formula-Reinsurance-mitigation.pdf)

considers that the transfer of risk, and therefore the credit taken for the reinsurance arrangement should be assessed with reference to:

- the effectiveness of risk transfer in all situations where the transfer is relied upon;
- the economic effect of the reinsurance arrangement (taking precedence over the legal form);
- the legal certainty and the enforceability of the arrangement;
- the credit rating of the reinsurance counterparty.

#### **Recommendation**

*267. If all or part of VA-business is reinsured (for instance, all risks except basis risk are reinsured) should:*

- *ensure if and to which extent the insurance undertaking is still exposed to VA-specific risks;*
- *assess risks which derive from possible future termination of the reinsurance contract (or the complex customized financial product) are dealt with in the contract (contingency plan);*
- *also, the insurer should ensure that the credit risk of the reinsurer (or of the investment bank) is appropriately allowed for. This need is even stronger when the length of VAs product is substantially different from the typical business of the counterparty;*
- *In some cases, reinsurers might act both as reinsurers, accepting risks, and as consultants, providing advice for e.g. technical provisions computations. Each of these roles should be clearly defined and subjected to their own requirements.*

*268. Naked VAs product should be carefully considered by the insurers as well as by supervisors:*

- *in a Solvency I context, having in mind limits and general principles governing investments;*
- *in a Solvency II context, the application of the prudent person principle, as well as risk management function.*

#### *Recommendation – Other*

#### **Recommendation**

*269. The insurer should be able, and therefore have the expertise, to challenge any purchased model eventually in use for the hedging so to be able to identify and possibly amend eventual miscalculation in the model or misfit between model results and the real situation of the insurer itself. The last four bullets under para 256 should be taken into account to this regard.*

## **5. GROUP/COLLEGES ISSUES**

### 5.1 General issues

270. The complexity of VAs, both of the products and of the related governance illustrated in the previous chapters, increases the need and the difficulty of supervision on insurance undertakings carrying on this business. The supervisory assessment of technical provisions and of capital adequacy<sup>27</sup> of the insurer requires indeed an analysis of the products sold, and therefore knowledge of local products and markets, since the technical features of products, such as guarantees for the policyholder, do heavily affect obligations of the supervised insurance undertaking towards policyholders and its commitments in terms of capital requirements.
271. Another reason for careful consideration by supervisors is the typical business model VAs which involves an important number of different disseminated entities in the business model (the holding company, the subsidiary that is set up to sell VAs, its branch, and other actors: the local subsidiary, the traders, the computation platform, etc.); these entities are usually situated in several MS. Some tasks are usually centralized (e.g. hedging, product design), not necessarily all tasks in one entity, i.e. hedging could be centralized in one entity while product design in another one.
272. However, notwithstanding the possible centralization of some other tasks in one entity, it is to be noted that the sale of VAs is usually done through different entities/subsidiaries which might be established in different countries, each in a different one. The most commonly observed VA business model envisages that products are sold by (only) one subsidiary of the group established in a country A - not necessarily the country where the head of the group is established - which in turn sells products also in other countries through freedom of establishment and/or freedom of services. This might also happen when other subsidiaries of the group already exist in those other countries.
273. The abovementioned features of technical and governance complexity as well as the relevant cross-border aspects of this business model do challenge the current supervisory framework, also in terms of cooperation among different supervisors involved.
274. A further issue to be taken into account when dealing with supervisory cooperation is that prudential supervision on the insurance undertakings is a responsibility of the home supervisors, whereas market conduct is the responsibility of the authorities of the countries where the product is sold. Therefore there needs to be close cooperation also between the supervisor of the subsidiary that sells the products and the supervisors of the countries where the product is sold.

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<sup>27</sup> This is different than prior approval of pre-contractual information to the policyholder, which is forbidden under the EU insurance regulation (i.e. Directive 2002/83, art.33-34, within the current framework as well as Solvency II Directive, art.180-182)

275. Therefore VAs call for a stronger cooperation among supervisors responsible of prudential supervision both at solo level and at group level. Since the most commonly observed business model for VAs involves different entities of the same group within different MS, this draft report focuses in particular on the need of enhanced cooperation within the group supervision framework, i.e. cooperation among supervisors responsible of prudential supervision on the different entities of the group in different MS. This is to be sure that all issues are supervised in a way that is efficient, thorough and adapted to the structure of the group and of its VAs business.
276. It is essential indeed to be sure that the supervision is adequate on all aspects, and that the group does not use the specific structure set up for its variable annuity business to create "black areas" that are impossible or critical to supervise.
277. In the following paragraphs, TF proposes some suggestions to improve and strengthen cooperation among supervisors both in a Solvency I and Solvency II context.

#### 5.2 Consideration on Solvency I

278. The Solvency I framework for the cooperation among supervisors builds on Life and Non-life Directives (and on the related General protocol<sup>28</sup>) and on Insurance Groups Directive and (and on the related Helsinki Protocol<sup>29</sup>).

##### *5.2.1 General Protocol and the cooperation at solo level*

279. The General Protocol, in the respect of responsibilities of each supervisor as assigned by the Directives<sup>30</sup> envisages principles/procedures and methods of cooperation between supervisors in relation to different activities and phases of the life/business of an insurance undertaking.
280. The TF aims at highlighting how the cooperation currently in force under this Protocol could be used/strengthened for VA related issues, and therefore provides below for some more suggestions and details to contextualize VAs in the framework offered by the General Protocol.
281. The relevant case would be for instance of a single insurance entity which might have organized its VAs business by operating in several countries through freedom of establishment or free provision of services. In this case no insurance group exists but the home supervisor for the accomplishment of its tasks at the level of solo supervision on the insurance would benefit from the local expertise of the host supervisor, for example for those supervisory tasks that would benefit an accurate understanding of the contract (e.g. adequacy of technical provisions).

