

Manitoba Public Insurance (MPI)

**2019 GRA Intervener Information Requests on
Consumers' Association of Canada (CAC)
Pre-filed Testimony**

October 10, 2018

MPI (CAC) 1-1

Part and Chapter:	The Role of the DCAT and Interest Rate Forecasting in the 2019 GRA	Page No.:	p.4
PUB Approved Issue No:	2. Rate indication based on accepted actuarial practice in Canada; 7. Update of DCAT, target capital analysis and the target Basic total equity threshold levels based upon methodology approved in Board Order 130/17;		
Topic:	Minimum Capital Test		
Sub Topic:	Risks captured by the MCT framework		

Preamble to IR (If Any):

"The MCT is designed to assess the capital required for a private company in a competitive industry to forestall insolvency. **As such, it is not linked to the specific risks facing MPI as a monopoly crown insurer** except insofar as an MCT level can be determined from RSR target levels calculated in the DCAT analysis." [Emphasis added]

Question:

- a) Please itemize, and provide a detailed explanation of the risks facing MPI as a monopoly crown insurer, that are not captured by the Minimum Capital Test (MCT)
- b) Referencing the 2018 MCT Guidelines (available here: [http://www.osfi-bsif.gc.ca/Eng/fi-if/rg-ro/gdn-ort/gd-ld/Pages/mct2018.aspx#Toc-4](http://www.osfi-bsif.gc.ca/Eng/fi-if/rg-ro/gdn-ort/gl-ld/Pages/mct2018.aspx#Toc-4)), please identify which risk categories are not relevant to MPI, as a crown monopoly insurer, and provide a detailed explanation as to why. If any risk categories are linked to the specific risks facing MPI as a monopoly crown insurer, please also provide a detailed explanation as to why.

Rationale for Question:

To understand the supporting grounds and reasons for the statement highlighted in the pre-amble.

RESPONSE:

- a) The quote [“The MCT is designed to assess the capital required for a private company in a competitive industry to forestall insolvency. As such, it is not linked to the specific risks facing MPI as a monopoly crown insurer except insofar as an MCT level can be determined from RSR target levels calculated in the DCAT analysis.”] is taken out of context by the question. From the Financial Services Commission of Ontario’s Superintendent’s Guideline No. 08/04, August 2004 as amended and effective January 1, 2016 “The MCT is a harmonized capital adequacy solvency test that is intended to apply throughout Canada for provincially and federally regulated insurers.” The point is that the MCT is a solvency test that is not applicable to a monopoly crown insurer.

- b) Please see the answer to a)

MPI (CAC) 1-2

Part and Chapter:	The Role of the DCAT and Interest Rate Forecasting in the 2019 GRA	Page No.:	p.4
PUB Approved Issue No:	2. Rate indication based on accepted actuarial practice in Canada; 7. Update of DCAT, target capital analysis and the target Basic total equity threshold levels based upon methodology approved in Board Order 130/17;		
Topic:	Minimum Capital Test		
Sub Topic:	Insolvency challenges		

Preamble to IR (If Any):

"Moreover, it raises again the questions around the setting of appropriate MCT levels for **a monopoly crown corporation that does not face the competitive and insolvency challenges of the private insurance industry.**" [emphasis added]

Question:

- a) Please provide the working definition of insolvency as it is used in this passage.
- b) Please elaborate on if it is possible for MPI to become insolvent, under this definition.
- c) If the answer to part (b) is yes, please elaborate on the remedial actions MPI could reasonably be expected to take, and discuss the implications for MPI's ratepayers, and shareholder.
- d) If the answer to part (b) is no, please elaborate on the reasons for this view.

Rationale for Question:

To understand the supporting grounds for the highlighted statement in the pre-amble

RESPONSE:

- a) From <https://www.merriam-webster.com/dictionary/insolvent> "Definition of insolvent 1a : unable to pay debts as they fall due in the usual course of business"

- b) Manitoba Public Insurance is backed by the government of Manitoba and is a monopoly. The only situation where MPI would go insolvent is if the government of Manitoba were to go insolvent, which is improbable given the taxing power of the provincial government.

