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Project	Insurance Contracts	
Topic	Risk Adjustment : techniques and inputs	

Purpose of this paper and summary of recommendations

1. The IASB's Exposure Draft *Insurance Contracts* (ED) includes the following three 'pillars' to ensure that a risk adjustment approach results in relevant and comparable information:
 - (a) the limitation of the techniques that an insurer may use to quantify the risk adjustment;
 - (b) a statement of the objective for the risk adjustment; and
 - (c) the requirement to disclose the equivalent confidence level for a risk adjustment determined under the conditional tail expectation (CTE) or the cost of capital (CoC) techniques.
2. We discuss the objective for the risk adjustment together with the requirement to disclose the confidence level equivalent in agenda paper 3B/73B *Risk adjustment: objective and confidence level disclosure*. This paper discusses whether the boards should restrict the range of available techniques for determining the risk adjustment.
3. We recommend that the Board:
 - (a) in line with the application of valuation techniques for Level 3 measurements in IFRS 13 *Fair Value Measurement*, does not limit the range of available techniques and the related inputs to estimate the risk adjustment. Instead, the Board should resolve comparability issues that would arise as a result of the inherent subjectivity in the estimate of the

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risk adjustment by requiring an insurer to apply a technique that meets the objective of the risk adjustment (and provide specific disclosures as further discussed in agenda paper 3B/73B); and

- (b) retain, in the application guidance:
 - (i) the ED's list of characteristics (described in paragraph B72 of the ED) that a risk adjustment technique should exhibit if that technique meets the objective of the risk adjustment; and
 - (ii) as examples the three techniques proposed in the ED (confidence levels, conditional tail expectation and cost of capital), together with the related application guidance.

Background

ED proposals

- 4. Paragraph B73 of the ED permits only a **closed set** of techniques to calculate the risk adjustment (emphasis added):

An insurer shall use *only* the following techniques for estimating risk adjustments:

- (a) **confidence level (paragraphs B75–B79).**
 - (b) **conditional tail expectation (paragraphs B80–B83).**
 - (c) **cost of capital (paragraphs B84–B90).**
- 5. Paragraph B72 also lists the characteristics that a risk adjustment technique shall have to meet the objective of the risk adjustment:

[...] the risk adjustment shall, to the extent practicable, have the following characteristics:

- (a) **risks with low frequency and high severity will result in higher risk adjustments than risks with high frequency and low severity.**
- (b) **for similar risks, contracts with a longer duration will result in higher risk adjustments than those of a shorter duration.**
- (c) **risks with a wide probability distribution will result in higher risk adjustments than those risks with a narrower distribution.**
- (d) **the less that is known about the current estimate and its trend, the higher the risk adjustment shall be.**
- (e) **to the extent that emerging experience reduces uncertainty, risk adjustments will decrease and vice versa.**

6. The reasons for restricting the techniques to be used were described in paragraphs BC116 and BC 117, which state that (emphasis added):

BC116 [...] The Board selected three techniques that it believes are *reasonably widely understood, applied in practice to some extent, and capable of providing relevant information consistent with the proposed objective* for the risk adjustment. [...]

BC117 [...] the Board concluded that *permitting a wide range of techniques to determine the risk adjustment could lead to diversity in practice, which might reduce the relevance of the resulting measurement and make it difficult for users to compare risk adjustments made by different insurers.*

Overview of comments on the proposals

7. Question 5(a) of the ED asked respondents the following:

Paragraph B73 limits the choice of techniques for estimating risk adjustments to confidence level, conditional tail expectation (CTE) and cost of capital techniques. Do you agree that these three techniques should be allowed, and no others? Why or why not? If not, what do you suggest and why?

8. Question 9 of the DP asked respondents the following:

Is the objective of the risk adjustment margin understandable? If so, do you think that the techniques for estimating the risk adjustment margin (see paragraph 52(b)) faithfully represent the maximum amount that the insurer would rationally pay to be relieved of the risk that the ultimate fulfilment cash flows exceed those expected?

