

Financing infrastructure investments in an era of deep uncertainty: in need of updating the regulatory toolbox

INTERNATIONAL PERSPECTIVE

PRESENTED BY

Bente Villadsen

PRESENTED FOR

Utilitatis / Utilitalia

WEBINAR

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Agenda

North American Cost of Capital Determination

Selected Issues and Practices (in various jurisdictions)

- Cost of Equity
 - Selecting the Risk-free Rate
 - Beta Estimates
 - Equity Risk Premium
- Incentives, Insurance and Securitization

North American Cost of Capital Regulation

North America: Electric, Gas and Water utilities regulated by the 50 U.S. state regulators / 10 Canadian Provinces (Electric & Gas Transmission regulated by Federal regulator in both countries)

U.S. States and Canadian provincial regulators have large degree of discretion regarding methods and evidence they consider

Common features:

- Hear evidence from multiple models* / witnesses
- Rarely provides specifics regarding ultimate calculation of the allowed return
- Generally specify the Allowed Return on Equity, the Allowed Equity percentage, and allows the embedded cost of debt
- U.S. generally operate with substantial lag in cost recovery, Canada generally uses forecasted cost

* Commonly includes CAPM, Discounted Cash Flow

Allowed Nominal ROEs and Equity Percentages (Last 12 months)

	Allowed ROE	Equity %
U.S. Electric Average	9.5%	49% - 50%
U.S. Gas Average	9.6%	50% - 52%
U.S. Water Average	9.5%	51% - 52%
Canadian Electric Range	8.5% - 9.65%	35% - 41%
Canadian Gas Range	8.5% - 9.65%	35% - 45%

- The British Columbia Utilities Commission has issued the only Canadian decision in 2023 for electric & gas utilities; includes 9.65% ROE and 41% (electric) to 45% (gas) equity. This is higher than in other Canadian jurisdictions.
- U.S. allowed ROEs are up slightly over 2022.
- Cost of debt is the embedded cost of debt (most including know and measurable changes)

Selected Issues and Practices: Risk-free Rate

All of North America calculates a nominal cost of equity and cost of debt, so the inflation adjustment is irrelevant.

They differ re. forecasted vs. historical and if historical – what period to use.

Virtually all use long-term; 20- or 30-year government bonds.

U.S. Federal, California: 6 month historical;

British Columbia, New York: 90 days historical

Illinois: forecast

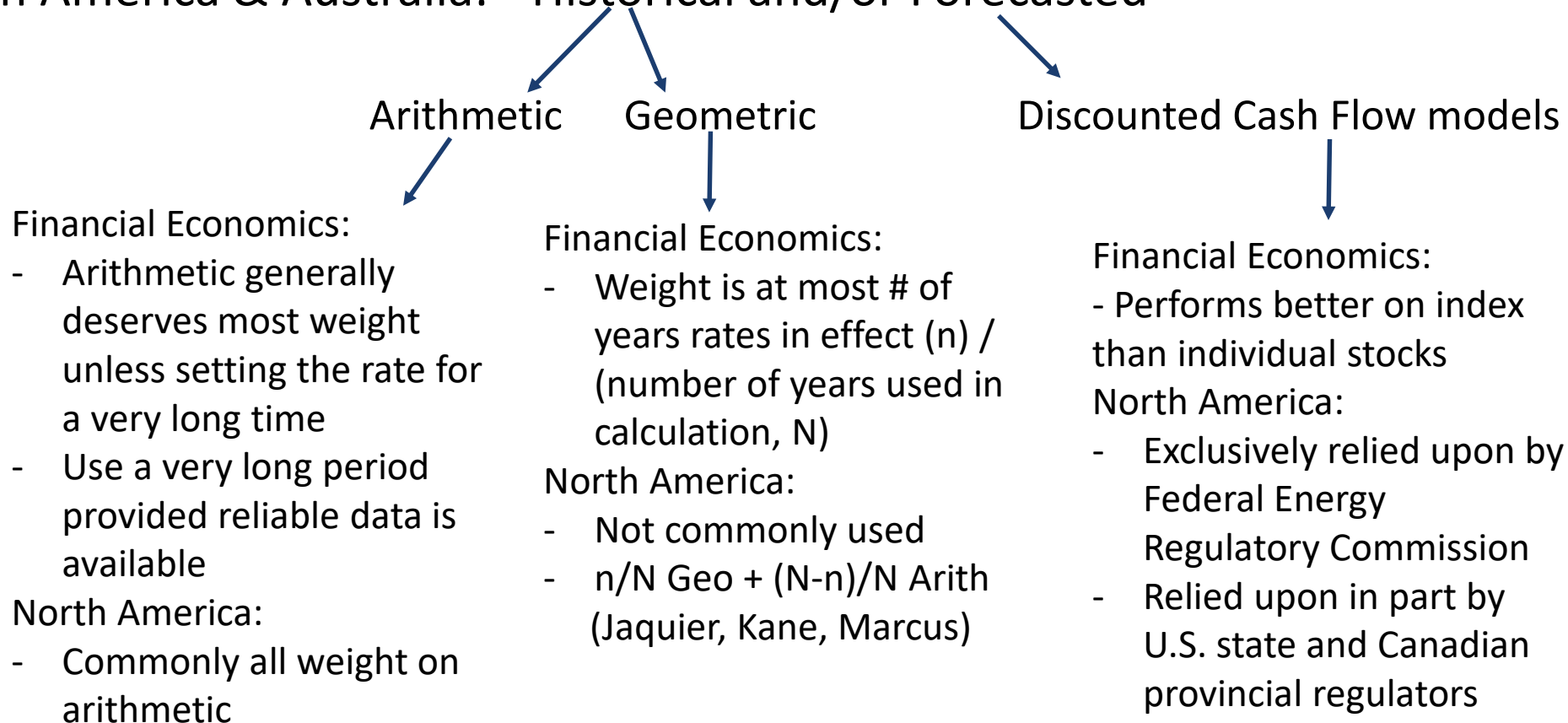
Some normalization during quantitative easing

