

**PUB (MPI) 1-125**

<b>Part and Chapter:</b>	<b>Part VII- Investments INV Attachment C</b>	<b>Page No.:</b>	<b>6 of 33</b>
<b>PUB Approved Issue No:</b>	<b>20. Asset Liability Management Study (in accordance with Directives 11.19 and 11.20 of Order 134/21)</b>		
<b>Topic:</b>	<b>Investments</b>		
<b>Sub Topic:</b>	<b>Interest Rate Risk</b>		

**Preamble to IR:**

Mercer states:

*"To assess interest rate risk, we estimate how the investment portfolios and liabilities (where applicable) would respond to an immediate parallel shift (1% decrease and increase) in market yield curve. For this purpose, only the fixed income portion of the investment portfolios is assumed to be impacted."*

**Question:**

- a) Please provide an alternative table based on Mercer's capital market assumptions, including Mercer's standard interest rate forecast and based on the forward curve, and provide the net impact on 2022/23 and 2023/24.
- b) Please provide the same analysis in (a) based on Mercer's recommended optimized changes to the portfolios.
- c) Please provide Mercer's interest rate forecast and implied forward curve used to model the analysis.
- d) Please provide the underlying assumptions and details in support of the Mercer interest rate forecasts based on future yield curve and Mercer's standard interest rate forecast.

**Rationale for Question:**

To understand the analysis of interest rate risk.

**Rationale for Question:**

Copy and paste IR rationale for question from Interveners or PUB here.

**RESPONSE:**

- a) Based upon clarification provided ~~by the PUB's counsel,~~ MPI ~~will has re-filed~~ Figure INV-41 using Mercer's capital market assumptions, including ~~Mercer's its~~ standard interest rate forecast ~~(see Appendix 1)~~ and based on ~~the~~ forward curve ~~(see Appendix 2)~~ for the current portfolio mix. ~~Mercer's standard interest rate forecast is 2.44% as of December 31, 2022 and 2.46% for all periods after December 31, 2023. The forward curve is as follows: [GA1][SS2] That updated figure will not be completed by August 30. MPI expects to be able to file that information in the first week of September.~~
- b) The optimization analysis includes tables with "Hedge Ratio"~~."~~" The Hedge Ratio is equal to the asset duration of a particular asset mix policy divided by the liability duration. The Hedge Ratio represents the magnitude of interest rate risk that is hedged by the asset mix policy.
- c) See ~~response to a)~~, not relevant to the exercise.
- d) See ~~response to a)~~, not relevant to the exercise.

**PUB (MPI) 1-125**

<b>Part and Chapter:</b>	<b>Part VII- Investments INV Attachment C</b>	<b>Page No.:</b>	<b>6 of 33</b>
<b>PUB Approved Issue No:</b>	<b>20. Asset Liability Management Study (in accordance with Directives 11.19 and 11.20 of Order 134/21)</b>		
<b>Topic:</b>	<b>Investments</b>		
<b>Sub Topic:</b>	<b>Interest Rate Risk</b>		

**Preamble to IR:**

Mercer states:

*"To assess interest rate risk, we estimate how the investment portfolios and liabilities (where applicable) would respond to an immediate parallel shift (1% decrease and increase) in market yield curve. For this purpose, only the fixed income portion of the investment portfolios is assumed to be impacted."*

**Question:**

- a) Please provide an alternative table based on Mercer's capital market assumptions, including Mercer's standard interest rate forecast and based on the forward curve, and provide the net impact on 2022/23 and 2023/24.
- b) Please provide the same analysis in (a) based on Mercer's recommended optimized changes to the portfolios.
- c) Please provide Mercer's interest rate forecast and implied forward curve used to model the analysis.
- d) Please provide the underlying assumptions and details in support of the Mercer interest rate forecasts based on future yield curve and Mercer's standard interest rate forecast.

**Rationale for Question:**

To understand the analysis of interest rate risk.

**Rationale for Question:**

Copy and paste IR rationale for question from Interveners or PUB here.

**RESPONSE:**

- a) Based upon clarification provided, MPI re-files Figure INV-41 using Mercer's capital market assumptions, including its standard interest rate forecast (see [Appendix 1](#)) and based on the forward curve (see [Appendix 2](#)) for the current portfolio mix. Mercer's standard interest rate forecast is 2.44% as of December 31, 2022 and 2.46% for all periods after December 31, 2023. The forward curve is as follows:
- b) The optimization analysis includes tables with "Hedge Ratio." The Hedge Ratio is equal to the asset duration of a particular asset mix policy divided by the liability duration. The Hedge Ratio represents the magnitude of interest rate risk that is hedged by the asset mix policy.
- c) See response to a), not relevant to the exercise.
- d) See response to a), not relevant to the exercise.

