

## STAFF PAPER

## Insurance working group

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**Insurance  
contracts****Reporting back on the risk adjustment decisions**

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This paper has been prepared by the staff of the IFRS Foundation for discussion at a public meeting of the Insurance working group. The views expressed in this paper reflect the individual views of the author[s] and not those of the IASB or the IFRS Foundation. Comments on the application of IFRSs do not purport to set out acceptable or unacceptable application of IFRSs. The IASB reports its decisions made in public meetings in *IASB Update*.

**Introduction**

1. This paper provides:
  - (a) A feedback statement on the Board's tentative decisions on the risk adjustment to date, including an outline of significant matters raised with us and how we responded.
  - (b) A working draft of how we propose to implement the boards' tentative decisions on the risk adjustment. This draft has been prepared by IASB staff and has not been reviewed by the Board. Official pronouncements of the IASB are published only after it has completed its full due process, including appropriate public consultation and formal voting procedures.

**Next steps**

2. This paper does not include the following matters that the boards will consider at a future board meeting:
  - (a) the extent to which the determination of the risk adjustment should reflect diversification benefits.

- (b) whether the risk adjustment approach can be reconciled to the composite margin approach through disclosure.

**Question for working group members**

Do you have any comments on the Board's tentative decisions or the proposed drafting?

# Feedback on the risk adjustment decisions

## Introduction

The IASB's exposure draft *Insurance Contracts* proposed that the measurement of an insurance contract liability should include an explicit adjustment to reflect the risk inherent in the insurance contract.

The FASB took a different approach in their discussion paper *Preliminary Views on Insurance Contracts*. Instead of including an explicit measure of risk in the measurement of the insurance liability, the FASB preferred to depict risk within a single composite margin. The FASB's view is that the pricing of the insurance contract reflects the risk and uncertainty about the net cash flows and any uncertainty would be implicitly included in a single composite margin that represents the profit at risk in the contract.

The Boards will consider in a future meeting whether the risk adjustment approach can be reconciled to the composite margin approach through disclosure.

Views on an explicit risk adjustment varied greatly by geographic region and were generally correlated to the approach in existing GAAP and existing or proposed regulatory requirements. Most respondents to the ED favoured an explicit risk adjustment, with the notable exception of many US insurers, and constituents in some parts of Asia. Views on an explicit and separate risk adjustment varied to a lesser extent on the type of respondent, though there was strong support for an explicit risk adjustment from audit firms and actuaries.

The main issues in the application of the requirement to include an explicit risk adjustment in the measurement of the liability were:

- the subjectivity and complexity inherent in determining a risk adjustment.
- the objective proposed in the ED.
- the proposal to limit the acceptable techniques for estimating a risk adjustment to three.
- the proposal to translate a risk adjustment into an implied confidence level for disclosure.
- The unit of account for determining the risk adjustment (yet to be discussed).

In the pages that follow we outline the more significant matters raised with us and how we responded.

## Subjectivity and complexity

### ***Proposal in the ED***

The ED proposed that the measurement of an insurance contract liability includes a risk adjustment that is *independently determined* and *remeasured* each period.

### ***Respondents' comments***

Some are concerned that risk adjustments are not observable, and that the subjectivity inherent in their determination may prevent comparability between insurers. Some also believe that the complexity inherent in calculating the risk adjustment would make it difficult for users to understand.

### ***Our response***

Assessing and quantifying risk is an essential part of an insurer's business and for some contracts, the degree of uncertainty can change dramatically at or after the time of a claim. Therefore, transparent and useful information should include:

- Information about different degree of riskiness inherent in different types of insurance liabilities
- Information about changes in the amount of risk, identified on a timely basis
- Information about when risk diverges from pricing assumptions (eg that are affected by supply/demand factors)

An explicit risk adjustment could provide this information and thus provides a more complete depiction of the risk inherent in the insurance contract liability.

Furthermore, an explicit, remeasured risk adjustment improves comparability by exposing differences between contracts with similar expected cash flows but very different risk profiles. For example, a risk adjustment exposes the difference between a liability with a 50% probability of being 90 and a 50% probability of being 110, and a liability with a 100% probability of being 100.

Although the determination of the risk adjustment may require complicated statistical techniques, we believe that the output of those techniques helps users of financial statements better understand insurance contract liabilities. This is because the risk adjustment would be higher when more risk is present and lower when less risk is present. Because this understandability of output is critical to financial reporting, we provide a list of characteristics that should result when a risk adjustment technique is applied (see page 5).

## The objective

### *Proposal in the ED*

The ED proposed that the risk adjustment should be “the maximum amount the insurer would rationally pay to be relieved of the risk that the ultimate fulfilment cash flows exceed those expected.”

