ADDENDA
CAPITAL

Manitoba Public Insurance

Inflation Mitigation Strategy – Real Return Bonds

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Background & Objectives

- ALM study conducted by Mercer recommended implementing a strategy to mitigate inflation risk
  - Proposed $600 million real return bond (RRB) strategy within the Basic Claims portfolio

Objectives

- Develop a strategy to mitigate inflation risk

Parameters

- Preserve the integrity of the existing interest rate risk management strategy
- Consider the liquidity profile of the resulting portfolio
- Keep the same methodology to calculate the IFRS discount curve

Mitigating Inflation Risk

Actual inflation = expected inflation + unexpected inflation

- Currently, only expected inflation is mitigated
  - MPI's liabilities reflect expected inflation through actuarial assumptions
- Claims are determined based on actual inflation
- Surplus volatility is introduced when actual inflation is different than expected inflation
- Real return bonds (RRB) compensate for actual inflation
  - Investing in RRBs would provide protection against unexpected inflation

Strategy Implementation Options

Implementation of the RRB portfolio can be accomplished through two approaches

1. Physical Portfolio Only

- Sale of Provincial bonds funds purchase of inflation linked bonds
- Provincial bond holdings drop significantly, lowering total yield due to loss of credit spread exposure
- May impact interest rate risk mitigation effectiveness
- Use of TIPS requires currency hedging

2. Portfolio with Overlay (via repo use)

- Provides unexpected inflation protection without losing provincial credit exposure
- Isolate inflation risk protection from interest rate risk for greater mitigation efficiency
- Long inflation linked and short nominal components leave no significant net leverage
- Maintaining the Provincial bond portfolio allows the interest rate risk mitigation to be preserved

Strategy Implementation

Addenda Capital's Proposed Approach: Portfolio with Overlay

Allocation (%)	Physical Portfolio Only	Portfolio with Overlay
Government Bonds	3	37
Corporate Bonds	28	28
MUSH Bonds	20	20
Short Term	0	0
Core Canadian Real Estate	10	10
Commercial Mortgages	5	5
Canadian RRB / US TIPS (physical)	34	
Canadian RRB / US TIPS (repo)		34
Canada/US Treasuries (reverse repo)		-34

The Physical Portfolio has a lower exposure to provincial bonds which lowers the total portfolio yield by 27 bps*

As at September 30, 2023

* Estimated as 34% exposure x assuming provincial credit spreads of approximately 80 bps

Source: MPI, Bloomberg, Addenda Capital

Overlay Strategy Mechanics

- In theory, the gain/loss of the strategy is a zero-sum game
  - Subject to inflation basis risk and mitigation ratio

- The payoff dynamics for the strategy can be simplified as follows:
  (assuming the inflation assumption for liabilities defined by actuaries is set to the expected inflation observation, where expected inflation is the difference between nominal and real yields)

Inflation Scenario	Liability (G/L)	Asset (G/L)
Actual > Assumption/Expected	Loss	Gain
Actual < Assumption/Expected	Gain	Loss

Risk Considerations of the Overlay Strategy

- Structure Risks
  - Operational complexity (small)
    - Managing repo/reverse repo transactions
  - Basis risk of inflation measures
    - Liabilities linked to healthcare costs and Manitoba CPI, while RRBs and TIPs pay national inflation measures
- Interest Rate Risk
  - Overlay approach enables preservation of the interest rate risk management strategy by not materially changing the physical portfolio
  - The overlay is constructed to have no duration contribution to the overall portfolio
- Liquidity
  - The overlay structure offers higher liquidity over the physical portfolio
- Adverse Funding Market Conditions
  - Inability to roll repo positions may result in the unwinding of the overlay exposure (long security or cash positions are still held)
  - Failure of a counterparty may result in a loss of associated market gains on the position if posted collateral is insufficient to cover

Capital & IFRS Considerations of an Overlay Strategy

IFRS

- Incorporation of inflation linked investments into the <u>physical</u> portfolio will require an adjustment to the IFRS 17 discount rate setting to reflect a higher allocation to federal government holdings resulting in a lower yield which will increase the value of the liabilities
- Use of an <u>overlay</u> strategy for inflation exposure does not require a change to the IFRS discount curve composition as a result of its inclusion

Capital

- Interest rate risk
  - If kept duration neutral, no contribution to interest rate risk sensitivity
- Credit risk
  - Contribution to required capital calculated based on the counterparty credit rating for the repo (estimate a senior bank rating AA or A = factor 0.25% or 0.75%) ($1.5M to $4.5M based on $600M)
- Currency risk
  - 10% capital charge on unhedged currency exposure (may be small related to P&L of repo)

Costs

- Transactional costs are a function of the difference in the repo financing rates
  - One repo rate is paid and one is received
    - Bid/ask spread between the repo on RRB and the reverse repo on nominal bonds
    - ~15 bps for the strategy ➔ 5 bps at the total portfolio level*
  - Financing cost to generate eligible collateral
    - Difference between repo rate on provincial bonds and T-bill rate (~5 bps)
    - ~0.2 bps at the total portfolio level**

As at September 30, 2023

* Estimated as 34% exposure x cost of 15 bps = 5 bps at the total portfolio level
** Estimated as 10% of collateral on the 34% notional exposure x cost of 5 bps = 0.15 bps at the total portfolio level
Source: Bloomberg, Addenda Capital

Mitigating inflation through an overlay strategy

- Provides compensation for unexpected inflation without compromising the portfolio's provincial credit exposure
- Preserves the integrity of the existing interest rate risk management strategy
- Maintains a desirable liquidity profile
- Does not necessitate consideration of changes to the IFRS discount curve composition

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