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<sup>28</sup>[http://www.ceiops.eu/media/docman/public\\_files/publications/protocols/RevisedSienaProtocol.pdf](http://www.ceiops.eu/media/docman/public_files/publications/protocols/RevisedSienaProtocol.pdf)

<sup>29</sup> [http://www.ceiops.eu/media/files/publications/protocols/nl194\\_helsinki\\_gbfi.pdf](http://www.ceiops.eu/media/files/publications/protocols/nl194_helsinki_gbfi.pdf)

<sup>30</sup> Art. 1.5 Nothing in this Protocol shall diminish the responsibilities of Competent Authorities under the Directives and in particular the duty vested in the Competent Authority of the Home State to exercise prudential supervision over the Undertaking for which it has sole responsibility

## Cooperation on the taking up of the business

282. **Part III of the Protocol** is related to cross-border activities (by way of freedom of establishment or by free provision of services) and its chapter 4 is about information on planned business, risks and commitments: according to this chapter, the Competent Authority of the Host State may ask the Competent Authorities of the other Member States for additional information.

### Recommendation

283. *The TF considers that, in case the request of additional information is deemed appropriate by the Authority of the Host MS, the following information could be helpful to provide a thorough picture of the VAs business and could be worthy of request:*

- *envisaged structure of the business (e.g. which entity does what, who/which entity is responsible for what,...);*
- *guarantees and hedge mechanisms underpinning the contracts that will be sold in the Host MS. To this regard, the Home Authority might also consider it helpful to share with Host Authority the draft pre-contractual information for contracts that will be sold in that Host State: to be noted that this sharing does not imply any kind of pre-approval process of the pre-contractual information which is not allowed under the Directive;*
- *steps/actions undertaken by the undertaking so to ensure compliance with rules in force in the Home MS;*
- *information on envisaged volumes.*

284. *The analysis of additional information required by the Host Authority might give raise to input/suggestions/highlights (e.g. on legal risks) from the Host Authority to the Home Authority so to enhance cooperation and positively contribute to the supervision exercised by the Home Authority.*

285. **Part III** of the Protocol further deals with communication of general good requirements in the Host Member State<sup>31</sup>.

### Recommendation

286. *In order to speed up supervisory processes and enhance clarity in the applicable framework, the TF recommends that the competent authorities of Host Member States analyse their general good requirements as to their compatibility with general features of VAs products and communicate timely the results of such analysis to the competent authority of the Home Member State.*

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<sup>31</sup> PART III, CHAPTER 1.2 CONDITIONS IMPOSED IN THE INTERESTS OF THE GENERAL GOOD

1.2.1 The Competent Authority of the Host State, shall, within two months from the date of receipt of the notification, communicate, in Written Form, to the head office of the Undertaking and the Competent Authority of the Home State, any conditions under which, in the interests of the general good, the activity must be pursued within the territory of the Host State.

1.2.2 The communication shall also include a reference to the website on which information on general good provisions is available.

### Cooperation for ongoing supervision

287. **Part VII** of the Protocol is related to the “**right to warn**”. Paragraph 7.2 states that, when a business is significantly carried out in a Host MS, the allocation of tasks and responsibilities among different Authorities involved should not prevent the Competent Authority of the Home State to use the knowledge of the Competent Authority of the Host State about local market and risks in order to achieve effective supervision and adequate protection of policyholders.

#### **Recommendation**

288. *The TF considers that in case of VAs business the knowledge of the Host supervisor is always to be considered significant by the Home Supervisor to the advantage of the effectiveness of its own supervision.*

289. *In order to enhance efficiency and effectiveness of cooperation among Home supervisor and Host supervisor(s), the TF considers that some form of permanent cooperation could be established. This could be done for example, by mirroring what is already envisaged at group level and illustrated below: e.g. a “college” of supervisors could be established even though no group is in place, by inviting Home and Host supervisor(s). See also section 5.2.2 on cooperation at group level.*

#### *5.2.2 The Helsinki Protocol and the cooperation at group level*

290. At group level, the current framework for cooperation is set by the Insurance Group Directive (IGD) and by its enabling Protocol, so called Helsinki Protocol (2000). The current framework should also take into account other complementing documents, such as “Guidelines for Coordination Committees” (2005)<sup>32</sup>, “Statement on the role of lead supervisor” (2006)<sup>33</sup> with its annex “Guidelines on information exchange between lead supervisors and other competent authorities” (2007)<sup>34</sup>; “Colleges of supervisors – 10 common principles” (2009)<sup>35</sup> and “Guidelines on preparation for and management of a financial crisis” (2009)<sup>36</sup>.

291. The framework of cooperation within group supervision builds on the functioning of colleges of supervisors (former CO-ordination Committees, CoCos), which have been established since many years for all EU cross-border groups.

292. The composition and activity of each college is developed along the lines envisaged by the abovementioned documents which include the following points:

- Coordination agreement to be signed within the college
- Topics to be discussed mandatorily within the college

<sup>32</sup>[http://www.ceiops.eu/media/files/publications/standardsandmore/guidelines/guidelines\\_coordination.pdf](http://www.ceiops.eu/media/files/publications/standardsandmore/guidelines/guidelines_coordination.pdf)

<sup>33</sup><http://www.ceiops.eu/media/files/publications/standardsandmore/guidelines/StatementontheRoleoftheLeadSupervisor.pdf>

<sup>34</sup>[http://www.ceiops.eu/media/docman/public\\_files/publications/standardsandmore/recommendations/CEIOPS-DOC-16-07%20Information%20exchange.pdf](http://www.ceiops.eu/media/docman/public_files/publications/standardsandmore/recommendations/CEIOPS-DOC-16-07%20Information%20exchange.pdf)

<sup>35</sup><http://www.ceiops.eu/media/files/publications/standardsandmore/recommendations/CEBS-CEIOPS-IWCFC-10-principles-colleges-of-supervisors.pdf>

<sup>36</sup><http://www.ceiops.eu/media/files/publications/standardsandmore/guidelines/CEIOPS-Guidelines-on-preparation-for-and-management-of-financial-crisis-27.03.2009.pdf>



- Supervisory tools for the college
  - Tasks to be carried out by the lead supervisor of the college
  - Relevant/Essential information to be exchanged within the college
293. The activity of colleges is monitored by EIOPA through IGSC<sup>37</sup>, which carries on periodic surveys with the aim of improving its effectiveness and efficiency as well as harmonization among different colleges so to enhance level playing field.
294. The TF aims at highlighting how the cooperation currently in force under Helsinki Protocol could be used/strengthened for VA related issues, and therefore provides below for some more suggestions and details to contextualize VAs in the framework offered by the Helsinki Protocol.

