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Undertaking #8

MPI to provide the analysis of the financial impact of the risk adjustment policy choice.

RESPONSE:

MPI is providing a revised draft position paper for the risk adjustment choice. Please see *Appendix 1 – Risk Adjustment Paper (Deloitte)*. The original choice was a Cost of Capital Method. This method requires a selected target return on equity (ROE). MPI does not have a target ROE, as such, MPI used the Cost of Capital/ROE used from the Value Management team for project analysis. A medium risk ROE was used for short tail lines and a high risk ROE was used for long tail lines. However, it became apparent that these ROEs did not reflect the uncertainty within the claims portfolio due to the long tail duration of the PIPP benefits. This was the primary reason for moving to a quantile method.

The other two reasons to move to the quantile method are:

1. Ease of understanding
2. Quantile is needed for financial note disclosure.

Memo

IFRS 17 Methodology Paper Risk Adjustment

Section 1: Objective

Objective: Technical overview of the need for a risk adjustment under IFRS 17.

This paper explores the requirements under the standard, the possible risk adjustments (“RAs”) calibration approaches available and the approaches Manitoba Public Insurance (“MPI”) will apply. The paper will also provide quantitative analysis on the RA results from multiple scenarios.

Section 2: Executive summary

2.1 Scope

This paper summarizes the technical requirements, current capabilities, key policy design options and operational process with respect to the IFRS 17 risk adjustments. The scope of this paper includes all operations and lines of business of MPI.

2.2 Next steps

Define risk adjustment measurement method for liability for remaining coverages; and implement the methodologies defined in this document to IFRS 17 actuarial models and templates.

Section 3: Standard requirements

This section will include relevant IFRS 17 guidance, with working interpretations and implications on the below topics.

3.1 Scope of risks included in the RA

Relevant standards

[37] An entity shall adjust the estimate of the present value of the future cash flows to reflect the compensation that the entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risk.

[B86] ...Financial risk is included in the estimates of the future cash flows or the discount rate...The risks covered by the risk adjustment for non-financial risk are insurance risk and other non-financial risks such as lapse risk and expense risk...

[B89] The purpose of the risk adjustment for non-financial risk is to measure the effect of uncertainty in the cash flows that arise from insurance contracts, other than uncertainty arising from financial risk. Consequently, the risk adjustment for non-financial risk shall reflect all non-financial risks associated with the insurance contracts. It shall not reflect the risks that do not arise from the insurance contracts, such as general operational risk..

IFRS 17 requires the entity to book RA for non-financial risk in order to measure the effect of uncertainty in the cash flows that arise from insurance contracts, other than uncertainty arising from financial risk which is covered in the discounting process.

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3.2 Linkage with risk appetite

Relevant standards

[B87] *The risk adjustment...measures the compensation that the entity would require to make the entity indifferent between:*

- (a) fulfilling a liability that has a range of possible outcomes arising from non-financial risk; and*
- (b) fulfilling a liability that will generate fixed cash flows with the same expected present value as the insurance contracts.*

[B88] *The risk adjustment for non-financial risk also reflects:*

- (a) the degree of diversification benefit the entity includes when determining the compensation it requires for bearing that risk; and*
- (b) both favourable and unfavourable outcomes, in a way that reflects the entity's degree of risk aversion.*

IFRS 17 requires the RA to reflect the entities degree of risk aversion. Due to the not-for-profit nature of the Basic line (majority of MPI business), MPI could not reflect its risk appetite by charging compensation for risk-bearing during the pricing process. However, MPI's risk appetite is reflected in the capital holding requirements under the RSR funds for each line of business: 100%, 200% and 300% MCT for Basic, Extension and SRE lines respectively. To build justifiable linkage between the RA and MPI's risk appetite, RA calibration approach will be carefully evaluated and selected in Section 4 of this memo to leverage the capital holding requirements for each line.

3.3 Estimation principles and disclosure

Relevant standards

[B91] *IFRS 17 does not specify the estimation technique(s) used...However:*

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

[B92] *... An entity shall apply judgement...[and] shall also consider whether the technique provides concise and informative disclosure so that users of financial statements can benchmark the entity's performance against the performance of other entities.*

[119] *An entity shall disclose the confidence level used to determine the risk adjustment for non-financial risk. If the entity uses a technique other than the confidence level technique for determining the risk adjustment for non-financial risk, it shall disclose the technique used and the confidence level corresponding to the results of that technique.*

Estimation principles will be considered during the RA calibration process; disclosure requirements will be followed accordingly.

