

## QIS1 - List of Methodological Issues Raised by Firms and Supervisors

### General Disclaimer

The answers given below are not official CEIOPS positions but tentative Working Group answers referring to QIS1 only.

### General guidance

1. **The default response to the questions raised is that the individual firm can take its own view as to the “appropriate approach”, as long as it clearly documents in its reply the approach it takes and any assumptions made.**
2. **The reply to QIS1 should be done on a best effort basis. If the proposed methodology can not be followed, undertakings may use their own methodology provided it is appropriately documented.**
3. **In the absence of precise instructions, all issues relating to cash flow modelling are the sole responsibility of the undertaking.**

### General

#### *Definition and role of the risk margin*

1. The draft scope of the QIS is not explicit in excluding risk margins on market risks although we believe that this is the intention. Explicit guidance would be helpful on whether this is intended. If on the contrary, risk margins are to be included for market risks, then could you please explain how these risk factors are to be taken into account in the cash flow projections?

[A – QIS1 requires the determination of the best estimate and 75%/90% percentile of the probability distribution of the present value of future cash flows. This should comprise all relevant risk factors that have a material impact on these cash flows – for example, in life insurance, mortality rates, lapse rates and option take up rates.

Risk margins on market risks, as defined in § 10.84 s. of CP7, are not in the scope of QIS1. But technical provisions in QIS 1 are intended to capture the part of underwriting risk that is correlated to market risks (e.g. in life TP, surrender or lapse risk)]

2. Risk margins: separate disclosure of risk margins is requested in the spreadsheet. An insurer would like to note that in cases where market data are used, it is not possible to separately identify the best estimate and the risk margin. They would like to have some specific guidance on this topic.

[A - The 'risk margins' to be included in the spreadsheet will be the difference between the 75<sup>th</sup> or 90<sup>th</sup> percentile for the provisions and the best estimate of those provisions. Some guidance on the calculation of the percentiles is given below.]

3. The QIS instructions make no reference to operational, market, credit or liquidity risk. An explicit statement that these belong in capital requirements and not in the technical provisions would be helpful.

[A - Technical provisions in QIS 1 are intended to capture only insurance / underwriting risk to the desired confidence level.

Underwriting risk that is correlated to operational risk should normally be taken into account. Firms should disclose their methodology.

For market risk, see above A1.

Credit risk (default of reinsurers) may be taken into account in the calculation of technical provisions net of reinsurance on an optional basis (see item 11 of the life risk class sheets of the QIS1 spreadsheets).

Other kinds of credit risk are out of the scope of QIS 1]

#### ***Definition of risk margins according to 75%/90% quantile***

4. Can CEIOPS confirm the time horizon over which technical liabilities are expected to meet the 75%/90% confidence interval? For instance is this over the outstanding term of the policy or is this over a one year time horizon

[A - The time horizon for assessing the 75<sup>th</sup> or 90<sup>th</sup> percentile as well as the best estimate should be the expected outstanding term of the policy or of the liability.]

5. More detailed guidance on what is meant by the 75th/90th percentile is requested, and in particular on how to select the statistical methods for determining the probability distribution of cash-flows

[A- The principles are clearly expressed. Firms should decide the approach that best suits their business and disclose their methodology in their response, together with their reasoning for the approach adopted.]

#### ***Guidance/prescriptions on methodologies***

6. If any stochastic modelling is required, firms would need the means and volatilities for all relevant asset classes, together with credit spread, migration and default rates for non-government bond investments. Different interest rate models will also need additional assumptions (e.g. second factor volatility, autoregression factors etc).

[A - If firms are applying a stochastic approach to the value of options and guarantees, then the relevant models should be calibrated to produce market consistent results.

Alternatively, firms may adopt the approach which is developed in A3.]

7. For non-EU entities in a group (ie branches or subsidiaries), guidance is needed on what is expected for countries currently in territories (e.g. US), where at present they can use the local statutory requirements - is the working assumption that firms can continue to use the local basis for the QIS?

[A - QIS1 should focus on a comparison of the current European technical provisions and the future Solvency II technical provisions.