### *Respondents’ comments*

Most respondents to the ED supported the proposed objective for a risk adjustment, but disagreed with the following drafting:

- ‘maximum amount’, which could suggest the application of prudence in estimating the risk adjustment.
- ‘pay to be relieved of the risk’, which implies an exit, rather than fulfilment notion.
- ‘exceed those expected’, which precludes consideration of both favourable and unfavourable events.

### *Our response*

We aligned the risk adjustment objective with the risk adjustment objective in IFRS 13, as follows:

“The risk adjustment is the compensation the insurer requires for bearing the uncertainty inherent in the cash flows that arise as the insurer fulfils the insurance contract.”

We added application guidance to clarify that:

- the risk adjustment measures the compensation that the insurer would require to make it indifferent between :
  - (c) fulfilling an insurance contract liability which would have a range of possible outcomes or
  - (d) fulfilling a fixed liability that has the same expected present value of cash flows as the insurance contract.

For example, the risk adjustment would measure the compensation that the insurer would require to make it indifferent between (a) fulfilling a liability that has a 50% probability of being 90 and a 50% probability of being 110 or (b) fulfilling a liability of 100.

- in estimating the risk adjustment, the insurer should consider both favourable and unfavourable outcomes in a way that reflects its degree of risk aversion. The Board noted that a risk averse insurer would place more weight on unfavourable outcomes than on favourable ones.

## Limitation of techniques

### *Proposal in the ED*

The ED proposed that an insurer should use only three permitted techniques for estimating risk adjustments. Ie confidence level, conditional tail expectation and cost of capital.

### *Respondents' comments*

Respondents acknowledged that these techniques are currently used by insurers in many jurisdictions and are capable of providing information on risks inherent in insurance contracts.

However, many respondents disagreed that the range of available techniques should be limited because it:

- would preclude the use of new risk measures that may be developed.
- would be inconsistent with a principles-based approach
- may not achieve the board's intention of greater comparability, given the differences between the proposed techniques.

### *Our response*

We decided not to limit the range of available techniques and the related inputs to estimate the risk adjustment. Instead we decided to retain, in the application guidance the following list of characteristics that a risk adjustment technique should exhibit if that technique is to meet the objective of the risk adjustment:

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

We also decided to retain as examples the three techniques proposed in the ED, together with the related application guidance.

## Confidence level disclosure

### *Proposal in the ED*

The ED proposed that an insurer should disclose information about the confidence level to which the risk adjustment corresponds.

### *Respondents' comments*

Some respondents objected that this requirement would not achieve its intended objective and would thus impose excess cost for little benefit. This was particularly true for entities that used a methodology other than a confidence level technique for determining the risk adjustment.

Some thought that the disclosure of the confidence level equivalent would provide useful information on an insurer's approach to managing risks and would permit comparisons of risk margins measured by different insurers because it would refer to a technique which is readily understood by users of financial statements.

### *Our response*

The amount of the risk adjustment considers both the probability distribution of cash flows and the entity-specific risk aversion of the insurer

The board thinks that, if the insurer uses a risk adjustment technique other than the confidence level technique, disclosure of the confidence level to which the risk adjustment corresponds will allow users to understand how the entity-specific assessment of risk aversion might differ from entity to entity.

Before confirming the confidence level equivalent disclosure, we considered the following alternative disclosures:

- Quantitative disclosure of the range of values of key inputs used to determine the risk adjustment, determined from a market participant's perspective or a statement that those inputs do not differ from those of a market participant.
- Information regarding the relative magnitude of the risk adjustment compared to total insurance liabilities, at a suitable level of disaggregation.

However we were not persuaded by the practical arguments against the confidence level equivalent disclosure and believe that it provides information about the relative risk-aversion of the insurer, even if that information is imperfect.

## Working draft

*A working draft of the wording for the standard is as follows (changes from the ED are marked). This draft has been prepared by IASB staff and has not been reviewed by the Board. Official pronouncements of the IASB are published only after it has completed its full due process, including appropriate public consultation and formal voting procedures.*

## Standard

### Risk adjustment

35 The risk adjustment shall be the compensation maximum amount the insurer requires for bearing the uncertainty inherent in the would rationally pay to be relieved of the risk that the ultimate fulfilment cash flows that arise as the insurer fulfils the insurance contract. exceed those expected

36 An insurer shall estimate the risk adjustment at the level of a portfolio of insurance contracts. Therefore, the risk adjustment shall reflect the effects of diversification that arise within a portfolio of insurance contracts, but not the effects of diversification between that portfolio and other portfolios of insurance contracts.