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3.4 Interaction with Loss Component**Relevant standards**

[32] *On initial recognition, an entity shall measure a group of insurance contracts at the total of...the fulfilment cash flows... [and] the contractual service margin.*

[40] *The carrying amount of a group of insurance contracts...shall be the sum of:*

(a) the liability for remaining coverage comprising:

(i) the fulfilment cash flows related to future service allocated to the group at that date...

(ii) the contractual service margin of the group at that date ... [and]

(b) the liability for incurred claims, comprising the fulfilment cash flows related to past service allocated to the group at that date...

[47] *An insurance contract is onerous at the date of initial recognition if the fulfilment cash flows allocated to the contract...are a net outflow.*

[50(a)] *...subsequent changes in fulfilment cash flows of the liability for remaining coverage [shall be allocated]...between:*

(i) the loss component of the liability for remaining coverage; and

(ii) the liability for remaining coverage, excluding the loss component.

[51] *The subsequent changes in the fulfilment cash flows of the liability for remaining coverage to be allocated applying paragraph 50(a) are:*

(a) estimates of the present value of future cash flows for claims and expenses released from the liability for remaining coverage because of incurred insurance service expenses;

(b) changes in the risk adjustment for non-financial risk recognised in profit or loss because of the release from risk; and

(c) insurance finance income or expenses.

RA for onerous contracts loss component calculation will be calibrated and implemented.

3.5 Ceded RA**3 Relevant standards**

[64] *...entity shall determine the risk adjustment for non-financial risk so that it represents the amount of risk being transferred by the holder of the group of reinsurance contracts to the issuer of those contracts.*

The RA for non-financial risk for groups of reinsurance contracts held is reported as an asset and reflects the amount of risk which has been ceded (or “transferred”) to the reinsurer. IFRS 17 requires an explicit risk adjustment for ceded reinsurance contracts. Therefore, it cannot be presented on a “net” basis with risk adjustment for direct insurance contracts issued.

The risk adjustment is to reflect the compensation required for uncertainty related to non-financial risk and needs to be assigned to gross insurance contract liabilities, and ceded insurance contract assets.

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Section 4: Risk Adjustment Methodologies and MPI Selection**4.1 Risk Adjustment Methodologies**

Comparison of major risk adjustment methodologies available:

Methodology	Description	Pros	Cons
Margin Method	Set margin at provision for adverse deviations for each unit of account	<ul style="list-style-type: none"> Allow leveraging of current Pfad/Mfad Easy to implement 	<ul style="list-style-type: none"> Require the calibration of confidence level Can be difficult to justify the link to the compensation for risk-bearing as the required return of capital
Cost of Capital	RA is based on the compensation that the entity requires to meet a target return on capital	<ul style="list-style-type: none"> Conceptually close to the definition of the RA Best alignment with the compensation measure based on capital required Allows allocation of the RA at a more granular level 	<ul style="list-style-type: none"> Require the calibration of confidence level Can be complex to implement
Quantile Approach	Set a margin under VaR or CTE based on selected distribution of probabilities and confidence level	<ul style="list-style-type: none"> Allow consideration of skewness effect (eg. CTE method) Directly satisfies the IFRS 17 disclosure requirements on confidence level The mathematics enable risks to be represented graphically which creates ease and convenience in understanding the result 	<ul style="list-style-type: none"> Require underlying assumption on risk distribution Higher requirement on the capability for stochastic simulation Require justification on the selection of percentile and risk measurement technique (i.e. VaR, CTE)

Regardless of the approach selected, IFRS 17.119 requires disclosure of the confidence level corresponding to the RA – see Section 6 below. This is an input for the Quantile Approach and an output for other two approaches.

4.2 Selection of Approach

Reviewing above pros and cons and considering MPI's risk appetite and capabilities, MPI will apply the Quantile method by coverage for each line of business for the following reasons:

- Return on Capital will be difficult to justify under the Cost of Capital method
- Margin method has not direct linkage to compensation of insurance risk bearing
- Additional work is not required for producing the confidence interval disclosures

The implementation process of the approach will be discussed in the following sections.

Section 5: Calibration of Risk Adjustments based on Selected Approach

Under the Quantile Approach, a range of claims development scenarios are simulated and the future claims payments of each of the scenarios are discounted to the measurement date. The risk adjustments

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for non-financial risk is determined as the difference of the discounted unpaid claims at the selected percentile and the best estimate unpaid claims liability averaged across the scenarios.

The Over-Dispersed Poisson (ODP) Bootstrap model is used to simulate the distribution of total discounted unpaid claims across all coverages and lines of business. MPI inputs historical paid claims (including ILAE) triangles to the ODP model to create the variabilities of future claims developments in the simulated scenarios. Benefit indexation is also catered through paid claims triangle.