I recommend a forecast for the period during which the WACC will be in effect if reliable forecasts are available

Selected Issues and Practices: Equity Risk Premium

Choices: Historical / Forecasted / Surveys

North America & Australia: Historical and/or Forecasted

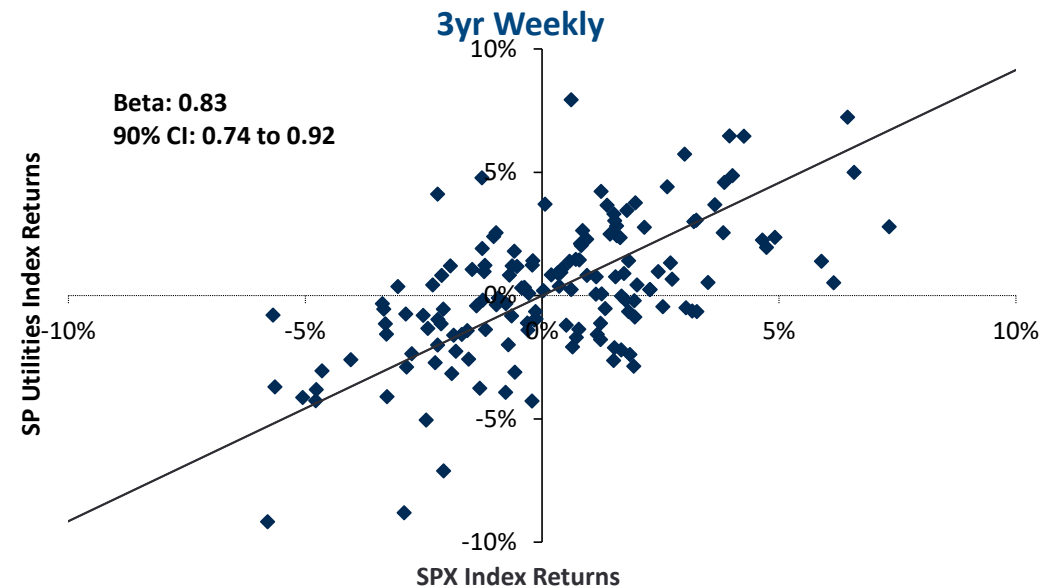
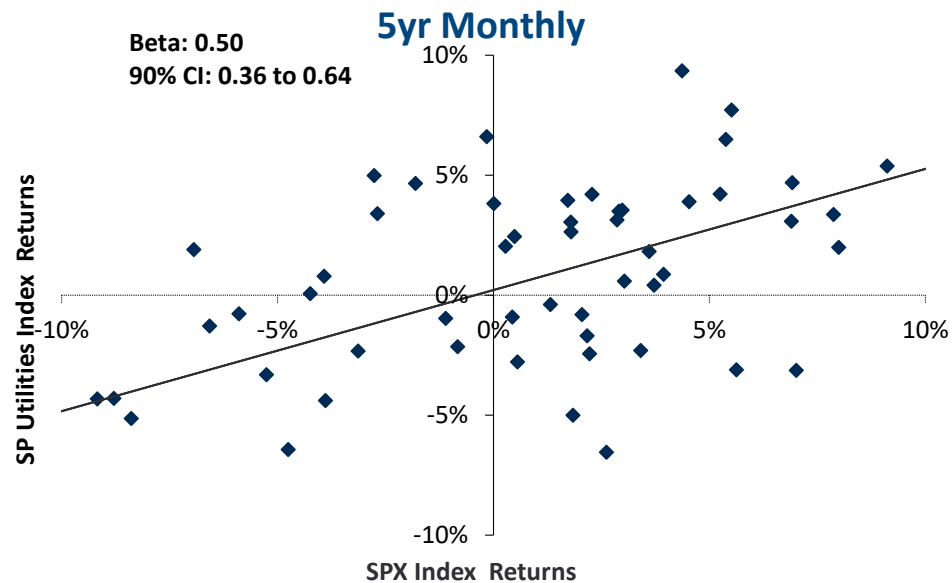