9. In general, respondents, including some of those that oppose the explicit measurement of a risk adjustment, acknowledged that the three proposed techniques are currently used by insurers in many jurisdictions for internal and external purposes, are capable of providing information on risks inherent in insurance contracts and are consistent with the measurement model (as they build on cash flow distributions).
10. Some of those that rejected a risk adjustment plus residual margin approach stated that:
- (a) each of the proposed techniques involves elements of subjectivity that may impair comparability;

- (b) subsequent transactions or other events cannot confirm the calculation of the risk adjustment (*ie back testing* is not possible); and
 - (c) qualitative and quantitative disclosure in the notes, including actual to expected results and sensitivity calculations, can provide the same information as the risk adjustment.
11. Many respondents commented that limiting the range of available techniques to the proposed three is inappropriate because:
- (a) It would preclude the use of new risk measures that may more faithfully represent an entity's risk position. On this point, one commentator said:
Actuarial science is continually evolving and we do not believe that it is appropriate to limit actuarial approaches as this could hinder the development and improvement of actuarial models.
 - (b) It would be inconsistent with a principles-based approach. One respondent stated:
We do not believe it is the role of accounting standards to prescribe actuarial valuation models, rather accounting standards should focus on the objective and principles of recognition and measurement.
 - (c) It would reflect a mistaken belief that it is possible to compare directly the risk adjustments calculated using the proposed techniques. With respect to this, one respondent commented:
[...] It is possible that insurers will use different parameters and detailed methodologies even within the three techniques permitted in the ED and even for largely similar business.
12. Some suggest that the boards should indicate that, although the three proposed techniques are acceptable, insurers may use other techniques that better meet the objective of the risk adjustment and result in a more relevant measure of the risk adjustment. These respondents suggest that the boards could either (a) set a rebuttable presumption that the proposed techniques are appropriate to measure the risk adjustment; or (b) describe the proposed techniques as examples of those that achieve the proposed objective. One commentator said:

[...] the standard could state that one of the three models will generally provide an appropriate valuation model but that the insurer should chose a model appropriate to the business written.

13. Many respondents indicated that instead of trying to achieve comparability by limiting the techniques, this objective could be accomplished by requiring a complete set of disclosures regarding the risk adjustment. Particularly, one commentator said:

[...] as long as the preparer is required to clearly disclose the method it uses and justify its adequacy in the context of its business model the user's concerns about consistency and comparability will be allayed.

14. A few respondents – including some users of financial statements - agreed with the boards' conclusions that limiting the range of techniques to determine the risk adjustment would reduce diversity in practice and help achieve a higher degree of comparability. Some of those went further and proposed that the boards specify a single technique.

15. However, most respondents believed that insurers and actuaries would converge on a set of most appropriate techniques to calculate risk adjustments consistently with the objective. Accordingly, they believed that uniformity in practice and comparability would increase as time passes. In addition, one respondent stated:

The financial reporting standard should provide general principles that the risk adjustment should meet, and the actuarial profession could then develop more specific guidance on how to determine the risk adjustment.

16. Some found that the linkage between the objective and the permitted techniques was not clear and stated that if the objective were better defined¹ there would be no need to limit the range of available techniques to determine the risk adjustment. Some respondents also stressed the importance of ensuring that the techniques to determine risk adjustments satisfy the characteristics identified in paragraph B72 of the ED (see paragraph 5) and that entities apply them consistently over time.

¹ At the joint board meeting of the week commencing on 22 March, the boards tentatively decided to amend the objective of the risk adjustment in response to the feedback received. Agenda paper 3B / 73B *Risk adjustment: objective and confidence level disclosure* discusses a further refinement to that objective.

17. Respondents' preferences for the individual techniques seemed to be broadly driven by existing local practice, such as for regulatory requirements. In many cases, such regulatory requirements also prescribe some of the inputs used to determine the risk adjustment. Some suggested that, similarly to those regulatory frameworks, the boards provide specific guidance on the inputs for each technique by indicating, for example under a cost of capital model, the specific percentile for the application of a confidence level approach or the capital charge and the required capital. One respondent also suggested that:

Since the characteristics of the insurance market are different for each country, the risk adjustment model developed by regulators through consideration of the market's characteristics for each country may be more appropriate.