CAC Manitoba adds that additional insight on related topics may be had by considering PUB Order 59/18 pages 61 – 68.

- c) N/A

- d) Please see the answer to b)

MPI (CAC) 1-3

Part and Chapter:	The Role of the DCAT and Interest Rate Forecasting in the 2019 GRA	Page No.:	p.6
PUB Approved Issue No:	4. d. Justification for the use of the Naïve interest rate forecast for rate-setting and target capital purposes; in particular, any change of circumstances since the issuance of Order 130/17 that would warrant the use of the Naïve interest rate forecast. 7.1 Any change in circumstances since the issuance of Order 130/17 that would justify changes to the DCAT methodology from that approved by the Board in Order 130/17;		
Topic:	Interest Rate Forecast		
Sub Topic:	Long-term yields Relationship with the Monetary Policy		

Preamble to IR (If Any):

Bank of Canada (BoC) states that its monetary policy is “a commitment to maintain low and relatively stable inflation—in particular, to keep the rate of inflation close to the 2 per cent midpoint of the 1 to 3 per cent target range”¹.

The BoC describes the transmission mechanism as “a complicated sequence of cause and effect that helps to keep inflation from rising above its target”. The starting point of the transmission mechanism is the target for the overnight interest rate.

The Transmission mechanism was described in the BoC materials cited in the following passage:

“Reliance on the naïve interest rate forecast for 2019 GRA also ignores recent developments in which the Bank of Canada has already twice raised the overnight lending rate this year, labelling the Bank of Canada’s “policy rate” to be “not material” (2019 GRA Information Requests – Round 1 CAC (MPI) 1-6). **This response flies in**

¹ <https://www.bankofcanada.ca/publications/books-andmonographs/why-monetary-policy-matters/4-monetary-policy/>, Monetary Policy: How It Works, and What It takes

the face of both common knowledge about the conduct of modern monetary policy and the Bank of Canada's clear official position, based on leading research:

Following the announcement of the Bank's policy action to increase its target for the overnight rate, the actual overnight interest rate adjusts almost instantly. As the overnight interest rate rises, two responses are observed. First, the hike in the overnight rate leads to an increase in longer-term interest rates in Canada. **This increase occurs because there is an entire spectrum of financial assets, ranging from overnight loans to 30-year bonds, and their rates tend to move together.**² [Emphasis Added]

Question:

- a Please provide any industry, or peer reviewed academic studies/literature that quantifies the length of lag, and the variability of lag between the overnight rate policy change, and the 10 Yr GOC Bond Rate.
- b Please assess the length and variability of the lags, documented in response to CAC (MPI) 2-1, in the context of the studies provided in part a) above.
- c Please provide any industry, or peer reviewed academic studies/literature that test the effectiveness of overnight rate policy changes as a forecasting proxy for 10 Yr GOC bond Rate. Please also discuss the lags documented in CAC (MPI) 2-1, in the context of these studies.

Rationale for Question:

To understand the relationship between the monetary policy and long-term yields.

² <https://www.bankofcanada.ca/publications/books-andmonographs/why-monetary-policy-matters/4-monetary-policy/>, Monetary Policy: How It Works, and What it Takes, section 4.1

RESPONSE:

- a) To argue about the position of the Bank of Canada on monetary policy and long-term yields on the basis of “any industry, or peer reviewed academic studies/literature that quantifies the length of lag, and the variability of lag between the overnight rate policy change, and the 10 Yr GOC Bond Rate” professes expertise and insight into the research underlying monetary policy decisions that I do not possess. Monetary policy is not based on one study or a narrow set of research. The extensive research program of the Bank of Canada is at <https://www.bankofcanada.ca/research/>