Selected Issues and Practices: Beta Estimates

U.S., Mexico, Caribbean: Mostly 5-year weekly, sometimes 2-3 year weekly (Blume Adjusted).

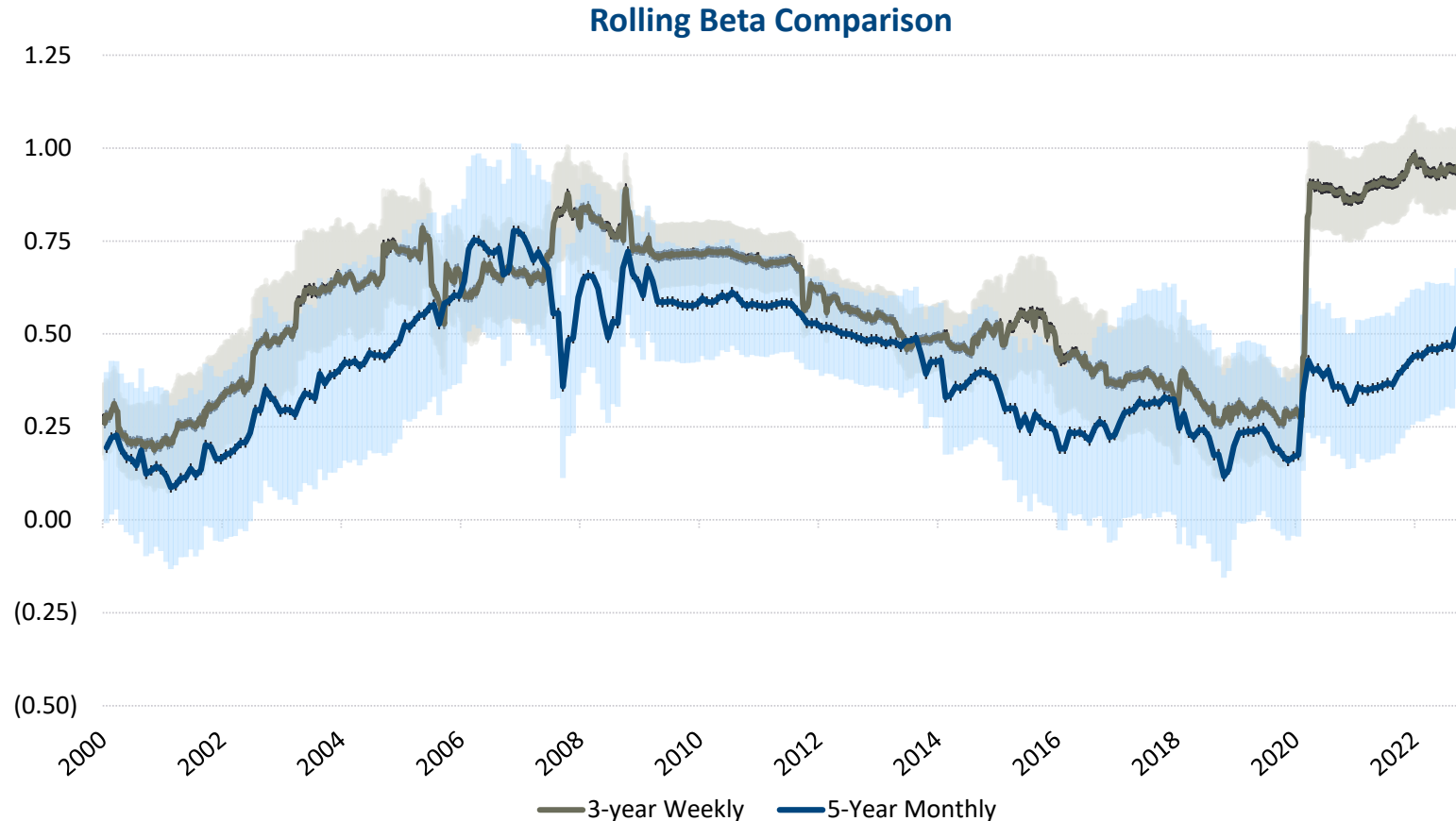
Canada: Weekly or monthly (may or may not be Blume adjusted)