There is no need to carry out the calculations for subsidiaries (since the technical provisions of its subsidiary have no effect on the firm's technical provisions), except if participants perform the QIS1 on a group level. ]

8. Which adjustments should be made for currencies where the interest rate term structure provided by CEIOPS is incomplete or missing? (Since the term structure for Norway is incomplete (year 12 and years 21-60 are missing), the supervisor have made an adjustment for this QIS. The original interest rates are used for the first five years, and from year six onwards the yield curve displays the same changes in NOK rates as in euro rates. This means that long term Norwegian rates will be 0.5 percentage points higher than the euro rate, which can be justified from the fact that the inflation target in Norway is 0.5 percentage points higher than in the euro zone. At the same time, the 10 year rate is somewhat reduced compared with the original rate, and hence somewhat more in line with the 10 year government bond rate, see issue below)

[A – In principle, the approach described in paragraph 7.23 of CP7 should be followed. The above approach would be reasonable for the purpose of QIS.]

9. The interest rate term structures used for this QIS are based on swap rates that in many cases are higher than (risk free) government bond rates. (In Norway, the 10 year QIS interest rate is 44 basis points above the 10 year government bond rate, and significant differences are observed in other countries as well). This makes it difficult to argue that risk free rates are used.

[A - CFA7 makes clear that a risk-free rate is what is required, so adjustments to swap rates, (preferably conducted in a uniform way across the market concerned), would be required to meet the CFA7 specification.

However, for the purposes of QIS1 it is accepted that the swap curve may be used without the adjustment for credit risk foreseen in CFA7.]

10. Clarification is needed on how to accurately calculate "effect of adjusting the income from reinsurance for the probability and severity of the reinsurer's default" (on spreadsheet of life insurance provisions). Is it a percentage of or a difference from the best estimate/75th percentile/90th percentile net of reinsurance or other

[A - For the purpose of the optional calculation in paragraph 46 of the specification, it is envisaged that the projected cashflows would be adjusted for the estimated probability of default of reinsurers and the estimated loss given default. The difference between the net of reinsurance provisions assessed on these assumptions, and the net of reinsurance provisions

included in the spreadsheet, would then be recorded at Items 3 and 4 of the template for non-life optional questions, or Item 11 of the template for life insurance provisions.]

## **Life insurance**

### ***Modelling approaches***

11. The Irish industry considers it appropriate that the scale of required modelling should be appropriate to the level of risk and that there should be recognition of the fact that a reduced risk profile should allow a company to adopt less complex techniques. The risk profile of life companies varies greatly, from companies writing substantial volumes of guaranteed traditional business such as with-profits and annuities to companies writing only pure unit-linked business with minimal death benefits. Is it intended that substantially different levels of modelling will be applied for these different types of companies?

[A - Yes, the sophistication of the models should reflect the complexity of the business and the materiality of the relevant risk factors, along with the reliability of the results]

12. Is it permissible to carry out the simulations using a small sample of test policies, rather than on a policy-by-policy approach (which might help identify potential problems and inconsistencies, before firms invested resources in the full exercise)?

[A - Yes, provided that the firm reasonably believes these test policies are representative of their portfolio, so that the results are unlikely to be materially different]

13. Is stochastic analysis of long-term savings products always necessary?

[A - See general guidance.]

14. Several methods to address stochasticity exist: using moments, year-by-year simulations, model points etc. if a stochastic approach is adopted, then which of these methods should be applied?

[A - Firms may choose whichever method is likely to provide reasonable answers that are in line with the general specification.]

### ***Financial risks***

15. Why is there no risk factor for economic risk? Is this because it is implied that there are assets held to match liability cashflows, and that any mismatch risk (i.e. where actual assets held are different to those that would hedge the liability) will be captured in the SCR calculation ?

[A - See Q3.]

16. Are the companies supposed to include interest rate risk in calculation of the risk margins? If so, are they supposed to establish distributions of interest rates for the calculations, and how should these distributions of interest rates then be included in the calculations?

[A - See Q3.]

17. In calculating the (market consistent) value of guarantees and options, how should firms select distributions for the relevant variables, and how should they allow for correlations between the different variables?