September 12, 2022

2023 GRA Information Requests - Round 1  
PUB (MPI) 1-125(c) Appendix 1

## Updated Figure INV -41 - Basic Investment and Claims Net Interest Rate Impact with Mercer's Forecasted Interest Rate

Line No.		2017/18 Actual	2018/19 Actual	2019/20 Actual	2020/21 Actual	2021/22 Actual	2022/23 Forecast	2023/24 Forecast	2024/25 Forecast	2025/26 Forecast	2026/27 Forecast
1	<i>(in Millions of Dollars)</i>										
2	<b>Marketable Bond Yield</b>	3.04%	2.88%	2.69%	2.50%	3.39%	3.49%	3.48%	3.46%	3.45%	3.45%
3	<b>YoY Change</b>	0.13%	-0.16%	-0.19%	-0.19%	0.89%	0.09%	-0.01%	-0.01%	-0.01%	-0.01%
4	<b>Claims Discount Rate</b>	3.47%	3.26%	3.09%	2.88%	3.54%	3.59%	3.57%	3.55%	3.54%	3.51%
5	<b>YoY Change</b>	0.08%	-0.21%	-0.17%	-0.21%	0.66%	0.05%	-0.02%	-0.02%	-0.01%	-0.02%
6	<b>Duration Gap (Years)*</b>	0.1	(0.1)	0.9	(0.2)	0.1	-	-	-	-	-
7	<b>Investments</b>										
8	<b>Investment Income</b>	116.3	208.5	59.6	89.5	(47.2)	129.4	106.1	105.6	109.7	109.9
9	<b>(1) Marketable Bond Gain/(Loss)</b>	4.6	14.2	5.5	0.7	(127.0)	(12.2)	(0.7)	(0.2)	(0.1)	0.0
10	<b>Investment Income excluding Marketable Bond G/L</b>	111.7	194.3	54.1	88.9	79.8	141.6	106.9	105.8	109.9	109.9
11	<b>Claims</b>										
12	<b>Net Claims Incurred</b>	783.0	892.3	761.5	653.8	838.6	875.2	931.3	975.2	1,019.0	1,076.4
13	<b>(2) Claims Interest Rate Impact</b>	(15.8)	40.9	(8.9)	44.2	(132.8)	(10.3)	3.8	4.7	2.6	5.5
14	<b>Claims Excluding Interest Rate Impact</b>	798.8	851.4	770.4	609.6	971.3	885.5	927.6	970.5	1,016.3	1,070.9
15	<b>Net Interest Rate Impact</b>										
16	<b>(1) Marketable Bond Gain/Loss</b>	4.6	14.2	5.5	0.7	(127.0)	(8.0)	(0.0)	0.0	0.0	(0.0)
17	<b>(2) Claims Interest Rate Impact</b>	(15.8)	40.9	(8.9)	44.2	(132.8)	(10.3)	3.8	4.7	2.6	5.5
18	<b>Net Impact of Changes in Interest Rates [(1) - (2)]</b>	20.4	(26.7)	14.4	(43.5)	5.8	2.3	(3.8)	(4.7)	(2.6)	(5.5)

September 12, 2022

2023 GRA Information Requests - Round 1  
PUB (MPI) 1-125(c) Appendix 2

## Updated Figure INV -41 - Basic Investment and Claims Net Interest Rate Impact with Forward Rates

Line No.		2017/18 Actual	2018/19 Actual	2019/20 Actual	2020/21 Actual	2021/22 Actual	2022/23 Forecast	2023/24 Forecast	2024/25 Forecast	2025/26 Forecast	2026/27 Forecast
1	<i>(in Millions of Dollars)</i>										
2	Marketable Bond Yield	3.04%	2.88%	2.69%	2.50%	3.39%	3.96%	3.91%	3.88%	3.90%	3.89%
3	YoY Change	0.13%	-0.16%	-0.19%	-0.19%	0.89%	0.56%	-0.04%	-0.03%	0.02%	-0.01%
4	Claims Discount Rate	3.47%	3.26%	3.09%	2.88%	3.54%	3.96%	3.93%	3.91%	3.93%	3.92%
5	YoY Change	0.08%	-0.21%	-0.17%	-0.21%	0.66%	0.43%	-0.03%	-0.02%	0.02%	-0.02%
6	Duration Gap (Years)*	0.1	(0.1)	0.9	(0.2)	0.1	-	-	-	-	-
7	<b>Investments</b>										
8	Investment Income	116.3	208.5	59.6	89.5	(47.2)	63.0	117.7	116.6	115.3	123.0
9	(1) Marketable Bond Gain/(Loss)	4.6	14.2	5.5	0.7	(127.0)	(89.8)	6.5	3.1	(5.5)	0.0
10	Investment Income excluding Marketable Bond G/L	111.7	194.3	54.1	88.9	79.8	152.8	111.2	113.4	120.9	123.0
11	<b>Claims</b>										
12	Net Claims Incurred	783.0	892.3	761.5	653.8	838.6	800.8	931.6	973.3	1,010.3	1,066.8
13	(2) Claims Interest Rate Impact	(15.8)	40.9	(8.9)	44.2	(132.8)	(84.7)	5.8	4.5	(4.2)	3.2
14	Claims Excluding Interest Rate Impact	798.8	851.4	770.4	609.6	971.3	885.5	925.9	968.8	1,014.5	1,063.6
15	<b>Net Interest Rate Impact</b>										
16	(1) Marketable Bond Gain/Loss	4.6	14.2	5.5	0.7	(127.0)	(83.4)	6.2	3.1	(5.5)	0.0
17	(2) Claims Interest Rate Impact	(15.8)	40.9	(8.9)	44.2	(132.8)	(84.7)	5.8	4.5	(4.2)	3.2
18	Net Impact of Changes in Interest Rates [(1) - (2)]	20.4	(26.7)	14.4	(43.5)	5.8	1.3	0.4	(1.5)	(1.3)	(3.2)