Tighter estimates using more recent and more frequent data



Charts shows the beta estimates for 37 Canadian and US Electric and gas utilities as of year-end 2022:
Betas in North American has increased substantially since 2019

Selected Issues and Practices: Beta Estimates – recent development



Charts shows the beta estimates for 37 Canadian and US Electric and gas utilities as of year-end 2022: Betas in North American has increased substantially since 2019. Water utilities increased earlier in the US.

Selected Issues and Practices: Selecting the WACC / ROE

New Zealand: Calculate the standard error of the estimated WACC and use 67 percentile of estimate.

U.S. Federal Energy regulatory Commission:

- Average the median of CAPM and DCF if nothing unusual
- Consider the Upper 1/3 of the range (from average of min to average of max results) if (1) entity is more risky than the sample or (2) if capital markets are highly volatile
- Add incentives to the allowed Return on Equity for selected issues: reducing transmission constraints, enhanced technology, participation in certain market organizations, ...

Selected Issues and Practices: Water Utilities

Several US States:

- Encourage the investor-owned water utilities take over of small local systems (often underfunded)
 - Connecticut: Incentive added to allowed return; e.g., 0.5% higher ROE
 - Pennsylvania: Allow standard nominal WACC on the purchase price (commonly only allowed on book value)
 - Multiple states: Mechanisms to flow investments in such systems into the regulated asset base without awaiting a regulatory hearing

Selected Issues and Practices: Stranded Assets and Asymmetric Risk

Early retirement of carbon-intensive assets: Many U.S. jurisdictions have recently used securitization - requires a line item to be added to customer bills to recover the remaining costs.

Asymmetric risk (e.g., wildfires): Regulation may prevent a utility from realizing a great upside but may not prevent downside risks or the sharing of such risks may not be allocated symmetrically – the utility may in expectation not be able to earn its allowed WACC.

- Options: (i) remove asymmetry or (ii) add a premium
- California example re. wildfires:
 - Unable to insure for wildfires
 - Calculated the premium needed to make the utilities indifferent in expectation between carrying the risk and insuring against the risk; premium needs to be 6% - 7%
 - Ultimate resolution: Created state-wide fund that covers all utilities in the state; funded by customer and utility (shareholder) contribution, managed by government

Discussion

Questions, Comments, Debate

References

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Eric Jacquier, Alex Kane, Alan J. Marcus, “Optimal Estimation of the Risk Premium for the Long Run and Asset Allocation: A Case of Compounded Estimation Risk,” *Journal of Financial Econometrics*, vol 3, 2005, 37-55. (theory on the weigh assigned to arithmetic v geometric risk premium)

Regulatory Practices

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New Zealand Commerce Commission, “*Input methodologies review decision: Summary Paper*,” December 2016.

California Bill, “AB-1054 Public Utilities: wildfires and employee protection,” [Bill Text - AB-1054 Public utilities: wildfires and employee protection. \(ca.gov\)](#)