[A - See general guidance.]

18. How should firms calibrate the implied volatility in their simulation models when valuing options? Should they allow for the potential movement in this parameter that would occur if they were to attempt to buy options in the market to cover the embedded options in their liabilities?

[A - See general guidance.]

19. Does paragraph 51 imply that a best estimate allows for a market consistent value of guarantees and options?

[A - See general guidance.]

20. For a lot of financial guarantees and options, assumptions on mortality, lapses, take up rates etc have to be made. Will these be the best estimate for BE, and have margins put in for 75th and 90th? Clarification is needed in this regard.

[A - See general guidance.]

21. Are stochastic approaches required where guarantees and options are not material?

[A - No, but some assessment will still be needed of the likely materiality.]

### ***Segmentation of portfolio***

22. A segmentation of the portfolio into life annuities, disability coverages etc is not consistent with the Danish market values principles. Here, the policy is the basic entity, and the maximisation performed (ie greater of value of policy as ongoing policy, paid-up policy or value of policyholder account) implies that the coverages are mixed. How should we split out the coverages for these policies?

[A – Contracts should be considered undividable and should be classified in their entirety into a risk group that best fits the overall risk profile of the contract.]

23. For Life business, it is suggested in the specification that the business is segmented by homogenous risk type. It is unclear how products exposed to multiple risk types should be treated.

- It is not clear whether multiple entries are required in the template for a single product exposed to more than one risk type (or whether this is feasible).

- One suggestion may be to segment the life business by major product and risk type (recognising that all products would not be exposed to all risk types).
- In such a case consideration is required as to how the different risk margins would be aggregated for a particular product and across products.

[A - Life business should be segmented by major product and risk type so that only one entry is required in the template. Appropriate diversification of risk factors can then be considered for the individual products. In addition, the aggregate net value of provisions, after allowance for diversification across products, may be shown as supplementary information in the spreadsheet. In that case, firms should explain the method applied to take account of the diversification effect across risk groups.]

24. Can a company allow for diversification benefits within each segment when doing 75% and 90% percentiles ?

[A - Yes, but the magnitude of the diversification benefit assumed should be indicated and justified.]

### ***Confidence level***

25. The expression confidence level (paragraph 12) should be clarified. If a confidence interval is meant then you would need to explicitly parameterise an analytic distribution. However many stochastic claims methodologies do not do this – they simulate outcomes and build up an empirical distribution from which percentiles can be chosen.

[A - A simulated distribution can be used as a proxy of the true underlying probability distribution when justified appropriately.]

### ***Profit sharing and management actions***

26. The information requested for the life business with special consideration required for financial options and guarantees, profit sharing, future bonuses and intended management actions. These may lead to a number of practical problems: e.g.
- In many jurisdictions, companies may not be formally committed to specific management actions.
  - For many companies, it may not be practical to adjust existing models in the specified timeframe.

In such a case, what approach should companies follow?

[A - When considering what management actions could and would be taken into account by firms, firms should take account of the factors set out in paragraphs 23-26 of the specification. As the rules and practices on profit sharing are country specific, CEIOPS cannot provide further advice on this at present, but firms may seek advice from their country supervisors on what approach to follow here. However, a prudently chosen approach where the potential benefits of management actions are not fully recognised is allowable]

27. In a market consistent framework the return on assets held does not impact the reserves (unless for profit sharing products). We suggest clarifying paragraph 23 by referring to products where returns on assets do impact the obligation

[A - See general guidance.]

28. It is not clear what is the difference between the item "Reserves for bonuses" and "provisions for bonuses", at respectively items 6 and 7 in life insurance optional questions , sheet 6 of the spreadsheet?

[A - These items are intended to refer to any existing provisions or reserves for bonuses that exist on the current balance sheet. These items will therefore reflect current accounting practices in this respect each country.]

29. In Italy the main traditional (not index or unit linked) life insurance product is the so-called "revaluable policy", a with profit contract. The revaluable policy provides for an annual increase of the insured capital or annuity through the acknowledgement of part of the financial profits realised by specific internal funds (Segregate Funds), in which the premiums paid are invested. The revaluation is calculated according to a formula - defined under contract terms - based on the rate of return of the segregate fund. This rate of return is not market based. There is always a guaranteed return.