Aggregation of the calculated RA from coverage level (undiversified) to company level includes a diversification benefit determined using assumed correlations between each coverage and LOB.

The simulation of discounted unpaid claims also utilizes the following parameters:

- **Discount rate** used to discount claims payments in each of the simulated scenario is the same yield curve for discount derived through the top-down approach. For details of the discount rate generation, please refer to the MPI IFRS 17 Discount Rate Paper
- **Correlation matrix** between each coverage and LOB. Specification of the matrix is a key assumption based on MPI's book of business:
 - Since SRE is commercial auto, all coverages within SRE are independent of those within Basic and Extension
 - Since Extension is an add-on to Basic, all respective coverages within Extension are correlated at 0.5 with those same coverages in Basic (i.e., BI, PD, Coll & Comp). Any coverages within Basic that are not available in Extension are independent (i.e., ABO)
 - Within each line (Basic, Extension, SRE), an assumption of a 0.25 correlation was used for coverages within the same line
- **Confidence level selection** for the diversified RA at company level. There are two notable items when selecting the confidence level:
 - higher confidence level produces a higher risk adjustment; and
 - the corporate risk adjustment is not additive since it includes the impact of diversification.

The Board has reviewed the level of RA implied at different confidence levels and determined 90th percentile confidence level is reasonable as the level of risk adjustment required by MPI.

RA Calculation for Onerous Assessment and Loss Component Calculation

The RA% is calibrated by line of business. The calculation is similar to those for LIC, but with the following differences:

Ceded RA

The RAs are measured on direct basis. Considering the minimal ceded portion of MPI (about 0.3% of direct book) and resulting minimal dollar impact of RA loadings, MPI assesses it's appropriate to set the ceded RA loadings (%) equal to the direct RA loadings.

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Section 6: Disclosure of Confidence Level**Relevant standards**

[119] *An entity shall disclose the confidence level used to determine the risk adjustment for non-financial risk. If the entity uses a technique other than the confidence level technique for determining the risk adjustment for non-financial risk, it shall disclose the technique used and the confidence level corresponding to the results of that technique.*

6.1 Level of disclosure

As per IFRS 17 requirements, the confidence level corresponding to the RA results needs to be disclosed. However, the level of disclosure is not strictly limited, thus the entity could determine the level of disclosure appropriate to its business profile.

MPI chooses to disclose the confidence level at company level, in line with IFRS 17 Standard.

6.2 Quantification of the Confidence Level

The confidence level will come directly from the selected percentile determined using the Quantile approach for the RA calculation, as discussed in Section 5.

Section 7: Aggregation and Disaggregation**7.1 Level of Aggregation**

For LIC, RA will be aggregated to company level, incorporating diversification credit across the lines of businesses and coverages. The diversified RA is allocated to coverage level for bottom-up reporting and disclosure purposes based on the relative proportion of each segment's undiversified RA:

$$\text{Diversified Coverage Level } RA_{\text{Coverage } x} = \frac{\text{Undiversified Coverage Level } RA_{\text{Coverage } x}}{\sum_i \text{Undiversified Coverage Level } RA_i} \times \text{Diversified MPI-total RA}$$

For purposes of calculating RA for internal purposes or between calibrations as a proxy measure, RA% by coverage can be calculated based on the implied RA%:

$$RA\% = \frac{RA}{\text{Discounted Unpaid Claims Liabilities}}$$

For onerous assessment, no further diversification credit is allowed for the RA from the new contract, and the RA is approximated based on the factor approach. Details of the onerous assessment is to be defined.

7.2 Disaggregation of Discounting**Relevant standards**

[81] *An entity is not required to disaggregate the change in the risk adjustment for non-financial risk between the insurance service result and insurance finance income or expenses. If an entity does not make such a disaggregation, it shall include the entire change in the risk adjustment for non-financial risk as part of the insurance service result.*

Under paragraph 81, MPI elects not to disaggregate insurance finance income and expense and will reflect the entire change in RA as insurance service.

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Section 8: Frequency of Risk Adjustment Calculation

MPI will calculate the risk adjustment loadings once per year during the year-end process and will be used for the upcoming year until the next year end unless material changes indicate that the prior assumptions are no longer relevant.