Activity of the college

295. The TF provides below a list of supervisory tasks that the TF considers for adequate supervision on VAs, in order to be sure that the specific structure set up by the group for its VAs business does not create "black areas" that are impossible or critical to supervise. These tasks are applicable in the context of group supervision; *mutatis mutandis*, most of the tasks are applicable for supervision at solo level (see para 5.2.1 of this report).
296. The list of tasks should be tailored to the specific structure of the group and of its VAs business. This means that the list is provided for the benefit of the college of supervisors, i.e. it is up to the college to examine and select tasks so build a supervisory framework tailored to the specific situation of that group:
- i. the validity of contracts<sup>38</sup> (mainly written in a foreign language) according to foreign laws. This task is to address the issue of legal risk already explained in section 3.1.3 of this report, i.e. the possibility that a contract, sold in a Host MS and written in the Host language, could be not properly understood and managed by the undertaking itself and therefore might give raise to commitments that are either not recognised/valid in the Host state or differently quantified;
  - ii. the modelling of those contracts for the hedging strategy;
  - iii. the adequacy of the calculation of technical provisions and solvency requirement for those contracts;
  - iv. the capacity for the company to limit some risks, given local laws (e.g. prevention of secondary market risk, where policies are bought by a third-party that will have a different behaviour than policyholders);
  - v. the typical behaviour of policyholders concerning lapses, premiums, life, death, etc.;

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<sup>37</sup> IGSC is Insurance Group Supervisory Committee, which is in charge of group issues within EIOPA

<sup>38</sup> The sample of contracts that are examined is to be constructed so that at least the most significant and the most risky contracts are examined.

- vi. the calculation of hedge recommendations by a platform located in another country;
- vii. the correct implementation of the computed hedge;
- viii. the transmission and transcription of in force data coming from another country;
- ix. that formal validation (e.g. for product launches, day-to-day trades, etc.) is made by people who have a precise knowledge of what happens locally;
- x. that the apparent management structure matches the real management structure;
- xi. that group standards, if they exist, are sufficiently precise and effectively respected and implemented everywhere, all the time and at all levels.

297. Some of these tasks could be shared or delegated, in the way that is most adapted to the structure of the group and of the VAs business (see for example Annex II). For instance, if the insurance group has organized its VAs business with a single insurer that operates in several countries through freedom of establishment, the home supervisor would benefit from the local expertise of the host supervisor, and it would be interesting to share tasks that require an in-depth understanding of the contract (e.g. adequacy of technical provisions).

298. It is important here to note that the issue is a delegation of tasks, not of responsibilities. Responsibilities are assigned by EU Directives and by national laws and cannot be removed from the supervisor entitled to them. However, it is likely that some tasks cannot be efficiently carried out without cooperation without the supervisors of the other MS involved.

**Recommendation**

299. *The TF considers that the college of supervisors should establish a list of tasks that should be performed by supervisors so to ensure adequate and complete supervision. In setting up the list, the college can profitably take advantage of the list provided by the TF, so to develop a supervisory framework tailored to the specific group and its VAs business.*

*Coordination agreements within the college*

300. The Helsinki Protocol (art.2.2) envisages that the members of the Co-ordination Committee may wish to lay down any arrangements on the supplementary supervision in written bilateral or multilateral agreements, addressing both the regular and any emergency situations.

**Recommendation**

301. *The TF recommends that a coordination agreement is envisaged for VAs business by each college for whose group VAs business is relevant (i.e. materiality/significance principle should apply).*

*Topics to be discussed within the college and supervisory tools*

302. The CEIOPS Guidelines for Coordination Committees, *inter alia*, highlight “key points” to be discussed within the colleges (i.e. content of the meeting), the full list of which includes: agreements with the Coco, crisis

situation, the insurance group, internal control mechanisms and risk management processes<sup>39</sup>, capital, solvency, intra-group transactions.

**Recommendation**

303. *Within "key points" to be discussed within a college, the TF recommends that a specific focus on internal control and risk mechanisms process related to VAs business is done, for assessment and discussion within each college where VAs exists.*

304. The Guidelines highlight as well some "tools for supervisors"<sup>40</sup> that could be used within the college.

**Recommendation**

305. *Within "tool for supervisors" to be used within a college, the TF recommends that some tools are developed so to help the college in assessing VA business and to help homogeneous assessments within different colleges, for example some specific information and data on VAs to be exchanged (see also chapter 7);*

*Tasks to be carried out by the lead supervisor of the college*

306. The CEIOPS Statement on the role of lead supervisor envisages a detailed list of tasks to be carried out by the lead supervisor, appointed by the college.

**Recommendation**

307. *The TF recommends that, without prejudice to the responsibility of other supervisors, the lead supervisor takes care of supervision on VA business in the context of supplementary supervision, i.e. this task is considered as part of the list of tasks to be carried out by the Lead Supervisor envisaged by the Statement.*

*Information to be exchanged within the college*

308. The CEIOPS Guidelines on information exchange between lead supervisors and other competent authorities (annex to the Statement) envisage some key features of the communication among supervisors<sup>41</sup>, make a distinction between "essential" information and "relevant" information<sup>42</sup>

<sup>39</sup> On internal control mechanisms and risk management processes (art. 4.4 of Guidelines): it is recommended that within the internal control and risk management framework, the Co-Co should look at the specific group-relevant risks in more detail, including for example the reinsurance program, distribution channels used in the different countries, the investment policies applied or the extent to which internal audit follows an audit plan applicable at group level. The Co-Co should furthermore be looking at how the management information systems contribute in giving the management and the board a reliable and global view of the real situation of the group as a whole. The Co-Co should also be reassured that clear lines of responsibilities should exist in the different areas and entities within the group.