How should undertakings calculate the cash-flow projections as of the financial hypothesis for such policy (before discounting the cash-flows following the term structure approach or the duration approach)? Possible answers: employing minimum guaranteed interest rate, risk-free interest rate, best estimate approach....

[A - Assumptions for modelling future bonuses cash flows should be consistent with the usage of risk-free rates.]

### ***Demographic risk factors***

30. Are assumptions on Volatility of mortality, etc. only needed for 75% and 90% risk margins, not for best estimate runs ?

[A - Yes, volatility is only likely to be material for the percentile calculations]

31. In many cases companies have not developed stochastic techniques for the calculation of risk margins for risk factors such as expenses, mortality and lapses. As a result, can deterministic stress tests be used as a practical alternative, and can you provide any guidance on how these might be calibrated?

[A - See general guidance.]

32. Calculation of the requested percentiles would mean that completely new models and methods should be developed. In addition, there are to our knowledge still no established

stochastic models for the development of the future mortality, disability, longevity etc. Various approaches exist, e.g. the Lee-Carter method and affine processes. How should firms proceed on this?

[A - See general guidance.]

33. Paragraph 16 suggests a list of risk factors that should be identified. With the Danish system, we doubt that the effects of changes in these factors would be linear. Furthermore we believe that the effects would be highly sensitive to changes in the forward rates. How should firms approach this?

[A - See general guidance.]

34. We are currently not able to present the type of stochastic model for the future mortality described in paragraph 17. Moreover we would not be able to implement a stochastic model for the insurance risk factors in the calculation of market values.

A model for the development of the mortality could possibly be introduced at an aggregate level in order to give some idea of the distribution of the life insurance liability. However, this should be considered as an ad-hoc approach, and the non-linearity of the effects really imply that this approach is somewhat doubtful.

The long-term solution seems to be to build simulation models, which would involve the following elements:

1. Systematic risk: A model, which can generate mortality scenarios, i.e. scenarios for the development of the future underlying mortality and disability. This gives the underlying mortality and disability intensity.
2. Unsystematic risk: Simulate each policy in the portfolio, given the simulated mortality and disability intensities. (This part may be omitted and replaced by deterministic calculations).
3. Discount the payments on policyholder-level using a forward rate curve in each mortality scenario.

We estimate that it would take a couple of years to develop and implement a satisfactory liability model that could meet these demands (disregarding the second part with the unsystematic risk).

Since the deadline for the suggested calculations is relatively short, we suggest calculating the market values under various fixed mortality scenarios. Would this be acceptable?

[A - The long term solution sketched in the question seems to indicate the likely timelines for such a calculation. It is therefore requested that insurer do the calculations on a best effort basis for QIS.]



35. Projected cash flows for the insurance business is completed using deterministic assumptions about future ‘expected’ experience. Therefore the first hurdle faced in attempting to produce “expected present values of liabilities” is finding a statistical basis for the assumptions. The Irish industry does not have this, nor are they likely to have such a basis in the near future. Hence in attempting to provide the valuations, best estimate, 75<sup>th</sup> and 90<sup>th</sup> percentile, the best that can be done is to set out assumptions and say why they were chosen. For the percentile valuations, they can only provide figures if some simple loadings are added to the ‘best estimate’ assumptions to approximate to what the percentiles might imply. This will only make sense in a wider forum if everyone applies the same approaches to determining the assumptions. That means each participant having to use either the same simple loadings for percentiles, or some simple approach to devising an appropriate loading. Could we please have guidance on this?

[A - See general guidance.]

36. Assumptions on the volatility of mortality, longevity and morbidity are required from all companies even though some companies might have very limited exposure to these risks and also very little experience. This sort of information should only be required from companies with reasonable/substantial exposures to these risks. The document also mentions that each element of the basis should be sampled from a distribution believed to be reasonable and realistic. The difficulty in estimating a distribution for every element of the basis should be recognised and only required for assumptions, which are significant to the particular company. Can firms apply such simplifications?