18. Finally some commentators believed that small insurers and insurers based in emerging markets might find it difficult to use the proposed techniques in the ED.

Feedback received from field test participants

19. Most participants in the field test calculated risk adjustments using their existing internal models for either pricing, regulatory reporting or economic value reporting purposes.
20. In general, those who currently report risk adjustments (or are in the process of setting up their systems to report risk adjustments to prudential regulators in the near future) found no practical issues in determining them. However, some others questioned how meaningful the information given by the risk margin would be.
21. One insurer hired an external consultancy to perform the field testing and tested the risk adjustment calculations under the three proposed methods (confidence level (also known as value at risk or 'VaR'), conditional tail expectation (also referred to as tail value at risk or 'T-VaR') and cost of capital ('CoC')). This participant commented that:
 - (a) Confidence levels for VaR and T-VaR were set so to make these techniques comparable with the risk adjustment derived under the CoC method.

- (b) The participant did not believe that all insurers would set VaR and T-VaR at the same confidence level as it did and this could impair comparability.
- (c) The reason for these differences across entities is attributable to the fact that different entities have different cash flow distributions and thus different variability.
- (d) The use of the CoC in the testing led to increased volatility in P&L compared to the use of other techniques especially when this is combined with the use of a variable discount rate. This volatility was mainly attributed to the choice of a 99.5% confidence level which is farther in the tail of the distribution compared to the confidence level used for the other techniques.

Staff analysis and recommendations

Comparability of valuation techniques

- 22. A number of studies address the issue of measuring risk and uncertainty, and different *families* of techniques have been developed². Those studies show that, at present, no *single best* technique is widely accepted as the *golden rule* of all risk adjustment techniques, not only for insurance risks, but also – and probably more fundamentally – for financial risks (as most of these techniques have been developed as approaches to measure the risk inherent in financial instruments).
- 23. However, this is not to say – as some might believe – that risk does not exist or that it is not measured or accounted for in today’s financial markets. For example, financial market prices and risk premiums are based on models such as option pricing models. These are a basic tool of modern finance and they are under continuous revision by active researchers in order to make them represent more faithfully the reality they aim to depict.
- 24. In sum, although these considerations regarding the variety of available techniques would suggest that one selected technique should be mandated in order to ensure

² One possible categorization of techniques is offered in the International Actuarial Association’s paper prepared by the *ad hoc* Risk Margin Working Group in 2009: (a) quantile approaches; (b) techniques that determine risk based on risk measures; (c) techniques based on implicit assumptions and judgement; and (d) adjustments to account for risk in the discount rate.

that entities calculate risk adjustments with a degree of comparability, the fact that no optimal technique exists suggests that at least a *range of techniques* that are widely accepted and applied should instead be selected. This thought process led to the IASB concluding that the techniques used to determine the risk adjustment should be limited to three *families*.

25. However, as most respondents to the ED and DP noted, restricting the number of permitted techniques to three can be misleading and provide the impression that risk adjustments measured under the same technique can be *directly* compared. Instead, as Appendix B of the ED acknowledges in paragraph B92:

The selection of the most appropriate risk adjustment technique depends on the nature of an insurance contract. An insurer shall apply judgement in determining the most appropriate technique to use for each type of insurance contract.

26. Furthermore, *true* (rather than merely *direct*) comparability, as indicated in paragraph QC21 of the *Conceptual Framework for Financial Reporting*:

[...] is the qualitative characteristic that enables users to identify and understand similarities in, and differences among, items.

27. QC23 further states:

Comparability is not uniformity. For information to be comparable, like things must look alike and different things must look different. Comparability of financial information is not enhanced by making unlike things look alike any more than it is enhanced by making like things look different.

28. In other words, although it might seem counterintuitive, an approach that promotes comparability allows for the use of different techniques as they are more or less appropriate depending on the different circumstances they aim to represent. Such an approach would provide more comparability than one that restricts the range of techniques and makes unlike things look alike.
29. Also, limiting the range of available techniques would prevent smaller insurers or insurers based in emerging countries from applying a technique that is cost-efficient (or from re-using a technique needed anyway for regulatory purposes) and which, although it is not listed in the range of available techniques, meets the objective of the risk adjustment and is consistent with the characteristics listed in paragraph B72 of the ED.