- b) Please see a)

- c) Please see a)

MPI (CAC) 1-4

Part and Chapter:	The Capital Maintenance Provision Proposal by Manitoba Public Insurance	Page No.:	p.3
PUB Approved Issue No:	2. Rate indication based on accepted actuarial practice in Canada; 20. Capital Maintenance Provision with further assessment of developing a pricing approach which accounts for the natural growth of Basic’s risk profile and protects against the natural depletion of Basic Total Equity.		
Topic:	Capital Maintenance Provision		
Sub Topic:	Alignment with international best practices		

Preamble to IR (If Any):

“The CMP does not align with Accepted Actuarial Practice in Canada.

In response to CAC (MPI) 1-78 the Corporation states that it “is not aware of the existence of any industry, gray and peer-reviewed literature regarding the need for and the methodology to establish a Capital Maintenance Provision (CMP) for non-profit, monopoly, public auto insurers, and therefore did not review any. **The CMP is simply a tool for maintaining capitalization from year-to-year**, based on a standard industry measure of capitalization (i.e. the Minimum Capital Test ratio). Even if such literature existed, the Corporation does not believe it was necessary, in the circumstances, to review it in order to recognize the need for a CMP and to establish the methodology.” [emphasis added]

And

“the use of a CMP is not normal actuarial practice and is not supported by any type of analysis or research in the industry”

Question:

Please identify the relevant section of the Actuarial Standards of Practice (ASOP) that describe how a company should **maintain** target capital.

Rationale for Question:

To understand the grounds for the statement

RESPONSE:

The question indicates that the passages quoted were taken out of context. The passages were written to indicate that including a capital growth component in an actuarial rate indication would not be the norm. To the best of the writer's knowledge the Actuarial Standards of Practice does not contain a section on how a company should maintain target capital.

MPI (CAC) 1-5

Part and Chapter:	The Capital Maintenance Provision Proposal by Manitoba Public Insurance	Page No.:	p.4
PUB Approved Issue No:	7.1 Any change in circumstances since the issuance of Order 130/17 that would justify changes to the DCAT methodology from that approved by the Board in Order 130/17;		
Topic:	Update of DCAT		
Sub Topic:			

Preamble to IR (If Any):

“the MCT used to calculate the proposed CMP in the 2019 GRA has no basis in actual capital need but is an arbitrary figure used to force through a CMP in this application.”

And

“The determination of a required rate increase to ensure a constant MCT is contrary to the PUB’s preference that the DCAT analysis be used to determine rate need based on the Corporation’s risk profile.”

Question:

- a Please explain how MPI uses the DCAT analysis to determine rate need.
- b Please provide a citation of the PUB order where the PUB’s preference is articulated.

Rationale for Question:

To understand the grounds for the statement

RESPONSE:

- The purpose of MPI's DCAT should be to determine the amount of capital the Corporation should hold in the Rate Stabilization Reserve. If the Corporation's actual capital is within the range of the RSR, determined using a carefully analyzed DCAT process, then the Corporation is holding sufficient capital for the risks it is faced with and the RSR will be at a level sufficient to serve its purpose which is to "protect motorists from rate increases that would otherwise have been necessary due to unexpected variances from forecasted results and due to events and losses arising from non-recurring events or factors", which is the stated purpose of the Rate Stabilization Reserve from Section RSR.3, page 3 of the 2019 GRA. If the RSR level falls below the minimum of the RSR target range then a rebuilding fee would be built into the rate change applied for.
- One citation is from PUB Order 162/16 (pp. 60-61): "The Board continues to favour the use of scenario testing adapted from the annual Basic DCAT investigation for the purposes of setting Basic target capital levels, expressed in terms of Basic total equity. . . For purposes of setting the upper threshold of the Basic target capital range, the Board withdraws its support for the use of the MCT and a MCT threshold ratio of 100%."