*[Staff note: the Board has yet to discuss the unit of account for determining the risk adjustment and the extent to which diversification benefits should be included.]*

37 Appendix B provides guidance for estimating the risk adjustment (see paragraphs B67–B103).

90 To comply with paragraph 85(b), an insurer shall disclose:

- (a) for the measurements that have the most material effect on the recognised amounts arising from insurance contracts, the methods used and the processes for estimating the inputs to those methods. When practicable, the insurer shall also provide quantitative information about those inputs.
- (b) to the extent not covered in (a), the methods and inputs used to estimate:
  - (i) the risk adjustment. If the insurer uses a technique other than confidence level for determining the risk adjustment, the insurer shall translate the result of that technique into a confidence level, including information about the confidence level to which the risk adjustment corresponds. If the insurer uses a conditional tail expectation technique or a cost of capital technique, it shall disclose the confidence level to which the risk adjustment estimated under those methods corresponds—(eg that the risk adjustment was estimated at conditional tail expectation (Y) and corresponds to a confidence level of Z per cent).
  - (ii) discount rates.
  - (iii) estimates of policyholder dividends.
- (c) the effect of changes in the methods and inputs used to measure insurance contracts, showing separately the effect of each change that has a material effect on the financial statements, together with an explanation of the reason for the change, identifying the type of contracts affected.
- (d) [deleted]

*[Staff note: paragraph 90(d) proposed disclosure of a measurement uncertainty analysis. In agenda paper 7D we describe the Board's reasons for deleting this proposed requirement.]*



## Application guidance

### Risk adjustments (paragraphs 35–37)

B67 This section addresses:

- (a) objective and characteristics (paragraphs B68–B72).
- (b) techniques for estimating risk adjustments (paragraphs B73–~~B90~~ and B74).
- ~~(c) features of permitted risk adjustment techniques (paragraphs B75–B90).~~
- ~~(d)~~ application of risk adjustment techniques (paragraphs B91–B102).
- ~~(e)~~ risk adjustments and the use of a replicating portfolio (paragraph B103).

#### Objective and characteristics

B68 The risk adjustment conveys information to users of financial statements about the effects of uncertainty about the amount and timing of the cash flows arising from an insurance contract. To achieve this, paragraph 35 requires that the risk adjustment shall be the compensation maximum amount that the insurer would rationally pay to be relieved of the risk that the ultimate fulfilment requires for bearing the uncertainty inherent in the cash flows that arise as the insurer fulfils the contract exceed those expected.

B68A Thus, the risk adjustment measures the compensation that the insurer would require to make it indifferent between:

- (a) fulfilling an insurance contract liability which has a range of possible outcomes and
- (b) fulfilling a fixed liability that has the same expected present value of cash flows as the insurance contract.

For example, the risk adjustment would measure the compensation that the insurer would require to make it indifferent between (a) fulfilling a liability that has a 50% probability of being 90 and a 50% probability of being 110 or (b) fulfilling a liability of 100.

B68B In estimating the risk adjustment, the insurer considers both favourable and unfavourable outcomes in a way that reflects its degree of risk aversion.

B69 Because the purpose of the risk adjustment is to measure the effect of uncertainty in the cash flows arising from the insurance contract only, the risk adjustment shall reflect all risks associated with that contract. It shall not reflect risks that do not arise from the insurance contract, such as investment risk (except when investment risk affects the amount of payments to policyholders), asset-liability mismatch risk or general operational risk relating to future transactions.

B70 The risk adjustment shall be included in the measurement in an explicit way. Thus, the risk adjustment is separate from estimates of future cash flows and the discount rate that adjusts those cash flows for the time value of money; it cannot be included implicitly in those two other building blocks. However, that requirement is not intended to preclude ‘replicating portfolio’ approaches (see paragraph B103).

B71 Care is needed to avoid duplicating adjustments for risk (see also paragraphs B45 and B103).

B72 To meet the objective in paragraph B68, 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.
- (e) the less that is known about the current estimate and its trend, the higher the risk adjustment shall be.
- (f) to the extent that emerging experience reduces uncertainty, risk adjustments will decrease and vice versa.

### Techniques for estimating risk adjustments

B73 ~~An insurer shall use only the following~~ Examples of techniques for estimating risk adjustments include:

- (a) confidence level (paragraphs B75–B79).
- (b) conditional tail expectation (paragraphs B80–B83).
- (c) cost of capital (paragraphs B84–B90).

B74 Paragraphs B75–B90 provide an overview of the main features of those ~~permitted~~ techniques. Paragraphs B91–B102 discuss how these ~~permitted~~ techniques could meet the characteristics in paragraph B72 and indicate when they might be ~~are~~ applicable.

### ~~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 50<sup>th</sup> 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 represent the compensation the estimate the amount an insurer requires for bearing the uncertainty inherent in the cash flows that arise as the insurer fulfils the contract would rationally pay to be relieved of the risk that the actual fulfilment cash flows may exceed those expected). The All three techniques discussed in paragraphs B73-B90 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. an insurer that uses a technique other than confidence level for determining the risk adjustment to translate the result of that technique into a confidence level.
- B93 The following paragraphs describe considerations for determining the most appropriate technique, by reference to the example techniques set out in paragraphs B73-B90 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.