[A - See general guidance.]

37. Does paragraph 15 imply allowance can or should be made for improvement in mortality for mortality life risks? This is currently the situation for annuitant mortality risks

[A - Yes, allowance should be made to the extent practical. For example, a foreseeable trend in life expectancy should be taken into account.]

38. It is not clear why the phrase 'to the extent practicable' has been included in paragraphs 15 and 18?

[A - It is intended that the approach described in paragraphs 15 and 18 should be followed by all firms. However, it is acknowledged that there and indeed elsewhere, some simplifications and approximations may be needed where it is not practicable to follow all of the specification. Firms are requested though to state the simplifications and approximations that they have made. This gives CEIOPS valuable input which can be used to allow for simplifications in the final system. ]

### ***Profit sharing and future bonuses***

39. There are several approaches in practice when it comes to sharing of future profits. If the generation of future profits is not recognised in the valuation of technical provisions, then can you confirm that the future use of these profits should not be recognised either?

[A - The modelling of future investment profits should be consistent with the assumptions on the risk free interest rate.]

40. Paragraph 24 implies best estimate technical provisions include a provision for Terminal bonuses. If this is the case, then can you confirm that the discretion to reduce Terminal bonuses (and reversionary bonuses) should be brought into account when assessing the risk margins for the calculation of the 75<sup>th</sup> and 90<sup>th</sup> percentiles?

[A - Yes, the cash flow projections should reflect the likely bonuses that would be made in each of those scenarios]

41. Should the assumed level of future bonuses be consistent with the discount rate assumed in calculating technical provisions.

[A - For modelling the cash flows relating to future bonuses, participants should assume that their investments return is consistent with the risk free-rate]

42. According to IAS the written premium should be accounted net of discounts. What position will have technical provision for bonuses and discounts in technical provision adequacy test?

[A - See general guidance.]

### ***Policy-by-policy approach***

43. The proposed methodology includes a request to use policy-by-policy data. However, can the value of policyholder options and guarantees be assessed through the use of model points?

[A - Yes, provided that the firm reasonably believes these model points are representative of their portfolio, so that the results are unlikely to be materially different]

44. Can firms project cash flows using aggregated data when the use of policy-level data is not feasible?

[A - Yes, but they should endeavour to satisfy themselves that there is unlikely to be any material loss of accuracy]

### ***Unit-linked policies***

45. For linked policies, charges should be based on current levels for the best estimate calculation. For 75% and 90% risk margins, can allowance be made for management actions if these are in line with policyholder reasonable expectations and treating customers fairly to increase charges to reduce impact of higher risk experience (i.e. increase critical illness charges) or higher expenses (increase management charge)?

[A - Yes, the criteria in paragraph 23 of the specification should be applied in both the best estimate and the percentile calculations. Consideration should also be given to any expectations that charges might be reduced]

46. Does paragraph 28 imply using a risk free rate of return for future growth? Is risk free rate equal to the yield curve provided?

[A - Participants should assume that future growth is consistent with the risk-free rate of return]

47. It should be recognised that the best estimate approach will result in the technical provisions for some linked contracts being less than the unit liability, as you would effectively be subtracting the future margins on the policies from the unit liability. There was some confusion over this point and some clarity would be appreciated as to whether this is the correct interpretation.

[A - Yes, this is possible where the expected future charges exceed the likely future expense costs]

48. In relation to unit-linked products, e.g. for a Single Premium contract (SP) it could be argued that best estimate reserve is the unit reserve - VIF (Value of In Force). (If this is the case, are unit reserves shown in line 2d and VIF in line 2b? ) Could an example of what is required be given?

[A - Where there are no option-like characteristics within the policies, the best estimate reserve should be made by an assessment of a best estimate of the present value of the likely cashflows discounted at the risk-neutral rate of interest. The unit liability should be shown in line 2d and the non-unit liabilities apportioned, where feasible between lines 2a – 2c.]

49. What allowance should be made for credit risk on corporate bonds? This would be relevant to valuing unit-linked policies and to with-profit bonuses.