Unobservable and entity-specific inputs

30. The objective of the risk adjustment, as tentatively agreed by the boards in March, builds on the notion that there is uncertainty about the cash flows arising from the fulfilment of an insurance contract, that a risk adjustment is a means to portray that uncertainty, and that the risk adjustment should capture the insurer's degree of risk aversion. This still holds true if the wording modifications proposed in agenda paper 3B/73B are considered.
31. This objective depicts the characteristics of a measure that inherently makes use of inputs (eg the characteristics of the distribution of fulfilment cash flows and the degree of risk aversion of the insurer) that are:
 - (a) unobservable – according to Appendix A of IFRS 13 these are ‘inputs for which market data are not available and that are developed using the best information available about the assumptions that market participants would use when pricing the asset or liability’; and
 - (b) entity-specific – because the model tries to capture risk based on the insurer's degree of risk aversion (as opposed to trying to estimate the market participant's degree of risk aversion, as is needed in fair value measurement – this is further discussed in agenda paper 3B/73B).
32. Within fair value measurement, we would refer to such unobservable inputs as *Level 3 inputs*. We note that for fair value measurement:
 - (a) valuation techniques are not mandated or limited;
 - (b) a market participant that uses unobservable inputs could arguably determine the risk adjustment using one of the same techniques that are available to an insurer to determine a risk adjustment to reflect the uncertainty that arises from insurance contracts; and
 - (c) it is stated in IFRS 13 (both in paragraph B16 (in general) and in B39 (for Level 3 measurements in particular)) that ‘the degree of difficulty [in determining risk margins] alone is not a sufficient reason [on which] to exclude a risk premium’.

33. In addition, it would be inconsistent with the entity-specific nature of the inputs to limit the techniques because entity-specific implies that the insurer should select the inputs based on the insurer's own degree of risk aversion.
34. Therefore, the staff do not think that the use of entity-specific and unobservable inputs prevent the risk adjustment from being sufficiently comparable for inclusion in the financial statements, nor that the range of available valuation techniques should be restricted.

Remove the limitation of techniques

35. Based on the previous paragraphs, some might argue that the unobservable and entity-specific nature of the inputs to the existing techniques for determining risk adjustments suggest that:
 - (a) in order to provide *readily* comparable results, the calculation of risk adjustments should be based on one single mandated technique fed with pre-selected inputs.
 - (b) any attempt to relax these limitations (either by allowing the use of a wider range of techniques or by not pre-determining the related inputs) results in information that is not *readily* comparable.
36. However, in the staff's view, even if a single technique with pre-selected inputs were mandated, full immediate comparability cannot be achieved by merely comparing the same risk adjustment line items for two different insurer's financial statements (which arguably is also the case for many, if not all, line items in the financial statements). As recalled in paragraph 27, comparability does not mean uniformity.
37. Staff believe that sufficient comparability can be achieved by: (a) setting an objective for the risk adjustment (which the boards have already tentatively agreed on); and (b) requiring appropriate disclosures (this is further discussed in agenda paper 3B/73B). Satisfying this objective would ensure that different measurement techniques depict the same economic phenomenon: the risk that arises as the insurer fulfils the contract. In this respect, this approach is consistent with the boards' conclusions in IFRS 13 (BC91):

the boards decided not to prescribe how an entity would adjust for the risk inherent in an asset or a liability, but to state that the objective is to ensure that the fair value measurement takes that risk into account.

38. Therefore, staff recommend to eliminate the limitation of the permitted techniques for quantifying the risk adjustment and that an insurer should apply a valuation that meets the objective of the risk adjustment.

Question 1 – Remove the limitation of techniques

- (a) Does the Board agree that it should not limit the range of available techniques to estimate the risk adjustment?
- (b) Instead, does the Board agree that an insurer should apply a technique that meets the objective of the risk adjustment and possess particular desirable characteristics? (Question 2 discusses what those characteristics should be.)