Section 9: Quantitative analysis of risk adjustment options

The discounted RA provisions and confidence levels for each of the RA approaches are outlined in the following two tables as of 31 March 2022:

Discounted Provision Amount						
Lines of Business	Margin Method[#]	Cost of Capital Method[*]	Quantile Method			
			80%	85%	90%	95%
Basic	\$196,167	\$77,138	\$123,312	\$156,955	\$206,753	\$281,449
Extension	\$3,598	\$568	\$2,082	\$2,709	\$3,545	\$5,218
SRE	\$16,371	\$7,106	\$8,515	\$10,705	\$12,895	\$18,005
Corporate	\$216,136	\$84,812	\$104,908	\$144,305	\$191,581	\$270,373

Note: # Assume the current IFRS 4 claims development PfAD

* Cost of capital rate at 6%/10% for non-indexed/indexed lines; and capital at 100%/200%/300% MCT for basic/extension/SRE lines

Equivalent Confidence Level			
Lines of Business	Margin Method	Cost of Capital Method	Percentile Method
Basic	86% (indexed) vs 96% (non-indexed)	73% (indexed) vs 53% (non-indexed)	As defined
Extension	89%	59%	As defined
SRE	94%	76%	As defined
Corporate	91%	74%	As defined

Appendix I – IFRS 17 Standards

This appendix lists all standards requirements as it relates to the risk adjustment.

32 On initial recognition, an entity shall measure a group of insurance contracts at the total of:

- (a) the fulfilment cash flows, which comprise:
- (b) estimates of future cash flows (paragraphs 33–35);
 - i. an adjustment to reflect the time value of money and the financial risks related to the future cash flows, to the extent that the financial risks are not included in the estimates of the future cash flows (paragraph 36); and
 - ii. a risk adjustment for non-financial risk (paragraph 37).
- (c) the contractual service margin, measured applying paragraphs 38–39.

37 An entity shall adjust the estimate of the present value of the future cash flows to reflect the compensation that the entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risk.

40 The carrying amount of a group of insurance contracts at the end of each reporting period shall be the sum of:

- (a) the *liability for remaining coverage* comprising:
 - i. the fulfilment cash flows related to future service allocated to the group at that date, measured applying paragraphs 33–37 and B36–B92;
 - ii. the contractual service margin of the group at that date, measured applying paragraphs 43–46; and
- (b) the *liability for incurred claims*, comprising the fulfilment cash flows related to past service allocated to the group at that date, measured applying paragraphs 33–37 and B36–B92.

47 An insurance contract is onerous at the date of initial recognition if the fulfilment cash flows allocated to the contract, any previously recognized acquisition cash flows and any cash flows arising from the contract at the date of initial recognition in total are a net outflow. Applying paragraph 16(a), an entity shall group such contracts separately from contracts that are not onerous. To the extent that paragraph 17 applies, an entity may identify the group of onerous contracts by measuring a set of contracts rather than individual contracts. An entity shall recognise a loss in profit or loss for the net outflow for the group of onerous contracts, resulting in the carrying amount of the liability for the group being equal to the fulfilment cash flows and the contractual service margin of the group being zero.

50 After an entity has recognised a loss on an onerous group of insurance contracts, it shall allocate:

- (a) the subsequent changes in fulfilment cash flows of the liability for remaining coverage specified in paragraph 51 on a systematic basis between:
 - (i) the loss component of the liability for remaining coverage; and
 - (ii) the liability for remaining coverage, excluding the loss component.

51 The subsequent changes in the fulfilment cash flows of the liability for remaining coverage to be allocated applying paragraph 50(a) are:

- (d) estimates of the present value of future cash flows for claims and expenses released from the liability for remaining coverage because of incurred insurance service expenses;
- (e) changes in the risk adjustment for non-financial risk recognised in profit or loss because of the release from risk; and
- (f) insurance finance income or expenses.

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57 If at any time during the coverage period, facts and circumstances indicate that a group of insurance contracts is onerous, an entity shall calculate the difference between:

(a) the carrying amount of the liability for remaining coverage determined applying paragraph 55; and

(b) the fulfilment cash flows that relate to remaining coverage of the group, applying paragraphs 33–37 and B36–B92. However, if, in applying paragraph 59(b), the entity does not adjust the liability for incurred claims for the time value of money and the effect of financial risk, it shall not include in the fulfilment cash flows any such adjustment.

58 To the extent that the fulfilment cash flows described in paragraph 57(b) exceed the carrying amount described in paragraph 57(a), the entity shall recognise a loss in profit or loss and increase the liability for remaining coverage.

64 Instead of applying paragraph 37, an entity shall determine the risk adjustment for non-financial risk so that it represents the amount of risk being transferred by the holder of the group of reinsurance contracts to the issuer of those contracts.

81 An entity is not required to disaggregate the change in the risk adjustment for non-financial risk between the insurance service result and insurance finance income or expenses. If an entity does not make such a disaggregation, it shall include the entire change in the risk adjustment for non-financial risk as part of the insurance service result.

