



Banc Ceannais na hÉireann
Central Bank of Ireland

Eurosystem

T +353 1 224 6000 F +353 1 671 6561

Bosca OP 559, Sráid an Dáma, Baile Átha Cliath 2, Éire.
PO Box No. 559 Dame Street, Dublin 2, Ireland.

www.centralbank.ie

08 November 2010

Requirements in relation to year-end Actuarial Reports

Dear Appointed Actuary,

Following consultation with industry on Investment Guarantees – Guidance on Reserving and Risk Governance (“CP42”), we recently requested quantitative submissions to establish the impact of possible changes to reserving requirements for Variable Annuities.

The attached annex details the items that the Central Bank of Ireland wishes to see specifically addressed in the year end Actuarial Report. These items should be analysed and quantified with their specific inclusion or exclusion in the mathematical reserves justified.

In addition, all companies should recently have completed the fifth Quantitative Impact Study (“QIS5”). We would expect the year-end Actuarial Report (or possibly a separate report, not necessarily prepared by the Appointed Actuary) to discuss the impact of Solvency under the QIS5 calibrations covering both the standard calibrations and the Internal Model route. The Report should also cover details of progress on Internal Models so that the Board is fully informed.

Should it appear that the requirements under Solvency II are more onerous than under Solvency I, we would expect the Report to establish why this is the case. If the reason is risk related, as opposed to a calibration issue, then you, in your capacity as Appointed Actuary, are obliged to establish higher provisions due to the fact that the Solvency I regime is a minimum and the Company must reserve to the actuarially required level. For this reason, we would be surprised if the total capital requirements under Solvency I are not at least as great as those required under Solvency II.

We require you to submit the year-end Actuarial Report (or Reports) by 30th April 2011, at the latest, together with any relevant Board (and any Board committees) papers and copies of minutes from the discussion.

Please forward the required information to the variable annuity supervisory team at the above address. Any correspondence or queries in relation to this request should be forwarded to Mr. Grellan O'Kelly.

Yours sincerely,



Fiona McMahan

Head of Retail Insurance Supervision Department

Actuarial Report

Existing actuarial practice (Paragraph 2 of ASP LA 3) calls for the production of an annual Actuarial Report. This report should be to the Board of the undertaking. The Central Bank of Ireland (“Central Bank”) will require a copy of this report plus a copy of minutes of the Board meeting at which it was discussed. Matters that the Central Bank expects to be covered and quantified in respect of 2010 and subsequent financial year-ends include:

- a) Analysis and justification of the impact of Dynamic Hedging (also known as Future Trading Offset). Please refer to 1.1 for more detail;
- b) Analysis and justification of basis risk (where necessary, this should be included in technical provisions). Please refer to 1.2 for additional detail;
- c) Sufficiency of model and modelling process. This requires numeric justification. Please refer to 1.3, 1.4 and 1.5 for additional detail;
- d) Examination of the ESG. Please refer to 1.3 for additional detail;
- e) Justification of all assumptions made;
- f) Operational and model risk. See 1.6;
- g) Liquidity Risk: during periods of market turbulence, extensive derivative trading may require significant liquidity for possible margin calls;
- h) Path dependency: VA’s may include features such as ratchets, which are path dependent. Policyholder actions or management actions may also be path dependent;
- i) Demographic risk, with particular reference to longevity risk;
- j) Lapse risk - policyholder behaviour: See 1.8 for details; and
- k) Counterparty risk. Please refer to 1.9 for additional detail.

If any of these pose significant risk that is not covered in the mathematical reserves, then the mathematical reserves must be increased to an appropriate level.

In the event that undertakings experience difficulty in compiling such analyses within the required timescales, they are invited to discuss the matter with the Central Bank before the submission of the Actuarial Report.

1.1 Dynamic Hedging

The terms dynamic hedging, hedge effectiveness and future trading offset (“FTO”) are all used interchangeably. In using these terms, the Central Bank is referring to the overall reduction in reserves which is assumed by undertakings arising out of the use of financial risk mitigation techniques.

The formula for the FTO as previously consulted upon in our Discussion Paper in August 2009 is just one of a number of approaches that undertakings may adopt to reflect the impact of financial risk mitigation techniques. Companies will, as part of the Internal Model approval process, be engaging in a dialogue with the Central Bank to agree a basis for the FTO calculation which better reflects their respective businesses.

In the interim, the following high level principles must be adhered to:

- a) Credit for dynamic hedging strategies should only be permitted where there is a clearly defined hedging strategy in place;
- b) The credit for hedging must not exceed the level that has been justified by actual experience and must have regard to the results of the Profit and Loss Attribution exercise;
- c) In deriving the credit for hedging, undertakings must also consider the likely hedge effectiveness in a wide range of investment conditions with special reference to more extreme investment conditions, particularly where these are not captured in the historical reference period of the Profit and Loss Attribution exercise;
- d) The credit for hedging should reflect the extent to which the dynamic hedging is adequately captured by the model;
- e) Simplistic reflection of the hedge cash-flows in the model should normally result in a low credit for hedging; and
- f) The impact on future hedge effectiveness of heteroskedasticity must also be considered.