List of desirable characteristics

39. The ED proposed a list of desirable characteristics that a risk adjustment technique should satisfy in order to meet the notions that the Board intended to convey with the risk adjustment objective; namely that:
- (a) risks with low frequency and high severity will result in higher risk adjustments than risks with high frequency and low severity.
 - (b) for similar risks, contracts with a longer duration will result in higher risk adjustments than those of a shorter duration.
 - (c) risks with a wide probability distribution will result in higher risk adjustments than those risks with a narrower distribution.
 - (d) the less that is known about the current estimate and its trend, the higher the risk adjustment shall be.
 - (e) to the extent that emerging experience reduces uncertainty, risk adjustments will decrease and vice versa.
40. At their March meeting, the boards tentatively agreed that the objective of the risk adjustment is to depict “the compensation the insurer requires to bear the risk that the ultimate cash flows could exceed those expected.” That objective retained all the notions that the boards intended to convey in the objective proposed in the ED

(ie that the risk adjustment is intended to represent the risk in the insurance contract using a fulfilment notion rather than an exit notion and does not include a layer-of-prudence notion).

41. In the ED the Board considered the desirable characteristics to be consistent with the notions it intended to convey with the risk adjustment objective. Those characteristics were not widely commented on in the response to the ED. Although, in agenda paper 3B / 73B for this meeting, we propose amendments to the risk adjustment objective to align this objective to that in IFRS 13, we do not believe that the notions reflected in the revised objective have changed from those in the ED and therefore we think that the desirable characteristics listed in the ED would still be consistent with the revised risk adjustment objective.
42. Therefore staff recommend that the application guidance of a future standard on insurance contracts retain these characteristics. As discussed in the education session held in March, techniques that meet these characteristics are currently used in practice.

Question 2 – List of desirable characteristics

Does you agree to retain in the application guidance the ED's list of characteristics (described in paragraph B72 of the ED and set out in paragraph 39 of this paper) that a risk adjustment technique should exhibit if that technique meets the objective of the risk adjustment?

Examples of the techniques

43. Some respondents suggested that, although the limitation to three techniques should be removed, the description of those three techniques should be retained, either:
 - (a) as examples of techniques that meet the set of characteristics and the objective; or
 - (b) as the *default* techniques which are to be used, unless an entity has evidence that a different technique provides more relevant information and meets the risk adjustment objective and the set of desirable characteristics (ie that there would be a rebuttable presumption that the techniques listed in the ED would be provide the most relevant information).

44. Staff believe that introducing a rebuttable presumption that the three proposed techniques provide relevant information might result in substance in a limitation of the techniques. In fact, it might imply that an insurer should apply significant efforts if it wishes to demonstrate that another technique produces more relevant information than the three proposed techniques. This might prove to be a burdensome exercise, especially for those entities that would select a different technique based mainly on cost-benefit considerations.
45. Therefore staff does not recommend a rebuttable presumption that the three techniques proposed in the ED would provide the most relevant information. However, staff recommend that the boards retain the three techniques (Confidence levels, CTE and Cost of Capital) as examples of techniques, together with the related application guidance (see Appendix A).

Question 3 – Examples of the techniques

Does you agree to retain as examples the three techniques proposed in the ED (Confidence levels, CTE and Cost of Capital), together with the related application guidance?

Appendix A: Extract from Application Guidance from ED

- A1. This appendix reproduces the application guidance in the ED that relates to the three proposed techniques to determine risk adjustments.