[A - The projected rate of return on the fund should be determined as indicated above. No allowance needs to be made for potential defaults on assets in the cashflow projections for the liabilities ]

### ***Expenses***

50. Guidance is required on you allow for uncertainty over the assumed distributions? In particular, how do you come up with an expense distribution, and a distribution for inflation?

[A - See general guidance.]

51. Could you please confirm whether the business should be valued as an ongoing concern (apart from companies which are in run off).

[A - Yes, for consistency with normal accounting conventions, the business should be considered as a going concern. ]

52. An issue for paragraphs 36-37 is that normally technical provisions are calculated on the basis of a per policy expense assumption, but this effectively assumes that as a policy goes off it is replaced by another. Should firms be considering what would be the runoff

of total expenses with management actively reducing them in line with policies (costs of Voluntary Severance, fixed costs etc), or will this form part of the capital assessment?

[A - Expenses of administering existing policies should be taken into account on a going concern basis. ]

53. The comment in paragraph 36 “Any shortfall would need to be recognised as an additional liability” created some confusion. Does this mean that expenses are treated differently to other elements in the basis?

[A - Expenses and any associated charges should all be included in the cash flow projections]

54. Paragraph 37 should also clarify whether any outstanding initial commission should be allowed for. Guidance should be provided on how to split total admin costs into acquisition and new business, and what will happen to acquisition costs if closed to new business?

[A - All future expenses related to the existing business should be included in the cash flow projections.]

55. Should any allowance be made for overhead expenses? Should any allowance be made for close-down costs?

[A - Ongoing overhead expenses should be included.]

56. What assumptions should be made about the costs of any staff pension scheme?

[A - The cash flow projections should take account of the likely payments in respect of pension costs for employees, any management actions that may be applied, and the relevant accounting provision already held for these payments on the firm's balance sheet. For the 75<sup>th</sup> and 90<sup>th</sup> percentile calculations, the effect of changes in longevity of retired employees on these cashflows should also be considered.]

57. The document does not specify whether expenses should be considered on an open or closed fund basis. It does say that expenses should be considered in relation to future plans, but that this should not include economies of scale where these have not yet been realised. Greater detail on this point would be appreciated.

[A - An open fund basis is intended. We confirm that economies of scale should not be included where these have not yet been realised.]

58. Could we have some guidance on how to calculate both the best estimate and percentiles for future CPI (Consumer Price Index) inflation and what extra to assume for salary (or other types of) inflation.

[A - See general guidance.]

59. Paragraph 40 deals with inflation, which is not a part of the Danish regulations. Here, guaranteed payments are determined as if the future premiums are fixed at today's level.

Implementing index- or inflation-linked premiums could be relevant, but would be a considerable task for most Danish companies. Is this required?

[A - See general guidance.]

### ***Taxation***

60. Regarding taxation, what assumptions should be made about any deferred tax assets or liabilities (including for unrealised capital gains)? Should firms allow for the tax that would be payable when any 'risk margins' contained in the percentiles fall into taxable profits? Can they use similar assumptions as for their EV calculations?

[A - Firms should consider the effect of current taxation rules when assessing the projected cashflows in respect of insurance policies.

However, they need not allow for the tax that would be payable when any 'risk margins' contained in the percentiles may fall into taxable profits.

They also do not need to allow for the possibility of changes in the present tax rules, other than any changes that have already been announced by the tax authorities]

### ***Persistency and surrenders***

61. Are allowances made for lapses/paid up policies? (per 16 and 18 answer is YES). If a company has not got a probability distribution, but has an experience investigation for an assumption, is it reasonable to base best estimate on experience investigation e.g. average of last 3 years experience?

[A - See general guidance.]

62. The definition of lapse risk needs to be clarified, does it include surrender values etc.?

[A - Yes]

63. What is the definition of surrender risk? Most companies split the risk that a company estimated the mean level of surrenders wrong versus the disintermediation risk. This latter risk is the risk of excess surrenders when it is to the financial incentive to the country unit.

[A - See general guidance.]

64. Should volatility of lapse rates be a factor to consider in paragraph 18?

[A - Yes, the effect of volatility in lapse rates should be included in the percentile calculations.]