MPI (CAC) 1-6

Part and Chapter:	The Capital Maintenance Provision Proposal by Manitoba Public Insurance	Page No.:	p.5 & p.6
PUB Approved Issue No:	2. Rate indication based on accepted actuarial practice in Canada; 20. Capital Maintenance Provision with further assessment of developing a pricing approach which accounts for the natural growth of Basic’s risk profile and protects against the natural depletion of Basic Total Equity.		
Topic:	Capital Maintenance Provision		
Sub Topic:	Alignment with international best practices		

Preamble to IR (If Any):

“The RSR range will go up in dollar terms as the size of the Corporation increases. This negates the need for a CMP” p.5

And

“In short, while the RSR target levels will move over time based on changes to the Company’s risk profile and resulting DCAT analysis – the CMP is needed to ensure that the actual capital position does not deteriorate with changes in Basic’s risk profile, as measured by the MCT ratio.” This suggests that the use of the DCAT to set the RSR range will adjust to any changes in the Corporation’s risk profile and, therefore, go up as needed to fit that profile. A CMP is not needed on top of a carefully analyzed DCAT and resulting RSR range.” P.6

Question:

Please explain how abstract RSR targets (even those determined by DCAT analysis, and adjusted from year to year) contribute to actual capital (total equity) within the

range? Please ensure the answer fully explores the conceptual and practical differences between a target range for capital, and actual capital (total equity) held.

Rationale for Question:

To understand the grounds for the statement

RESPONSE:

The question asked seems to imply that MPI should hold capital above the level needed to ensure the Corporation can “protect motorists from rate increases that would otherwise have been necessary due to unexpected variances from forecasted results and due to events and losses arising from non-recurring events or factors”, which is the stated purpose of the Rate Stabilization Reserve from Section RSR.3, page 3 of the 2019 GRA.

The question is also confusing in the sense that it implies a link between contribution to the actual capital of the Corporation and the level of the RSR target range. A company’s total equity position will vary from year to year depending on the events that occur during that year (investment returns, frequency and severity of losses, population changes, etc.). The amount of capital a company should hold varies depending on the risk associated with its business model and the risk tolerance of the company. The purpose of MPI’s DCAT should be to determine the amount of capital the Corporation should hold in the Rate Stabilization Reserve, which is the Corporation’s capital reserve. If the Corporation’s actual capital is within the range of the RSR, determined using a carefully analyzed DCAT process, then the Corporation is holding sufficient capital for the risks it faces and the RSR will be at a level sufficient to serve its purpose stated above.

MPI (CAC) 1-7

Part and Chapter:	The Capital Maintenance Provision Proposal by Manitoba Public Insurance	Page No.:	p.6 Appendix B, p. 10
PUB Approved Issue No:	2. Rate indication based on accepted actuarial practice in Canada; 20. Capital Maintenance Provision with further assessment of developing a pricing approach which accounts for the natural growth of Basic's risk profile and protects against the natural depletion of Basic Total Equity.		
Topic:			
Sub Topic:			

Preamble to IR (If Any):**Recommendations:**

1. The PUB order that the CMP be removed from the 2019 GRA.
2. **The DCAT methodology should be used to set the RSR range.**
3. The PUB approve a decrease in rates based on the 50/50 interest rate forecast and Accepted Actuarial Practice in Canada, that would include the investment income on the RSR.

[Emphasis Added]**Question:**

Please provide the excerpt from the application that forms the basis for recommendation 2.

Rationale for Question:

To understand the grounds of the recommendation.