Features of permitted risk adjustment techniques

Confidence level

- B75 The confidence level technique expresses the likelihood that the actual outcome will be within a specified interval. The confidence level technique is sometimes referred to as Value at Risk (VaR). The International Actuarial Association's paper *Measurement of Liabilities for Insurance Contracts: Current Estimates and Risk Margins* describes the use of confidence levels in estimating a risk adjustment as follows:
- [Risk adjustment techniques] based on confidence levels express uncertainty in terms of the extra amount that must be added to the expected value so that the probability that the actual outcome will be less than the amount of the liability (including the risk [adjustment]) over the selected time period equals the target level of confidence.
- B76 The use of confidence levels for estimating a risk adjustment has the benefits of being relatively easy to communicate to users and relatively easy to calculate. However, the usefulness of confidence level diminishes when the probability distribution is not statistically normal (which is often the case for insurance contracts). When the probability distribution is not normal (in which case, the probability distribution may be skewed and the mean may not equal the median), the selection of the confidence level must take into account additional factors, such as the skewness of the probability distribution. In addition, this technique ignores outliers (ie extreme losses in the tail of the distribution beyond the specified confidence level).
- B77 For example, suppose a confidence level of 95 per cent is used and the following estimates are made for two insurance contracts:
- (a) for contract A, the 95 per cent confidence level is at CU1,000 and the remaining 5 per cent of the distribution is evenly spread from CU1,001 to CU1,010.
 - (b) for contract B, the 95 per cent confidence level is at CU1,000 and the remaining 5 per cent of the distribution is evenly spread from CU1,001 to CU2,000.
- B78 At the 95 per cent confidence level, those two contracts would have the same risk adjustment. However, at, for example, the 97 per cent confidence level, contract A would be measured at CU1,004 and contract B at CU1,400.
- B79 Judgement is required to determine the confidence level (ie what percentage) to set for particular portfolios of insurance contracts in particular circumstances. In

setting the confidence level, an insurer needs to consider factors, such as the shape of the distribution, which may differ by portfolio. Because the distribution can change over time, the insurer may need to change the confidence level accordingly in future periods.

Conditional tail expectation

B80 A conditional tail expectation (CTE) (also referred to as a tail conditional expectation or a tail value at risk) technique is an enhancement of VaR. A CTE technique provides a better reflection of the potentially extreme losses than VaR by incorporating the expected value of those extreme losses into the measurement of the risk adjustment (although a confidence level technique may meet the objective of the risk adjustment if the distribution is not particularly skewed). The Society of Actuaries' paper *Analysis of Methods for Determining Margins for Uncertainty under a Principle-Based Framework for Life Insurance and Annuity Products* describes a CTE technique as follows:

The CTE technique is a modified percentile approach that combines the percentile and mean values of different cases. It basically calculates the mean of losses within a certain band (or tail) of pre-defined percentiles. With the CTE method, the margin is calculated as the probability weighted average of all scenarios in the chosen tail of the distribution less the mean estimate (which may or may not be the median, i.e. the 50th percentile).

B81 The CTE over, for example, the 75 per cent confidence level (referred to as CTE(75)) is the expected value of all outcomes that are in the highest 25 per cent of the claim distribution (ie in the tail). The risk adjustment in this case would be the expected value of claims at CTE(75) less the expected value (ie mean) of claims for the entire probability distribution.

B82 The focus of a CTE technique on the tail of the probability distribution reflects a fundamental aspect of an insurance contract—the fact that the tail is the riskiest part of the distribution. Tail risk is an important factor in contracts with skewed payments, such as insurance contracts that contain embedded options (eg the interest guarantees and other financial guarantees embedded in many life insurance products) or that cover low-frequency high-severity risks (such as an earthquake), or portfolios that contain significant concentrations of risk. For example, if a large portfolio of insurance contracts is subject to significant earthquake risk but the insurer estimates that the probability of an earthquake occurring is only 1 per cent, the measurement of the insurance contract should not ignore that risk. As part of the estimation of the amount an insurer would rationally pay to be relieved of the risk, significant consideration needs to be given to the tail of the loss distribution. Consequently, CTE techniques would meet the objective for a risk adjustment described in paragraph B68. However, a confidence interval technique may meet the objective if distributions are not particularly skewed.

B83 Judgement is required to determine the CTE band set for particular portfolios of insurance contracts in particular circumstances. In setting the CTE band, an insurer will consider the shape of the distribution. Because the distribution can change over time, the CTE band may need to change accordingly in future periods.