<sup>40</sup> For example, envisaged tools are: copies of the latest board minutes, latest report from internal audit; risk assessment models developed by supervisors, communication with external auditor...

<sup>41</sup> It is a two-way process, proportionality, risk focused, as spontaneous as possible

<sup>42</sup> "Essential" information can materially influence another MS assessment of the financial soundness of a (re)insurance undertaking) and are communicated on own initiative; "relevant" information are relevant to the performance of another supervisor's obligations and are communicated on request.

and provide for an illustrative detailed list of “essential” information to be exchanged, split by three main objectives<sup>43</sup>.

#### **Recommendation**

309. *The TF recommends that information on VAs business are considered as “essential” and are therefore exchanged consequently, for those groups whose VA business is relevant. The definition of which information should be exchanged for a specific group on VAs business is up to the specific supervisory college, so to build a supervisory framework tailored to the specific situation of that group. To this regard, data and information as set in section 7.2 could be of help for the supervisors within the college. .*

#### Composition of the college

310. Nor the Directive 98/78 nor the Helsinki Protocol do explicitly mention which supervisors are included in the college of supervisors. Implicitly, they have also been intended to be those supervisors in charge of supervising (re)insurance entities belonging to the insurance group (i.e. to the area of supplementary supervision according to Dir 98/78), so including also supervisors of insurance entities only participated (but not controlled) by the group.

311. The Helsinki Protocol also envisages the possibility to invite to attend the college EU supervisors from other sectors, especially - but not only - if the insurance group is part of a financial conglomerate (HP 1.11).

312. More generally, the Helsinki Protocol envisages that the supervisors of the Member States concerned should strive for forms of co-operation in the exercise of the supplementary supervision which are sufficiently flexible, and which are based on a genuine wish to work together, in the view of ensuring optimal supplementary supervision, the most important aim of which is the protection of the interests of insured persons.

313. The first of the “10 common principles on colleges of supervisors” jointly published in 2009 by CEIOPS and CEBS and JCFC states that *The supervisors of the Member States involved in the supervision of any of the relevant activities of a cross-border insurance group, banking group or a financial conglomerate, hereinafter called a “Group” shall form a “College” (College of supervisors)*. The explanatory text of the principle mention - for the banking sector - that:

- if deemed necessary, supervisors of systemically relevant branches should be invited to the College;
- the host supervisors of significant branches may be invited to join the College.

#### **Recommendation**

314. *The TF considers it useful that the college takes advantage of the knowledge of the supervisors of MS where VAs business is sold by way of freedom of establishment (via branch).*

315. *To this aim the TF would consider profitable that also those supervisors are invited to the college (or only to a specific session of the college held*

<sup>43</sup> i.e. significant changes in the group structure, significant changes in the way information is reported, difficulties that potentially have significant effects within the group

*for VAs), should they not be already attending (i.e. in that MS there is a only branch which sells VAs by way of freedom of establishment and there is not another subsidiary).*

316. *The TF also considers it important to preserve the flexibility of the functioning of the college. Therefore, alternatively, the college might consider it more appropriate to take advantage of the knowledge of supervisors of those MS by way of bilateral contacts.*

317. *The TF considers it useful that the college takes advantage of the knowledge of the supervisors of MS which VAs business is sold by way of free provision of services.*

318. *To this aim the TF would consider profitable that also those supervisors are invited to the college (or only to a specific session of the college held for VAs), should they not be already attending (i.e. in that MS there is nor a branch nor another subsidiary).*

319. *The TF also considers it important to preserve the flexibility of the functioning of the college. Therefore, alternatively, the college might consider it more appropriate to take advantage of the knowledge of supervisors of those MS by way of bilateral contacts*

### 5.3 Considerations on Solvency II

320. In the Solvency II framework references are the Directive itself, art.249 on information exchange and art. 248 on colleges of supervisors, as well as CEIOPS advice on cooperation and colleges<sup>44</sup>. To be noted that:

- art. 248.7 calls for implementing measures for the coordination of group supervision, including the definition of a significant branch;
- art.248.6 calls for guidelines be CEIOPS on the operational functioning of colleges.

321. The Solvency II framework, as designed by the Directive and by the abovementioned documents basically consists of:

- Coordination agreement to be signed within the college
- Specialized teams to be established within the college
- Reporting to supervisors as a basis for information exchange within the college

322. The TF aims at highlighting which abovementioned supervisory instruments (namely regarding the operational work of the college) can be developed/tailored for VAs related issues.

#### Activity of the college

323. The TF considers that a similar approach as illustrated under Solvency I is applicable and desirable also in Solvency II: i.e. the tasks already illustrated under the Solvency I part in para 296 should be carried out in the Solvency II framework as well. On those grounds, the college should agree on a specific/tailored list of tasks to be performed (shared and/or delegated among different supervisors) for ensuring adequate and complete supervision on a specific group.

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<sup>44</sup><http://www.ceiops.eu/media/files/consultations/consultationpapers/CP62/CEIOPS-L2-Final-Advice-Cooperation-and-Colleges.pdf>

**Recommendation**

324. *The TF considers that the college of supervisors should establish a list of tasks that should be performed by supervisors so to ensure adequate and complete supervision of the products. The list should be periodically reviewed.*

*Coordination agreement to be signed within the college*

325. CEIOPS advice<sup>45</sup> envisages some contents and general requirements for coordination agreements to be signed within each college. The TF considers that those requirements are fit for VAs business as well.