RESPONSE:

From page 2 of the Legal Application of the 2019 GRA:

"In the 2019 General Rate Application (GRA) for Basic Autopac the Corporation is requesting that the PUB approve the premiums charged with respect to compulsory driver and vehicle insurance (rates for service) effective March 1, 2019, including:

1. A 2.2% overall increase in Basic vehicle premium revenue (including Vehicles for Hire rates for service) comprised of:

i. 0.1% increase to the break-even cost of policies

ii. 2.1% increase for a Net Capital Maintenance Provision to maintain MPI's capital position through the rating year, as measured by the Minimum Capital Test. The Capital Maintenance Provision accounts for the positive impact of investment income on Basic's Rate Stabilization Reserve, and collects only the residual amount required to maintain Basic's capital position

2. A minimum (lower) RSR target of 34% Minimum Capital Test (MCT), (total equity equivalent of \$143 million as at February 28, 2019), based on a 1-in-40 probability Dynamic Capital Adequacy Test (DCAT) scenario.

3. A maximum (upper) range RSR target of 85% Minimum Capital Test (MCT), (total equity equivalent of \$305 million as at February 28, 2019), based on a 2 year, 1-in-40 DCAT scenario with no management action."

The recommendations made in the report support the use of the DCAT methodology to set the RSR range and also that the CMP be removed.

MPI (CAC) 1-8

Part and Chapter:	MPI’s Investment Portfolio: Asset/Liability and Previous Recommendations	Page No.:	p.6
PUB Approved Issue No:	21. Asset Liability Management Study		
Topic:	Dollar and Duration Matching		
Sub Topic:	Length of Nominal Duration		

Preamble to IR (If Any):

“#4 Lengthening Nominal Duration

Re-examine the decision to lengthen the nominal duration in the Basic Portfolio, given: MPI’s defensive (lower risk) strategy; Mercer’s return assumptions for bonds and RRBs; and concerns about the effectiveness of the duration policy noted above (“basis” risk).”

The Corporation’s strategy to reduce interest rate risk is by dollar and duration matching the fixed income portfolio and claims liabilities.

Question:

- a Please explain how lowering the nominal duration of the Basic Claims fixed income portfolio below the claims liability duration will impact interest rate risk strategy and;
- b Please explain why this decision needs to be re-examined.

Rationale for Question:

To understand the supporting grounds for the recommendation

RESPONSE:**a) Lengthening Nominal Duration**

It is my understanding that MPI proposes to **lengthen or increase nominal** duration in the Basic Portfolio. I believe that this would increase the inflation risk component of surplus volatility when a Real (not Nominal) Liability Benchmark Portfolio is used.

I am not suggesting lowering the nominal duration. Instead, I am suggesting changing the basis of hedging (i.e., using some RRBs to better match the real interest rate risks and inflation risks in the Real Liability Benchmark Portfolio).

b) Re-examining Lengthening "Nominal" Bond Duration

Unless the bases (nominal vs. real) are the same for assets and liabilities, there is basis risk from using one type of (nominal) asset to hedge (real) interest rate risk and inflation risk in the liabilities.

For example, here's one exposure that arises from the current policy to use nominal assets only (no RRBs) to hedge risk in the liabilities (which have some inflation sensitivity). If inflation turns out to be higher than expected ("realized" inflation), then surplus will fall because nominal bonds will do poorly relative to RRBs. (Lengthening nominal bonds would make the outcomes worse.)

- "Current" income on RRBs would reflect higher actual inflation (i.e., the RRB principal is adjusted up by the rate of inflation, maintaining the real purchasing power of RRB capital);
- RRBs may also have a capital gain to the extent that real yields fall, with investors seeking more insurance protection against future inflation risk by bidding the price of RRBs up); and
- Nominal bonds would do poorly (nominal yields could rise), with longer duration bonds doing worse than shorter ones.

