



Options for the IRFRF



**Manitoba
Public Insurance**



Interest Rate Forecast Risk Factor

Interest rate forecast is a core element of Basic ratemaking

Starting Premise:

- Consistent with Dr. Cleary's view and the historical evidence, the standard interest rate forecast is unlikely to be realized
- The Corporation does not believe that the standard interest rate forecast is a "best estimate"
- The IRFRF should therefore protect against the risk that rates are being systematically set to be deficient



Form of the IRFRF

Recommended Approach:

- Risk Factor Rate Increase

Base the Risk Factor Rate Increase on:

- i. Risk Tolerance
- ii. Adjustment to Standard Forecast
- iii. Historical context



Risk Factor Rate Increase

A Risk Factor Rate Increase would take the following form:

Total Rate Increase (%)

= Rate Increase with Standard Forecast (%) + IRFRF (%)

Advantages:

- Conceptually Simple, easy to understand
- Transparent
- Limited impact on existing forecast and ratemaking

Challenges:

- Calibrating the magnitude of the IRFRF



Calibrating the IRFRF Magnitude

Based on Risk Tolerance

1. Define the reasonable “book ends” of Risk
 - Use Standard Forecast and Flat Interest rate assumption:
 - Rate increase of 2% to 7% needed
2. Apply judgment/qualitative assessment to determine magnitude of IRFRF
 - IRFRF anywhere from 0% to 5%, based on 2% overall rate increase



Calibrating the IRFRF Magnitude

Based on Adjustments to Standard Forecast

1. Define a reasonable adjustment to the Standard Forecast
 - E.g. if Standard Forecast is a 211 bps increase, cut increase by one half, to 106 bps
2. Run Rate model with 'Half Slope' (106 bps) interest rate trajectory to determine required rate increase
 - 106 bps requires 4.0% overall rate increase
3. Determine IRFRF as:
$$\text{Half Slope} - \text{Standard} = \text{IRFRF}$$
$$4.0\% - 2.0\% = 2.0\%$$



Calibrating the IRFRF Magnitude

Based on Historical Context

1. Use Historical Rate movements
 - Use historical interest rates to choose a 'more common' interest rate trajectory
 - E.g. 85th Percentile = 123 bps
2. Run rate model with '85th Percentile' (123 bps) interest rate trajectory to determine required rate increase
 - 123 bps requires 3.6% overall rate increase
3. Determine IRFRF as:
$$\begin{array}{rcl} 85^{\text{th}} \text{ Percentile} & - & \text{Standard} = \text{IRFRF} \\ 3.6\% & - & 2.0\% = 1.6\% \end{array}$$



Standard Interest Rate Forecast

Historical Interest Rate Movements

- The magnitude of Interest Rate movement in the Standard Forecast is 'uncommon'
 - Analyzed Bank of Canada >10 year interest rates since 1956, excluding the Stagflation Period from 1976 to 1985
 - Standard forecast movement of 211 basis points over the next 10 quarters (to the end of the rating period) represents a 96.5 percentile interest rate movement (1-in-29 year)
 - Olympic average forecast of 259 basis points represents a 99.4 percentile interest rate movement (1-in-167 year)



Risk Factor Rate Increase

Scenarios based on 0% Rate Increase

Name			2016/17	2017/18	2018/19	Avg Net Inc. for Rating Years	Rate Change Estimate	IRFRF Rate Increase
\$000,000s								
1. March 2016 Standard Forecast 2017 GRA, Forecast 0% Rate Change	Net Income		(18.7)	(17.9)	(7.9)	(12.9)	2.0%	
	RSR		180.6	162.0	154.7			
2. Flat Interest Rate Forecast	Net Income		(38.2)	(48.1)	(45.2)	(46.6)	7.0%	
	RSR		157.2	103.6	53.3			
3. July 2016 Standard Forecast	Net Income		(32.7)	(32.8)	10.6	(11.1)	1.7%	
	RSR		162.8	128.4	141.4			
4. Half Slope (1.06%)	Net Income		(25.5)	(32.4)	(22.9)	(27.7)	4.0%	2.0%
	RSR		172.3	137.0	111.7			
5. 85th Percentile (1.23%)	Net Income		(23.6)	(30.0)	(19.3)	(24.7)	3.6%	1.6%
	RSR		174.6	142.1	120.9			
6. 90th Percentile (1.47%)	Net Income		(21.0)	(26.0)	(15.5)	(20.7)	2.9%	0.9%
	RSR		177.8	149.9	132.9			
7. 95th Percentile (1.85%)	Net Income		(16.9)	(20.6)	(9.8)	(15.2)	2.2%	0.2%
	RSR		182.7	161.0	150.4			



Alternative Interest Rate Forecasts

- Alternative means and tools for interest rate forecasting do exist:
 - ESGs, derivatives based forecasts
- Complex alternatives with significant costs, and learning curves
- Interest Rate Forecasting Risk is a material concern, requiring immediate relief
- An IRFRF is the appropriate solution for the circumstance



Conclusions

- A Risk Forecast Rate Increase is the appropriate approach
 - Simple and Transparent
 - Options exist for calibrating the magnitude of the IRFRF
- Risk Tolerance will factor into the determination of magnitude, considering:
 - Rate stability
 - Satisfactory financial condition of Basic