Overall, the credit for hedging must be determined on a prudent basis in light of the inherent uncertainties involved with dynamic hedging.

1.2 Basis Risk

Basis risk must be carefully examined. Basis risk can arise in different forms in VA business. This arises due to the fact that a VA programme may involve use of instruments in traded markets to hedge risks in specific funds which may not perform exactly as the markets do. 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.

1.3 Model of Sufficient Prudence

In making stochastic projections, an Economic Scenario Generator (“ESG”) is required. It is important that this reflects market instability in a sufficiently strong manner. However it is accepted that there can be interaction between complexity of runs and run times. Some simplification of models may be required to carry out a sufficient number of runs. Therefore it is acceptable to supplement stochastic analysis with well investigated supplementary calculations. This can be performed using more sophisticated models or other more appropriate techniques.

The following principles apply with regard to the use of an ESG:

- a) Where the ESG is calibrated for real-world valuations, the model output should be benchmarked to a wide range of investment conditions, including special reference to more extreme investment conditions with justification for the margins assumed in the valuation basis;
- b) If a Gaussian model is used, then compensating prudence must be demonstrated;
- c) If constant volatility is assumed, compensating prudence must be demonstrated. This applies whether the model is calibrated to perform real world or risk neutral valuations;
- d) Risk premia, where used must be prudent. It has been suggested that risk premia should be best estimate in nature and that this would permit a better overall assessment of the levels of prudence in the ESG. This will be considered acceptable subject to paragraph (a) above.

Generally speaking, where ESG models are used, the Board must ensure that the company has a sound understanding of the features, strengths and weaknesses of the ESG model and that effective challenge has been provided to the methodology and parameterisation adopted. This should extend to understanding the key assumptions which are driving the results and the justification for those assumptions.

1.4 Sufficient Number of Runs

For purposes of accuracy in making calculations from stochastic methods it is important that a sufficient number of runs are undertaken. It would not be appropriate to set a minimum number of scenarios for the entire industry. Instead the undertaking must include quantitative analysis in the Actuarial Report to demonstrate convergence (that is, stability of results) at the chosen number of runs.

1.5 Modelling Accuracy

Stochastic models should have sufficient model points to be a sufficiently accurate representation of the portfolio in force. If the modelling is not on a per policy basis then as part of the Actuarial Report, detailed examination and justification of the modelling accuracy must be made.

1.6 Operational and Model Risk

There are always going to be differences between the world as modelled in the technical provisions, in hedging and in reality. The Central Bank considers that the following causes of this should be analysed and quantified in the Actuarial Report since their effects tend to be greater than the operational risk that exists for more traditional companies:

- a) Turbulence: the risk that normal relationships between market parameters may break down in extreme financial conditions;

- b) 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;
- c) Model Risk: No model is perfect and models that reflect behaviour at some periods may cease to have validity as markets change;
- d) Granularity: Market prices are not smooth functions when looked at in close detail but move as jumps from moment to moment;
- e) 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.

It is not expected that many of these risks have been incorporated into existing models. Where their inclusion for year-end 2010 presents significant difficulties, it will be acceptable to adopt a more high-level approach to deal with these risks and move towards a more sophisticated approach for the following year-end.

1.7 Behavioural Risk and Dynamic Lapsation

Policyholder behavior can have a substantial impact on the value of the VA guarantees. This characteristic is not possible to hedge and it makes the hedging of basic financial risk harder. The unknowns of policyholder behavior (lapse rates, asset allocation, withdrawal elections, etc.) are the greatest uncertainties regarding pricing and risk management of variable annuity guarantees. If the contract is of long duration, then even small changes in policyholder behaviour each year can make a substantial difference in the number of policyholders expected to be subject to a maturity guarantee.

Therefore dynamic lapse functionality should normally be used. Where this is a feature, this may be replaced by the assumption of very low lapse rates provided this does not reduce reserves.

The Central Bank has recently become aware of the possibility of significant hedge fund activity in the secondary VA market. The impact of such activity must be reflected in the derivation of lapse and premium cessation rates.

The impact on the hedging program of changes to persistency assumptions also needs to be quantified.

1.9 Counterparty Risk

For (re)insurance undertakings ceding significant risks to third party undertakings, it is expected that the cedant will have investigated the counterparty's exposures, provisions and capital very carefully. In examining the credit risk exposure of the cedant, the question of whether the undertaking accepting the risks can withstand adverse experience across its full VA book needs to be considered.

For variable annuities cessions in particular, exposure to the counterparty's credit risk becomes critical only in adverse investment conditions. Therefore, the models should take into account the link between investment market risks and reinsurer credit risk.

In some cases, the (re)insurance undertaking might buy an ad-hoc structured financial product from an investment bank. As is the case for reinsurance cessions, the link between markets and default of that asset must be taken into account.