Cost of capital

- B84 Cost of capital techniques are applied for a number of purposes, for example pricing insurance contracts, valuations in business combinations, regulatory reporting, internal capital management and supplementary reporting. For general purpose financial reporting, a cost of capital technique can be used to estimate a risk adjustment that reflects the uncertainty about the amount and timing of the future cash flows that will arise as an insurer fulfils its existing insurance contracts.
- B85 In order to fulfil an insurance contract, an insurer needs to hold and maintain a sufficient amount of capital. If an insurer does not have sufficient capital, it might be unable to fulfil its obligations and the policyholders would be likely to surrender their insurance contracts.
- B86 An insurer applies a cost of capital technique as follows:
- (a) first, the insurer derives an estimated probability distribution for the cash flows.
 - (b) secondly, the insurer sets a confidence level from that distribution. That confidence level is intended to provide a high degree of certainty that the insurer will be able to fulfil its obligations under existing insurance contracts. The difference between the amount at that confidence level and the expected value (ie mean) of claims for the entire probability distribution indicates a capital amount that corresponds to the high degree of certainty that the insurer will be able to fulfil its obligations under the portfolio of existing insurance contracts, ignoring any risk factors not related to those contracts.
 - (c) lastly, the insurer estimates the risk adjustment by:
 - (i) applying a factor, in the form of an appropriate annual rate, to that capital over the lifetime of the contract, and
 - (ii) making a further adjustment for the time value of money because the capital will be held in future periods.
- B87 For example, suppose an insurer sets the capital amount as the amount necessary to provide for a confidence level of 99.5 per cent, and estimates that the corresponding capital amount is CU100. Suppose also that the insurer estimates that the appropriate capital rate is 8 per cent per year, and that it will need to hold the capital amount for one year. Therefore, the risk adjustment will be CU8 (ie the capital amount of CU100 at 8 per cent for one year). For simplicity, this example assumes that the time value of money is not material. However, the computation of the risk adjustment using the capital amount and the annual rate needs to reflect the time value of money, which is particularly relevant if a capital amount is held for a longer period.
- B88 To meet the objective for a risk adjustment (ie to estimate the amount an insurer would rationally pay to be relieved of the risk that the actual fulfilment cash flows will exceed those expected), both the amount of capital and the capital rate need to be derived in an appropriate way, as follows:

- (a) the amount of capital shall be set at a sufficiently high level that it captures almost the entire tail of the distribution. To do this, an insurer will need to identify how much uncertainty exists in the tail of the distribution.
- (b) the capital rate shall reflect the risks that are relevant to the liability (ie those risks that the owners of the insurer would require for exposure to the risk in the liability), but not reflect risks that are not relevant to the liability (eg asset risk for non-participating insurance contracts and avoidable mismatch risk) or those risks that are already captured elsewhere in the model. For example, suppose investors require an 18 per cent return for investing in an insurer, including:
 - (i) 4 per cent relating to the time value of money (ie the risk-free rate, which is not related to the insurance liability; the insurer can generate that return by investing the capital amount in risk-free assets and so does not need to generate that return from the insurance liabilities);
 - (ii) 2 per cent relating to asset risks borne by the insurer;
 - (iii) 1 per cent relating to avoidable asset/liability mismatch risk taken by the insurer; and
 - (iv) 3 per cent relating to uncertainty about future business (including operational risk related to future business).

This results in a capital rate of 8 per cent relating to the capital return (ie the residual, which is calculated as 18 per cent – 4 per cent – 2 per cent – 1 per cent – 3 per cent).

- B89 The cost of capital technique reflects almost the entire distribution, and only a relatively small band on the far end of the distribution, beyond the selected confidence level for the capital amount, would not be considered. This is because the confidence level for determining the capital amount is set at a level that is intended to provide a high degree of certainty that the insurer will be able to fulfil its obligations under existing insurance contracts. Therefore, in setting the confidence level in the cost of capital technique, an insurer takes into account the possibility of low-frequency high-severity losses in all but the extreme tail of the probability distribution. Because the cost of capital technique takes into account the release of the capital amount over the life of the contract, this technique also reflects how the risk associated with the insurance contract changes over time.
- B90 The confidence level for the capital amount, and the annual rate applied to that capital amount to calculate the risk adjustment, shall be set in a way that reflects the characteristics of the liability at each point in time. Conceptually, it would be possible to apply different confidence levels and different capital rates to different types of contracts. However, it may be possible to apply a consistent confidence level and capital rate to different portfolios (and over time) because the capital amount needs to be set so that it captures almost the entire distribution.