65. Greater detail on how to determine the relevant take-up rates for options would be appreciated.

[A - See general guidance.]

66. How should firms calibrate a model for the behaviour of policyholders in different economic and non-economic conditions?

[A - Firms should, where practicable, allow for the likely surrender rates, or take-up rates for options, in different economic and non-economic conditions, based on relevant experience and sensible assumptions about likely future experience, including possible changes in policyholder behaviour in those different conditions.]

67. Are companies allowed a negative technical provision on the best estimate calculation for non-linked policies?

[A - Yes, this could arise where the value of cash inflows exceeds the value of cash outflows. Where relevant, firms should include the total of such negative technical provisions within the figure at item 9 of the spreadsheet for each risk group.]

68. Should future premiums of regular-premium contracts be taken into account?

[A - Yes, where such premiums must be payable under the terms of the contract, then the premiums and the associated policyholder benefits should all be taken into account]

69. The approach to be used in paragraph 20 must be clarified. In particular, it is not clear whether this relates to an additional calculation, or whether participants should always value the policy as if the policyholder were sure (or more likely) to surrender the contract when this is unfavourable to the insurer?

[A - It is intended that the calculation in paragraph 20 should be an additional calculation, the result of which is reported at Item 9 of the spreadsheet for each life segment]

70. Paragraph 20 appears to be contrary to the approach proposed in paragraph 18, which says there should be an assumption made on future lapses. It suggests you do the reserves per cash reserve where you look at every duration assuming no lapses up to that duration and that the policy then lapses, and take the highest reserve. This is effectively a 100% percentile on lapses! ? It almost suggests you produce 2 reserve numbers, one on allowing for lapses per paragraph 18 and one allowing for cash reserve approach? Is this correct?

[A - Yes]

71. Firms would like clarification of paragraph 20, and in particular on how to compare best estimate values of policies (including a market consistent value of guarantees) with surrender values on a policy-by-policy approach

[A - An appropriate method should be applied to apportion any additional value of options and guarantees derived from a stochastic model, across the relevant policies. If this value of options and guarantees is not material, then an approximate method would suffice for this purpose.]

72. Calculation of the Present Value of guaranteed Surrender Value is difficult, and depends on a number of factors which should be specified in the QIS, for example; interest rate,

unit-linked liabilities, lapse rate, allowance for future charges and expenses etc. An example of what is required should be given separately for a non-linked and a linked contract.

[A - See general guidance.]

73. Paragraph 21 of QIS specification: We believe the term “the highest present value of the surrender values of the contract” is somewhat confusing and suggest further guidance is necessary as to what is required.

[A - This is intended to mean that the surrender value available at each duration should be discounted to the present time at the relevant risk-neutral rate, and that the highest of these discounted values should then be selected.]

74. For the purpose of the calculation in paragraph 21, some insurance contracts will require 1000 or more scenarios to value. Which scenario are we to choose to perform this operation? How is this any value without consistency?

[A - Some appropriate approximation should be made where there are multiple surrender value options, such as looking principally at the surrender values available on those dates when the surrender payment is guaranteed]

75. Clarification of paragraph 21 is required, in particular for a unit-linked policy.

[A - As above]

76. Clarification is needed on what "the contribution of the surrender risk" in the 75th/90th percentile means in paragraph 22.

[A - A calculation should be made of the provision based on best estimate assumptions apart from the surrender value rates which would be as assumed for the 75<sup>th</sup>/90<sup>th</sup> percentiles. The difference between this provision and the best estimate provision is the figure requested for paragraph 22 of the specification]

77. To the knowledge of one supervisor, there are currently no really convincing models available for determining the values of surrender options for participating life insurance contracts in a reasonable way. They are currently not aware of suitable theoretical models, and would expect that implementation of such models on policyholder level would be a very big task.

In order to perform a proper valuation of the impact of surrender values and profit sharing, it seems necessary to perform the simulation described above within different simulated financial scenarios. Thus, a full simulation model including assets and liabilities on policyholder level is really needed. *This is in our opinion a very ambitious goal. Could firms as an alternative perform this type of valuation within a model with only one, fixed mortality scenario?*

[A - See general guidance.]