**Recommendation**

326. *The TF recommends that a coordination agreement is envisaged for VAs business by each college for whose groups where VAs business is relevant (i.e. materiality/significance principle should apply).*

*Specialized teams to be established within the college*

327. In its advice, CEIOPS highlights that flexibility is essential in the functioning of colleges. CEIOPS also noted in its previous advice<sup>46</sup> that within the College of Supervisors the supervisors could have formalized roles in the on-going supervision of the group whereupon specialized supervisory teams could be established depending of the specificities of the Group (i.e. smaller supervisory teams discussing matters related to their specific topic or specific issues noted across the group). Supervisory teams shall also depend on the nature, scale and complexity of the risks of the group and the cross-border dimension. Supervisory teams have already been established in some cases for reasons of efficiency, in order to collect the necessary expertise and support the activity of the college as a whole.

**Recommendation**

328. *The TF considers that a specialized team could be profitable tool to deal with supervision on VA business and therefore encourages the college to evaluate the establishment of a specialized team, subject to nature, scale and complexity of the VA business carried on by a specific group.*

*Reporting to supervisors as a basis for information exchange within the college*

329. CEIOPS advice states that *"The group report to supervisors (RTS) shall form the basis for the regular exchange of information"*.

**Recommendation**

330. *The TF recommends that a reporting specific to VA business is included in CEIOPS group reporting or that details on VA business can be added to the current group reporting, following proportionality principle. To be noted that reporting could also mean qualitative reporting, i.e. not necessarily templates (see chapter 7)*

<sup>45</sup> CEIOPS DOC 54/09 (former CP 62)

<sup>46</sup> CEIOPS's Advice to the European Commission on aspects of the Framework Directive Proposal related to Insurance Groups (CEIOPS-DOC-25/08)

### Composition of the college

331. Art. 248.3 of the Directive states, among others, that *the supervisory authorities of significant branches and related undertakings shall also be allowed to participate in the colleges of supervisors. However, their participation shall only be limited to achieving the objective of efficient exchange of information.*

332. In its advice, CEIOPS:

- acknowledging some cases where, in absence of subsidiaries, no college is established, states that the relevance of branches may justify the establishment of some coordination arrangements similar to Colleges that should then be chaired by the home supervisor;
- considers that the 'significance' of a branch should be based on the judgment of the group supervisor following the consultation with the other supervisory authorities within the College; this judgment should be supported on quantitative and qualitative criteria<sup>47</sup>;
- makes some reasoning on the possible procedures to be followed for the participation of any branch' supervisor in the College (on own request of the supervisor or by invitation of the group supervisor).

#### **Recommendation**

333. *The TF considers that those criteria could be profitably integrated also with a reference to VAs activities, which could be an additional trigger for enlarging the composition of the college. This because VAs business can affect the group' overall financial or solvency position and because supervisors of the MS where the business is sold can bring to the college a profitable contribution to specific local features of contracts and of commitments the group will be committed to.*

334. *The TF considers it useful that the college takes advantage of the knowledge of the supervisors of MS where VA business is sold.*

335. *To this aim, and in line with the recommendation provided in a Solvency I context, the TF would consider it profitable that VA business is a trigger for relevance for this kind of college to be established (in case no subsidiary exists) or that, in case the college already exists, also supervisors of the MS where VAs are sold are invited to the college (or only to a specific session of the college held for VA), should they not be already attending.*

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<sup>47</sup> Criteria suggested by CEIOPS in its advice:

- 5% threshold: if the market share exceeds 5% in the members state or if its gross written premium volume exceeds 5% of the gross written premium volume of the all group;
- Importance of the branch given the global risk profile of the group (e.g. where the potential contribution of the branch to the group SCR is above a material level);
- Supervisory authorities of newly entered branches in the groups bearing in mind how it will ultimately effect the group's overall financial or solvency position;
- Supervisors that bring insight into the specific nature of local governance cultures, that may have an impact both locally and/or the group as a whole.

## 6. SYSTEMIC AND MACRO-PRUDENTIAL ISSUES

336. In considering whether VAs pose systemic risk it is theoretically necessary to define what systemic risk is. However simply taking a definition from one source and then assessing how VAs impact on that definition of systemic risk, while logically rigorous and robust, ignores the fact that the term systemic risk has different meanings for different people and different contexts. Therefore a wider approach is necessary for a comprehensive consideration.
337. Therefore the working party's approach has been to start with consideration of systemic risk as defined by the FSB. Having done that we move to consideration of other factors which, while outside the pure systemic risk issue, are wider than single company issues.

### FSB criteria

338. The FSB has defined systemic risk as follows

"The risk of disruption to the flow of financial services that is (I) caused by an Impairment of or parts of the financial system and (II) has the potential to have serious negative consequences for the real economy.

Fundamental to this definition is the notion that systemic risk is associated with negative externalities and/or market failure and that a financial institution's failure may impair the operation of the financial system and/or the real economy."<sup>48</sup>

339. Criteria used by FSB to identify systemically relevant institutions are
- a. **Size:** "The proportion of the volume of the financial services provided by the individual component of the financial system"
  - b. **Interconnectedness:** "Linkages with other components of the system"
  - c. **Substitutability:** "The extent to which other components can provide the same services in the event of failure"
340. Taking each criterion in turn we can assess what issues are posed by the VAs business. For VAs business, the TF considers it relevant to assess these criteria both from the assets and from the liability side, since the two are strictly connected via the hedging mechanism.
341. **Size:** No data is currently regularly collected on a European wide basis. The Central bank of Ireland has been collecting data since 1.1.2010 on a quarterly basis of the number of policyholders covered and the volume of assets. During the consultation period, EIOPA conducted an ad-hoc survey on the size of EEA market (see section 2.4).
342. **Interconnectedness:** A common model in VAs business is to move risk by way of reinsurance; however this is nearly always within a group: this appears to offer neither risk diversification nor amplification. When a dynamic hedging program is instead in place, companies are connected via financial markets through both the hedging assets they hold at any given moment and their need to regularly trade. It must be noted, moreover, that even if the exact amount to trade will vary from one

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<sup>48</sup> Financial Stability Board: "Guidance to assess the systemic importance of Financial Institutions, Markets and Instruments, Initial Considerations – Background paper" November 2009.



company to another, the global reaction to a given market movement will probably be in the same direction for all companies (for instance, short when markets go down).