Application of risk adjustment techniques

- B91 Paragraph B72 sets out the characteristics that a risk adjustment must have in order to satisfy the objective (ie to estimate the amount an insurer would rationally

pay to be relieved of the risk that the actual fulfilment cash flows may exceed those expected). All three techniques permitted by this [draft] IFRS meet those characteristics in at least some, but not necessarily all, situations and will do so in varying degrees depending on the circumstances.

- B92 The selection of the most appropriate risk adjustment technique depends on the nature of an insurance contract. An insurer shall apply judgement in determining the most appropriate technique to use for each type of insurance contract. In applying that judgement, an insurer shall also consider the following:
- (a) the technique must be implementable at a reasonable cost and in a reasonable time, and be auditable;
 - (b) the technique must provide concise and informative disclosure so that users of financial statements can benchmark the insurer's performance against the performance of other insurers. Paragraph 90(b)(i) requires disclosure of the confidence levels used for the three permitted techniques.
- B93 The following paragraphs describe when each technique is more likely to be appropriate.

Shape of the probability distribution

- B94 Paragraph B72(a) states that risks with low frequency and high severity will result in higher risk adjustments than risks with high frequency and low severity. In other words, risk adjustments will be larger for probability distributions that are more skewed.
- B95 Because a confidence level technique focuses on one point in the probability distribution, it satisfies this characteristic only if the distribution is not particularly skewed. Consequently, a confidence level technique is not appropriate for distributions that are highly skewed.
- B96 A CTE technique can satisfy this characteristic, even for skewed distributions, because it considers all outcomes above the confidence level.
- B97 Similarly, cost of capital techniques can satisfy this characteristic, even for skewed distributions, if the required capital is set at a sufficiently high level to capture almost the entire tail of the distribution.

Contract duration

- B98 Paragraph B72(b) states that, for similar risks, contracts with a longer duration will result in higher risk adjustments than those of shorter duration. The confidence level and CTE techniques achieve this to the extent that the insurer's estimate of the distribution of outcomes takes account of this factor. Cost of capital techniques achieve this in a way that explicitly reflects the changing shape of the distribution over time by applying a capital factor (rate) to the capital required during each period during the life of the contract.

Width of probability distribution

- B99 Paragraph B72(c) states that risks with a wide probability distribution will result in a higher risk adjustment than risks with a narrower distribution. A confidence level technique achieves this if the additional width of the distribution is below the selected confidence level. A CTE technique achieves this because it takes into account the entire tail. A cost of capital technique takes into account the width of the distribution when the widening of the distribution does not occur further out in the tail of the distribution than the confidence level used to estimate the required capital.

Uncertainty of estimates

- B100 Paragraph B72(d) states that the less that is known about the current estimate and its trend, the higher the risk adjustment shall be. A confidence level technique and a CTE technique could take into account this characteristic by, for example, setting a higher confidence level. A cost of capital technique could take it into account by, for example, increasing the confidence level used to estimate the required capital.

Emerging experience

- B101 Paragraph B72(e) states that to the extent that emerging experience reduces uncertainty, risk adjustments will decrease (and vice versa). All three of the techniques meet this characteristic because emerging experience will affect the loss distribution and, therefore, the amount of the risk adjustment.
- B102 Thus, in summary, when the probability distribution is not skewed and does not vary significantly over time, a confidence level technique can typically provide a risk adjustment that possesses the characteristics described in paragraph B72. However, when the probability distribution is skewed or varies significantly over time, a CTE technique or cost of capital technique is more appropriate, because those approaches result in a risk adjustment that is likely to be more sensitive to the shape of the distribution of possible outcomes around the mean (and, thus, the risk) and to changes in its shape over time.

Risk adjustments and the use of a replicating portfolio

- B103 The requirement that a risk adjustment is included in the measurement in an explicit way (ie separately from the expected cash flows and discount rate building blocks), does not preclude a ‘replicating portfolio’ approach as described in paragraphs B45–B47. To avoid double-counting, the risk adjustment does not include any risk that is captured in the fair value of the replicating portfolio.