MPI (CAC) 1-9

Part and Chapter:	MPI’s Investment Portfolio: Asset/Liability and Previous Recommendations	Page No.:	p.16
PUB Approved Issue No:	21. Asset Liability Management Study		
Topic:	Real Interest Rate Risk		
Sub Topic:			

Preamble to IR (If Any):

“MPI’s approach **appears to** focus more on the **shorter-horizon** and on the inflation component (less risky), rather than the capital gain/duration effects from **longer-term** changes related to **both inflation and changing “real” interest rates** (“really” risky)

Question:

- a Please provide a definition of “really risky”, specifying the metrics and relevant benchmarks.
- b Please provide supporting documentation, in the form of relevant industry or peer reviewed academic articles that supports the assertion that real yields are “really risky”.

Rationale for Question:

To understand the supporting grounds for the statement

RESPONSE:

a) “Really Risky” Metrics and Relevant Benchmarks

Using the definition of risk adopted by MPI (surplus volatility), I would say the liabilities are inherently “really” risky because their present value varies considerably with changes in real interest rates and inflation. (A 10 year duration for Basic Liabilities is much riskier, other things equal, than a liability which matures tomorrow.)

Using the Liability Benchmark Portfolio as the reference point, I would suggest that the shorter-horizon component of those liabilities has less inherent risk in it in today’s environment (relatively low, stable inflation) compared to historic periods. In other words, it may not be that risky to use nominal bonds to hedge real interest rate exposures in the liabilities over, say, the next few years (< 3 years). However, going beyond, say, five (5) years, the basis risk between nominal bonds and RRBs may be higher given the greater uncertainty about these longer-term forecasts, and the greater sensitivity of outcomes (i.e., duration) over those longer time horizons.

b) How Risky are Real Yields?

The limited time frame to prepare a response (i.e., over a long weekend plus two working days) does not allow for a thorough literature review. However, here are some useful statistics from the the Canadian Institute of Actuaries (“CIA”).

The CIA publishes a Report on Canadian Economic Statistics, and the most recent version covers the period ending 2017.³ In this report, the CIA shows the performance difference between RRBs and nominal bonds over the past 25 years since RRBs were first issued (in 1993), as well as inflation and related volatilities.

The table on the following page shows, for example, the **standard deviation** (“volatility”) of the percentage change/return in the Consumer Price Index (“inflation”), Canada Long Bonds, and RRBs (highlighted in yellow).

³ Table 2A. STANDARD DEVIATIONS OF NOMINAL ANNUAL PERCENTAGE RATES OF CHANGE/RETURN, in *Report on Canadian Economic Statistics 1924–2017 (Final Release, Document 218048)*

STANDARD DEVIATIONS OF NOMINAL ANNUAL PERCENTAGE RATES OF CHANGE/RETURN										
	PERIOD	CONSUMER PRICE INDEX	CANADA COMMON STOCKS	CANADA LONG BONDS	CONVENTIONAL MORTGAGE INDEX	91 DAY T-BILLS	REAL RETURN BONDS	U.S. COMMON STOCKS IN CANADIAN \$	GDP PER EMPLOYED	WAGE AND SALARY INDEX
5 YRS	1928 - 1932	5,51	26,51	6,94	7,67	3,54
	1933 - 1937	2,54	24,48	8,22	3,06	2,88
	1938 - 1942	3,37	12,66	4,29	.	0,08	.	19,87	6,75	2,85