343. **Substitutability:** VAs are not sold between banks and insurers, so even if there were no comparable product, this is unlikely to have a systemic risk implication. On the assets side, the amount of assets suitable for hedging is not unlimited: for the main "delta" hedging of large markets, it is usually not a problem but for smaller markets or more exotic instruments it may well be.

*Other factors*

344. The hedging mechanism that underlines most VAs might give rise to additional aspects that have to be taken into account when evaluating impact on systemic risk.
345. The trading programs of the dynamically VAs hedged companies require frequent (often daily) rebalancing of hedge instruments. If the price is moved then this process could upset the market. This because of a potential risk that all companies have to trade at the same time because market movements require certain trades under dynamic hedging programs. This will tend to be the same need for all companies for a given change in market conditions, therefore there is a danger of pro-cyclicality especially when the term of the guarantee is near.
346. This is further amplified by the fact that many models are likely to be quite similar between different companies (many models even appear to be stemming from one single consultant). Those models might have an algorithm which produces an automatic 'herd' response, leading to lots of market movement on the same securities at the same time. In fact, movements are expected to be in the same direction for all insurers
347. This point increases its relevance when there are no deep and liquid markets, and some indices are lightly traded with the result that VA hedges comprise much of the market.
348. Pro-cyclicality might be dramatic in poorly hedged forms, such as insufficient controls placed on marketing departments so that inappropriate investment products were covered, hedging only of a small number of Greeks or hedges being needed in thinly traded areas so that when protection was needed it could not be obtained at realistic prices.
349. Consequently, the TF considers that poorly hedged insurers (or not hedge at all) might cause systemic risk to other insurers and to the system as a whole when in urgency to buy hedge; poorly hedged insurers are also the most sensitive to difficulties in the markets. Concentration of poorly hedged insurers could pose systemic risk.
350. Last but not least, a matter of concentration of errors could arise in relation to hedging programmes, since it is known that the majority of market participants have interacted with a single adviser and have used or are using that adviser's software. Should mistakes be occurring in their work, those mistakes could be made in many companies at once.
351. There are risks mitigating factors in place, since companies undertake their own validation of the supplied software before using it. Some

companies do use different valuation models. It seems sensible to ensure that companies are not overly reliant on advisers but have their own expertise.

352. In any case the critical factor is size of impact from any particular market movement. Even though the current size of VAs EU market seems not to give raise to systemic threats, the TF considers that its development should be closely monitored as it could pose procyclical threats. We therefore believe that there is a need to gather data and monitor exposures not only on size but on the marginal propensity to rebalance following market movements.

### **Conclusions and Recommendations**

353. *VAs do not currently pose a systemic risk for the wider financial system*
354. *EIOPA should monitor the development level of the market. We recommend that EIOPA should collect, compile and publish data on the size of the VA market in Europe.*
355. *EIOPA should also develop metrics (and collect data) on the possible impact on market trading, e.g. develop market trading exposure metrics (i.e. to answer the question what would happen further to a fall of X% in the market).*
356. *Concentration of poorly hedged insurers could pose systemic risk.. Therefore simple imposition of extra capital requirements may not be sufficient to remove risk. The TF recommend that supervisors consider the impact of the risk profile of the insurer on systemic risk and if necessary take action to reduce their risk profile, also considering the existence of more insurers in the same situation. Different level of actions can be taken, including monitoring and asking to reduce the risk profile.*
357. *The TF considers also that companies should be able to demonstrate that they have their own expertise to challenge any purchased model (see also chapter 4 on governance issues). Insurers should take account appropriately of the risks derived from the use of models where some of their elements are provided by external vendors. Furthermore, where the model bases on widely applied assumptions, the insurer should take account that in times of crisis all the market may react in the same manner, leading to a systemic risk and the impossibility of applying the envisaged management actions.*

## **7. Data and information to be required**

### *7.1 Introduction*

358. The TF did some work on data/information to be required to insurers for an effective supervision on VAs business, in order to offer to supervisors and to colleges a view as complete as possible.

359. This chapter deals with data/information on the financial and solvency position of the insurer/group carrying on VAs business. This chapter does not deal with information on the market as a whole, that in chapter 6 on systemic risk the TF recommends are dealt with by EIOPA. The draft does not deal with pre-contractual information to policyholders which is outside the scope of the mandate of the TF.

360. On the information on the financial and solvency position of the insurer, this chapter first illustrates therefore the information and data that the TF considers helpful for a complete supervisory overview on those insurers/groups who carry out a significant VAs business. Information/data are then examined in the context of Solvency I and Solvency II requirements on supervisory reporting and public disclosure.

### *7.2 Data and information for the overview on VAs business*

361. The TF considers that at least the following technical areas are to be investigated:

- identification and description of VA products,
- funds
- guarantees

A qualitative reporting on the business model and on governance aspect should complement the quantitative data as shown in Annex III and illustrated below.

362. This information are meant to be addressed to insurers at solo level. In case of a business model where group issues are particularly relevant data/information should be collected accordingly.

### *Identification and description of the products*

363. The first step is to identify the VAs sold by insurer/groups. This is done at first by the insurers themselves also taking into account the criteria provided in this draft, and then challenged by supervisors (see chapter 3.1).