119 An entity shall disclose the confidence level used to determine the risk adjustment for non-financial risk. If the entity uses a technique other than the confidence level technique for determining the risk adjustment for non-financial risk, it shall disclose the technique used and the confidence level corresponding to the results of that technique.

B53 In other cases, market variables and non-market variables may be correlated. For example, there may be evidence that lapse rates (a non-market variable) are correlated with interest rates (a market variable). Similarly, there may be evidence that claim levels for house or car insurance are correlated with economic cycles and therefore with interest rates and expense amounts. The entity shall ensure that the probabilities for the scenarios and the risk adjustments for the non-financial risk that relates to the market variables are consistent with the observed market prices that depend on those market variables.

B62 Many insurance contracts have features that enable policyholders to take actions that change the amount, timing, nature or uncertainty of the amounts they will receive. Such features include renewal options, surrender options, conversion options and options to stop paying premiums while still receiving benefits under the contracts. The measurement of a group of insurance contracts shall reflect, on an expected value basis, the entity's current estimates of how the policyholders in the group will exercise the options available, and the risk adjustment for non-financial risk shall reflect the entity's current estimates of how the actual behaviour of the policyholders may differ from the expected behaviour. This requirement to determine the expected value applies regardless of the number of contracts in a group; for example it applies even if the group comprises a single contract. Thus, the measurement of a group of insurance contracts shall not assume a 100 per cent probability that policyholders will:

(a) surrender their contracts, if there is some probability that some of the policyholders will not; or

(b) continue their contracts, if there is some probability that some of the policyholders will not.

B86 The risk adjustment for non-financial risk relates to risk arising from insurance contracts other than financial risk. Financial risk is included in the estimates of the future cash flows or the discount rate used to adjust the cash flows. The risks covered by the risk adjustment for non-financial risk are insurance risk and other non-financial risks such as lapse risk and expense risk (see paragraph B14).

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B87 The risk adjustment for non-financial risk for insurance contracts measures the compensation that the entity would require to make the entity indifferent between:

- (a) fulfilling a liability that has a range of possible outcomes arising from non-financial risk; and
- (b) fulfilling a liability that will generate fixed cash flows with the same expected present value as the insurance contracts.

For example, the risk adjustment for non-financial risk would measure the compensation the entity would require to make it indifferent between fulfilling a liability that—because of non-financial risk—has a 50 per cent probability of being CU90 and a 50 per cent probability of being CU110, and fulfilling a liability that is fixed at CU100. As a result, the risk adjustment for non-financial risk conveys information to users of financial statements about the amount charged by the entity for the uncertainty arising from non-financial risk about the amount and timing of cash flows.

B88 Because the risk adjustment for non-financial risk reflects the compensation the entity would require for bearing the non-financial risk arising from the uncertain amount and timing of the cash flows, the risk adjustment for non-financial risk also reflects:

- (a) the degree of diversification benefit the entity includes when determining the compensation it requires for bearing that risk; and
- (b) both favourable and unfavourable outcomes, in a way that reflects the entity's degree of risk aversion.

B89 The purpose of the risk adjustment for non-financial risk is to measure the effect of uncertainty in the cash flows that arise from insurance contracts, other than uncertainty arising from financial risk. Consequently, the risk adjustment for non-financial risk shall reflect all non-financial risks associated with the insurance contracts. It shall not reflect the risks that do not arise from the insurance contracts, such as general operational risk.

B90 The risk adjustment for non-financial risk shall be included in the measurement in an explicit way. The risk adjustment for non-financial risk is conceptually separate from the estimates of future cash flows and the discount rates that adjust those cash flows. The entity shall not double-count the risk adjustment for non-financial risk by, for example, also including the risk adjustment for non-financial risk implicitly when determining the estimates of future cash flows or the discount rates. The discount rates that are disclosed to comply with paragraph 120 shall not include any implicit adjustments for non-financial risk.

B91 IFRS 17 does not specify the estimation technique(s) used to determine the risk adjustment for non-financial risk. However, to reflect the compensation the entity would require for bearing the non-financial risk, the risk adjustment for non-financial risk shall have the following characteristics:

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

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B92 An entity shall apply judgement when determining an appropriate estimation technique for the risk adjustment for non-financial risk. When applying that judgement, an entity shall also consider whether the technique provides concise and informative disclosure so that users of financial statements can benchmark the entity's performance against the performance of other entities. Paragraph 119 requires an entity that uses a technique other than the confidence level technique for determining the risk adjustment for non-financial risk to disclose the technique used and the confidence level corresponding to the results of that technique.