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	1943 - 1947	6,21	15,37	1,27	.	0,05	.	20,35	5,34	3,98
	1948 - 1952	5,23	18,04	3,27	.	0,26	.	9,94	4,01	1,47
	1953 - 1957	1,27	23,13	5,31	3,98	1,06	.	26,16	3,89	0,89
	1958 - 1962	0,99	18,18	6,86	3,24	1,01	.	20,25	2,20	0,96
	1963 - 1967	0,96	12,47	3,47	2,76	0,62	.	13,45	1,44	1,13
	1968 - 1972	1,72	13,78	10,24	6,97	1,76	.	10,93	1,52	1,67
	1973 - 1977	2,49	17,38	8,01	4,55	1,45	.	27,80	1,91	3,27
	1978 - 1982	1,42	21,99	19,61	9,75	4,18	.	15,54	1,40	2,11
	1983 - 1987	0,33	15,35	9,26	4,01	1,27	.	14,35	2,27	1,97
	1988 - 1992	1,22	14,01	7,74	4,74	2,97	.	13,91	1,28	0,64
	1993 - 1997	0,79	12,94	14,49	7,03	1,51	12,53	14,14	0,62	0,75
	1998 - 2002	1,36	18,33	8,86	3,61	1,16	6,73	24,23	3,01	1,34
	2003 - 2007	0,25	6,93	4,85	1,90	0,90	10,77	8,75	2,33	0,71
	2008 - 2012	0,69	25,93	8,93	2,59	0,94	7,88	14,17	2,33	0,90
	2013 - 2017	0,23	10,77	8,76	1,27	0,22	13,34	12,41	2,11	0,40
10 YRS	1928 - 1937	4,99	29,84	7,44	.	.	.	.	8,08	3,83
	1938 - 1947	4,78	14,79	3,00	.	0,13	.	19,19	7,43	3,27
	1948 - 1957	4,13	20,13	4,42	.	1,13	.	18,71	4,91	2,25
	1958 - 1967	1,18	14,71	5,13	3,23	0,89	.	16,33	1,95	1,60
	1968 - 1977	3,43	15,34	8,68	5,86	1,89	.	19,93	2,71	2,81
	1978 - 1987	3,28	18,10	14,74	7,17	3,68	.	14,11	2,75	3,29
	1988 - 1997	1,72	14,30	10,96	5,83	3,60	.	13,84	1,03	1,61
	1998 - 2007	0,93	15,55	6,75	2,91	1,15	8,50	17,18	2,54	1,21
	2008 - 2017	0,49	18,94	8,91	2,52	0,68	11,46	16,42	2,10	0,72
15 YRS	1928 - 1942	4,88	24,96	6,48	.	.	.	.	10,38	4,16
	1943 - 1957	4,74	18,18	3,83	.	1,04	.	18,60	5,09	2,84
	1958 - 1972	1,61	13,92	7,15	4,58	1,44	.	14,95	2,19	2,45
	1973 - 1987	3,12	18,61	12,83	6,39	3,71	.	19,78	3,19	3,68
	1988 - 2002	1,57	15,76	10,53	5,46	3,40	.	18,85	1,81	1,56
	2003 - 2017	0,48	16,71	7,65	2,26	1,35	10,89	14,60	2,23	0,82
25 YRS	1943 - 1967	3,75	16,64	4,29	.	1,68	.	17,38	4,15	2,50
	1968 - 1992	3,19	16,54	11,36	6,42	3,77	.	17,08	3,21	3,31
	1993 - 2017	0,80	16,49	9,57	4,15	2,02	10,14	17,40	2,14	0,98
50 YRS	1968 - 2017	3,27	16,35	10,42	5,79	4,50	.	17,08	3,55	3,59
75 YRS	1943 - 2017	3,45	16,43	9,33	.	4,24	.	17,16	3,74	3,26
ALL YRS	- 2017	3,91	18,29	8,72	5,61	4,21	9,96	17,24	5,29	3,60

Source: Statistics Canada CANSIM Series © Copyright 2018. All Rights Reserved.

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Source: Standard & Poor's, a division of The McGraw-Hill Companies, Inc. © Copyright 2018. All Rights Reserved.

The CIA's statistics show:

c) **Over the last 25 years:**

- **CPI (inflation) volatility/standard deviation of 0.8%**, significantly below the two prior 25-year periods (~ 3% to ~ 4%);
- **RRB return volatility ~ 10.1%**;
- **Canada Long Bond return volatility ~ 9.6%**;

d) **Over 5-year periods (ending 2017, 2012, 2007, 2002, 1997):**

- **Falling volatility in Canada Long Bond returns** (14.5% to 8.8%);
- **Falling inflation volatility**; and
- **No trend in RRB return volatility** (12.5% by 1997, 13.3% by 2017).