364. Each product identified as VAs should be described, in order to:

- provide a general description of the product, highlighting the core structure in terms of base component (i.e. unit-linked component, immediate or deferred annuity) and of guarantee rider (i.e. specify the type of benefit and, possibly, the mechanism through which it's determined);
- specify in what country the product is sold, and if a local branch is involved;

- specify if the premium is recurrent or single and mention if the product has the option for any subsequent premium deposits on existing guarantee terms;
- specify the contract duration and the specific guarantee term, if different from the contract duration (i.e. due to the presence of deferral periods or starting age for the guarantee to work);
- indicate if the product is open to new production or not;
- provide a detailed description of the guarantee riders being sold. Once identified the specific guarantee:
  - indicate each GMxB type (GMDB, GMAB, GMIB, GMWB);
  - indicate the level of the guaranteed benefit (i.e. 2,5%);
- provide a description of the benefit specifying the capital accumulation mechanism (i.e. roll-up, ratchet, step-up, reset), its frequency (infra-annual, annual, x-yearly), the item from which the guaranteed level is calculated (i.e. premium paid, premium paid net of expenses and/or withdrawals and/or paid-ups, premium increased by the capital accumulation mechanisms), the guaranteed conversion factor specifically for the GMIB and how the guarantee generally works

### *Funds*

365. This section provides quantitative and qualitative information concerning the financial profile of VAs product. For each product in the portfolio, indicate the underlying fund(s) and for each of them specify:

- The name of the product they are offered with;
- The name of the fund;
- A description: for example it is useful to know if the fund is available only at certain conditions (e.g. a fund with a major equity component could be offered only for long durations or low guarantee levels; monetary funds could be used as default to switch or shift in at specified market conditions);
- the amount of gross written premiums for the specified year, corresponding to pre-existing business;
- the amount of gross written premium for the specified year, corresponding to new business;
- the amount of AUM (Assets Under Management) at closing business (31/12/yyyy);
- the currency;
- the asset allocation, distinguishing among Equity, Bond and Other components. It might be considered useful also investigating exposures by major indexes within each asset class (equity, bond, etc.), or at least a more detailed breakdown such as international small cap equity, or German large cap equity, etc.

### *Risk Management of guarantee section*

366. This section provides information on the Risk Management techniques adopted to face the guarantee rider risks. Information/data are required with a specific focus on those business models where an hedging programme is in place, with a few specific information (in a separate sheet) for the cases of dealing with guarantees via reinsurance or via a customized financial products. Data/information deemed useful are:

- which portion of the total risk is retained by the company;
- how the portion of retained risk is managed, by selecting from the list the type of hedging (dynamic, static) implemented, if present. The difference between "static" and "dynamic" strategy lies in the rebalancing frequency of the hedge positions: a hedging strategy is considered to be "dynamic" if the hedge position is readjusted on a intra-daily, daily, weekly or (at the most) monthly basis;
- the "hedged risks", identifying them in terms of Greek-exposures (Delta, Rho, Vega or higher order Greeks) or specifying the single type of risk (equity, currency, interest rate, equity/interest rate volatility). Indicate "yes/no/partially" if hedged/not hedged/partially hedged, and "NA" if the product is not sensitive to this risk; if it is required for regulatory/accounting reasons, the dedicated guarantee reserve in balance sheet. To this regard it might be helpful to consider as well which indexes the "hedged risks" are tied to<sup>49</sup>.
- required minimum margin/SCR;
- the results, with and without the hedging strategy;
- the policyholder behaviour forecasted by the model and realised, excluding for instance lapses that are programmed in the contracts;
- the amount of supervisory charges, i.e. technical provisions (split in the two components, unit linked and guarantees) and capital requirements. These data/information are most likely to be used only in a Solvency I framework, since Solvency II unlikely will envisage such details by products;
- which portion of total risk is ceded out of the company;
- whether the risk is transferred to an intra-group or external reinsurer;
- whether a customized financial product (i.e. an OTC structured product) has been purchased from an investment bank or other financial institution. If yes, provide the name of this financial institution.

### *7.3 Solvency I and Solvency II requirements*

367. In the Solvency I framework there are no specific provisions concerning the level of harmonization of EU supervisory reporting; the level of harmonization of disclosure requirements is provided in the annual account directive.

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<sup>49</sup> This information combined with the funds exposures from paragraph 365 will permit one to better determine potential basis mismatch between the hedging instruments and the VAs underlying fund's exposures

368. The Solvency II framework for supervisory reporting and public disclosure is based on a public SFCR (Solvency and Financial Condition Report) of the insurer and at group level<sup>50</sup>; the Directive also mentions a specific RTS (Reporting to Supervisors). CEIOPS published an advice on supervisory reporting and public disclosures<sup>51</sup>, envisaging a draft structure for the SFCR and gives details on which specific information should be given within each point of the structure.
369. The same CEIOPS advice also deals with information to be reported to supervisors (not for public disclosures) on predefined events, on enquiries by the supervisors and on contracts with third parties.
370. EIOPA is currently developing also quantitative templates for an EU harmonised collection of supervisory data in the Solvency II framework.

### **Recommendation**

371. *The TF considers that the data and information for an overview on VAs business as illustrated in 7.2 above are quite detailed and could be used by supervisor(s)/colleges already in Solvency I.*
372. *In Solvency II, data and information as illustrated under point 7.2 could be used for ad hoc enquiries on VAs business, also taking into account the relevance of the business for the insurer/group.*
373. *Concerning regular reporting, also having in mind the current ongoing works on quantitative templates, the TF made a first analysis of if/how the information/data above fit into the quantitative reporting currently developed and provided input to ongoing works.*
374. *Concerning public disclosure, the TF considers that SII requirements framework seems to be fit also for VAs purposes. Also in this case, some specifications (i.e. further level of details or specific mention in the SFCR) could be profitably recommended for some areas, depending on the relevance of the business for the group/insurer. Areas that could be detailed on VAs could be Description of the business model (A1), Risk management system and ORSA (B3 and B4), Risk profile (C) and Group reporting (group SFCR).*

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<sup>50</sup> On the group SFCR, art. 256 of the Solvency II directive envisages that the parent company of an insurance group shall publish a group SFCR annually as well by applying mutatis mutandis, relevant articles at solo level. The parent company might decide, with the agreement of the group supervisor, to publish a Group SFC including also information on subsidiaries (no solo SFCR needed in this case).