## **Non-Life**

78. The request for calculations for non-life companies using at least two statistical methods (Paragraph 32 of specification) seems onerous at this stage. In addition, it is not clear how the results of the two statistical methods should be entered in the spreadsheet (better, worse or average of the two results)?

[A - The preferred approach applies at least two statistical methods in order to ensure that the participant assesses the appropriateness of the methods and chooses the most appropriate value. This value may be the result of the method considered more reliable, or (where both methods have some credibility) between the results of the two methods, and should be entered in the spreadsheets. However, for this QIS one statistical method (most likely) is allowed]

79. What is meant by “The estimate should be based on policy-by-policy data” in the context on non-life expected future cash flows (also paragraph 32 suggests a run-off triangle methodology).

[A - The quoted sentence should only refer to life insurance.]

80. It is not practicable to carry out a policy-by-policy assessment for provisions, particularly in respect of IBNR claims, and in respect of asbestos claims. Can some aggregate statistical method be applied in those cases?

[A - It is not necessary to carry out a policy-by-policy assessment in non-life insurance. Regularly, aggregate statistical methods will be appropriate.]

81. How would one determine exactly which methods were compatible with “current actuarial best practice”?

[A - Firms should decide the approach that is most appropriate and disclose their methodology in their response, together with their reasoning for the approach adopted.]

82. In an economic approach, we would expect that any margin within the provision for unearned premiums would be recognized. Could you clarify whether this is intended?

[A - CP7 does not require this. Firms may disclose such margins if they find it appropriate.]

83. The preference concerning best estimate estimation between mean and 50<sup>th</sup> percentile should be made clear, but if companies systems are designed to do either one or the other, it should be acceptable to do so.

[A - It is intended that the best estimate refers to the mean (expected value) of the distribution of projected cashflows. If the calculation of the best estimate (i.e. the mean) is problematic, firms may use the 50<sup>th</sup> percentile instead, provided it is disclosed.]

84. There are several popular methods (e.g. Mack’s method) which estimate a mean and a standard error, but not any percentiles. In order to back out percentiles an analytic form of the loss distribution would need to be assumed. This could cause some people difficulties.



[A - Firms should decide the approach that is best suited to their circumstances and disclose their methodology in their response, together with their reasoning for the approach adopted.]

85. It would be helpful to clarify what assumptions are to be made about future claims inflation (e.g. medical inflation, super imposed)

[A Claims inflation should be based on actuarial assumptions that are deemed to be realistic for the book of business in question and on a best effort basis. Future inflation could be viewed as a statistical variable for the purpose of estimating means and percentiles, but firms should decide the approach that is best suited to their circumstances and disclose their methodology in their response, together with their reasoning for the approach adopted.]

86. Estimates net of reinsurance are complicated, especially when non proportional covers are involved. Additional guidance would be useful

[A - We appreciate it can be difficult to accurately model the effect of reinsurance. Where there is difficulty or the approach adopted may give rise to material error, the firm should include a suitable explanation in their response.]

87. Should the annuities arising from personal injury claims be handled as a life-insurance contract?

[A - Yes]

88. The section on expenses appears to be written from the perspective of a life insurer. How should this be applied for a non-life insurer? Can investment expenses be allowed for by making a deduction from the discount rate?

[A - The relevant expenses that would be incurred by the firm as a going concern should be included in the cash flow projection. However, alternate approximate approaches, including implicit approaches, may be used, if considered appropriate. Where an implicit approach is used, it is not necessary to recognise the expected expenses explicitly in the cash flow projections. Firms should disclose their methodology in their response, together with their reasoning for the approach adopted.]

89. Guidance is needed on how loss adjustment expenses should be taken into account

[A - These should be included within the cashflow projections on a best efforts basis]

90. Are companies expected to explicitly produce a distribution for future unallocated claims handling expenses? Currently this is calculated as a deterministic amount.

[A -On a best effort basis, participants should try to take a possible stochastic nature of these expenses into account if it is considered material.]