If inflation volatility were zero, then nominal yield volatility would be the same as real yield volatility, and all yield volatilities would be deemed “really” risky or less risky depending on, say, the mismatch in duration between assets and liabilities. Given the long time horizon we are concerned about – such as 10 years or longer – even small changes in yields can have big impacts on funded status (surplus) if there is a material mismatch between asset and liability durations (type of mismatch and size).

While inflation volatility has fallen over the decades and we are currently in a low, stable inflation environment, over a long time horizon (10+ years), investors should not be overconfident about their ability to predict inflation or interest rate “regimes”. If the cost of buying inflation protection/insurance is relatively low, the surplus volatility reduction from hedging inflation risk (and real interest rate risk) can free up risk-taking room in asset classes that offer better risk-adjusted returns, measured on a total portfolio basis and in relation to liabilities.

MPI (CAC) 1-10

Part and Chapter:	MPI’s Investment Portfolio: Asset/Liability and Previous Recommendations	Page No.:	p.22, footnote 23
PUB Approved Issue No:	21. Asset Liability Management Study		
Topic:	Liability Benchmark Portfolio		
Sub Topic:			

Preamble to IR (If Any):

“In my oral testimony two years ago, I described the concept of a “risky bucket” and a “risk-free” or “minimum risk” bucket. Simply put, I believe MPI has a “leak”, or two, in its Liability Benchmark Portfolio (minimum risk bucket).”

Question:

Please elaborate on what is meant by “leak” in the context of this quote, specifying if there are one or more. If more than one, please specify if there are any distinguishing features between them.

Rationale for Question:

To understand the supporting grounds for the assertion.

RESPONSE:

The Risk-Free Bucket

I believe that MPI’s Minimum Risk Portfolio (also called Liability Benchmark Portfolio) should include some RRBs. However, MPI has chosen to define the Liability Benchmark Portfolio in nominal terms (i.e., by including only nominal bonds, and no RRBs).

Possible Leaks

Because the liabilities have some exposure to inflation risk, I believe that a Liability Benchmark Portfolio that has no inflation protection in it may suffer a leak (loss in purchasing power) if **realized** inflation turns out to be higher in the future than the rate being priced in the nominal bonds that make up the Liability Benchmark Portfolio.

A second leak would occur if **real interest rates** fall, while nominal interest rates remained unchanged (implying higher **expected** inflation).

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Sub Topic:	Inflation expectations		

Preamble to IR (If Any):**"EXECUTIVE SUMMARY OF RECOMMENDATIONS****1. Real Liability Benchmark**

Re-examine the reliance on a Nominal Liability Benchmark, rather than a Real Liability Benchmark, given the understatement of the long-term risk of inflation and changing real interest rates that are inherent in the Basic and Pension Liabilities."

Question:

- a Please elaborate on Mr. Viola's expectations for inflation, and inflation volatility, in the short and long run.
- b Please provide any supporting documentation, in the form of relevant industry or peer reviewed academic articles that supports these expectations

Rationale for Question:

To provide context for the recommendation noted in the pre-amble.

RESPONSE:**a) Expectations for Inflation and Inflation Volatility**

I don't have a "view" on expected inflation, or inflation volatility, per se. However, I would suggest that investors should have less confidence about their inflation forecasts the farther out the forecast goes (i.e., we should have less confidence about the 2025 inflation rate than the inflation rate next year).

b) Supports for Expectations

My comment about the "understatement of the long-term risk of inflation and changing real interest rates that are inherent in the Basic and Pension Liabilities" relates specifically to MPI's determination of the constituents of the Basic and Pension Liability Benchmark Portfolios. As such, there is no industry or academic article that I am aware of that addresses my claim about the basis risk that I believe exists between liability benchmark portfolios that are defined in nominal terms rather than real terms.