<sup>51</sup> [https://www.ceiops.eu/fileadmin/tx\\_dam/files/consultations/consultationpapers/CP58/CEIOPS-L2-Final-Advice-Supervisory-Reporting-and-Disclosure.pdf](https://www.ceiops.eu/fileadmin/tx_dam/files/consultations/consultationpapers/CP58/CEIOPS-L2-Final-Advice-Supervisory-Reporting-and-Disclosure.pdf)

## ANNEXES

### I. EXAMPLES ON THE USE OF REPLICATING PORTFOLIO (QIS5 TS)<sup>52</sup>

Example	Can the obligations be replicated reliably using financial instruments for which a reliable market value is observable?	Technical provisions should be calculated:
The insurance undertaking should pay the market value of an equity portfolio or should deliver an equity portfolio (matching an index or not) at the payment date.	<u>Yes</u> , but only under one condition: <ul style="list-style-type: none"> <li>• a reliable market value for every asset within the portfolio is observable.</li> </ul> However there are, for example, fixed expense cash-flows associated with this contract which should be excluded because they depend on the development of magnitudes internal to the undertaking.	<ul style="list-style-type: none"> <li>• as a whole (if the condition is met). This also applies when the contract pays the market value of the units at the earlier of maturity, death or surrender.</li> <li>• Best Estimate + Risk Margin (if not and for the expense cash-flows)</li> </ul>
An insurance undertaking investing in assets replicating its future cash-flows provided by a third party (e.g. investment bank).	<u>No</u> : This case introduces counterparty and concentration risks with regard to the issuer of the replicating asset.	Best Estimate + Risk Margin
Term-assurance contracts and with-profits contracts.	<u>No</u> : In these cases the expected value, the volatility and other features of the future cash-flows associated with insurance obligations depend on the biometric development as well as on the behaviour of the policyholder.	Best Estimate + Risk Margin
An insurance undertaking signs a contract with a reinsurer to replicate the insurance undertaking's future cash-flows.	<u>No</u> : a reinsurance contract is not a financial instrument. See also comments to the third example.	Best Estimate + Risk Margin
Pure Unit-linked contract (without any additional guarantees) <sup>53</sup>	<u>YES</u> : regarding to the number of units guaranteed, and <u>No</u> : expense cash-flows associated with the fact that the contract will be managed until it ends.	For the calculation of the technical provision, these two aspects of the contract must be unbundled: as a whole / Best Estimate + Risk Margin (for the expenses)

<sup>52</sup> QIS 5 TS TP. 4.48. On the contrary, the following cash-flows associated with insurance or reinsurance obligations cannot be reliably replicated:

- (a) cash-flows associated with insurance or reinsurance obligations that depend on the likelihood that policyholders will exercise contractual options, including lapses and surrenders;
- (b) cash-flows associated with insurance or reinsurance obligations that depend on the level, trend, or volatility of mortality, disability, sickness and morbidity rates;
- (c) all expenses that will be incurred in servicing insurance and reinsurance obligations

<sup>53</sup> Unit-linked contract is « a contract, under which benefits are determined based on the fair value of units of a mutual fund. The benefit reflects the fair value of a specific number of units, which is either contractually determined as a fixed number, or derived from other events under the contract, e.g. premium payments associated with a specific additional number of units based on the fair value of the units at the time of premium payment. » (CEA-Groupe Consultatif Solvency II Glossary)

## ANNEX II

### **Example of the cooperation framework that could be discussed and agreed within the college of supervisors**

The college of supervisors should define tasks that need to be performed to ensure adequate and complete supervision of the products. This list of tasks, which could then be shared or delegated<sup>54</sup>, should be tailored to the specific structure of the group and of its VA business. For instance:

Tasks for supervision: (the tasks in para 297 have been regrouped in this table)	Sup. A VA insurer	Sup. B where the product is sold	Sup. C Group supervisor	Sup. D Other
i. the validity of contracts <sup>55</sup> (mainly written in a foreign language) according to foreign laws and market practices		Responsible		
ii. the modelling of contracts and policyholders behaviour for the hedging strategy, technical provisions or solvency requirements	Responsible	Help needed	Cooperation ?	
iii. the capacity for the company to limit some risks, given local laws (e.g. prevention of secondary market risk, where policies are bought by a third-party that will have a different behaviour than policyholders)	Responsible	Help needed		
iv. the calculation of hedge recommendations by a platform located in another country	Responsible		Cooperation ? When central platform for all entities	Cooperation ? Where the platform is located/regulated

<sup>54</sup> It is important here to note that the issue is a delegation of tasks, not of responsibilities. Responsibilities are assigned by EU Directives and by national laws and cannot be removed from the supervisor entitled to them. However, it is likely that some tasks cannot be efficiently carried out without cooperation without the supervisors of the other MS involved.

<sup>55</sup> The sample of contracts that are examined is to be constructed so that at least the most significant and the most risky contracts are examined.



Tasks for supervision: (the tasks in para 297 have been regrouped in this table)	Sup. A VA insurer	Sup. B where the product is sold	Sup. C Group supervisor	Sup. D Other
v. the correct implementation of the computed hedge	Responsible		Cooperation ? When hedges carried through unique entity	Cooperation ? Where the entity carrying hedges is located
vi. the transmission and transcription of inforce data coming from another country	Responsible	Help needed		
vii. that formal validation (e.g. for product launches, day-to-day trades, etc.) is made by people who have a precise knowledge of what happens locally	Responsible	Help needed	Cooperation ? When pre-launch procedures involve the group	
viii. that the apparent management structure matches the real management structure	Responsible	Help needed	Help needed	Cooperation ?
ix. that group standards, if they exist, are sufficiently strict and precise, and effectively respected and implemented everywhere, all the time and at all levels	Responsible	Help needed	Responsible	

## **ANNEX III**

### **Information to be required**



ANNEX 3.xls