DEMANDE DE RENSEIGNEMENTS NO 1 DE DRE VILLADSEN AU DR BOOTH

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1. **Références** : **C-ACIG-0037**

   Page. 2, lines 14-16 : "I base my LTC yield on the forecast from the Parliamentary budget officer and the Federal government's budget briefing which itself was based on consensus values from the private sector.".

Demandes :

1.1 Please provide a copy or citation to the referenced budget briefing used by Dr. Booth.

Réponse :

Please see: https://www.budget.gc.ca/2021/home-accueil-en.html

2. **Références** : **C-ACIG-0037**

   Page 3, line 17 : "However, I have seen such qualitative risk factors consistently introduced in other hearings for the last almost four decades.".

Demandes :

2.1 Please provide citations to the filed evidence in which such qualitative risk factors were described, and please provide the link and/or copies of the corresponding decisions.

Réponse :

Dr. Booth has rarely seen any testimony from a witness on behalf of a utility without qualitative assessments of increased risk since he first testified in 1986. Neither, has he seen *any* analysis of the repeated ability of Canadian utilities to earn their allowed ROE demonstrating the practical absence of such risk. In terms of examples, Dr. Booth refers to recent witnesses before the Regie in 2009 and 2011 that should be familiar.

Dr. Villadsen's colleague Dr. Carpenter, for example, was a Brattle witness in 2009 (R-3690-2009) who stated on page 3 of his evidence:

The market environment in which Gaz Métro and other gas utilities operate in North America has changed significantly since 1999, reflecting greater uncertainty in the supply of the gas commodity and greater uncertainty in the extent and timing of the growth in demand. This uncertainty is partly reflected in significantly higher gas commodity price levels and volatility, which has significant implications for the need for, and investment risk of, gas utility infrastructure.

Dr. Carpenter went on to talk in his detailed evidence about declining energy intensity, tighter supply/demand balances, price differentials between Henry Hub and AECO prices, the volatllity of natural gas prices. However, Dr. Carpenter did not analyse GMI's consistent ability throughout that period to earn its allowed ROE, that is, the transfer of these qualitative risks into an objective assessment of losses.

Similarly, in 2011 Energir's witness Dr. Morin (D-2011-182) discussed GMI's business risks to justify a 0.40% additional risk premium based on his qualitative assessment of GMI's business risk. He cited several factors: the then slow economic conditions increasing competitive threats thereby making forecasting more difficult; a heavier reliance on industrial customers exposed to the busines cycle; the low penetration of natural gas in its territory and a recent change as Hydro Quebec had lost several export contracts and would focuss more on competing for GMI's industrial customers. There was no discussion of how these qualitative risks would be transferred into an inability of GMI to earn its allowed ROE, and subsequently no such inability materialised.

3 Références : **C-ACIG-0037**

Page 4, line 3: "In my judgment, the only risk the utility shareholders face is standard market risk due to price fluctuations which is measured by their beta coefficient."

Demandes :

3.1 Please specify which utility's shareholders Dr. Booth is referring to in this sentence.

Réponse :

All shareholders of publicly owned utilities.

3.2 Please specify which beta coefficient Dr. Booth is referring to in this sentence.

Réponse :

The historic beta coefficient reflects the past risk borne by shareholders and the best estimate of the future beta coefficient reflects the expectation of the future risk to be borne.

4 Références : **C-ACIG-0037**

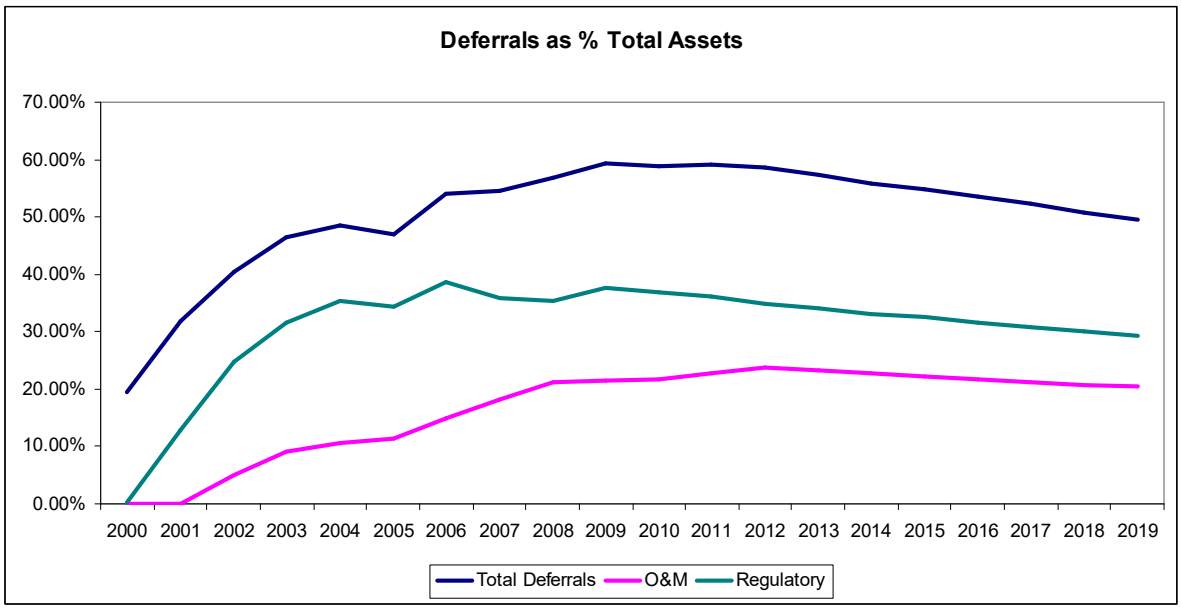
Page 9, line 4-7: "Even though I regard GMI as more risky than an average Canadian gas distribution utility, LUNB is even riskier as a greenfield utility that has not met its expansion targets and found competition from alternative fuels extremely difficult".

Demandes :

4.1 Please provide any quantitative analysis of the business risk differences between LUNB and GMI to support Dr. Booth to conclude in his Direct Evidence that LUNB is "even riskier" than GMI?

Réponse :

LUNB (formerly Enbridge Gas New Brunswick EGNB) was a greenfield utility as of 2010 and incurred significant costs to try and establish a gas market in New Brunswick. The following graphic from Dr. Booth's testimony before the NBEUB in June 2021 (page 86) shows the size of these deferred charges in the rate base. As of 2010 deferred charges consisting of operation and management costs and regulatory costs that could not be recovered in rates, but instead were put in a deferral account for future recovery constituted 60% of rate base assets.



The government in New Brunswick subsequently restricted the recovery of these deferred charges leading to litigation between EGNB and the provincial government and an eventual settlement. LUNB was asked to provide the allowed and actual ROE and other information in Liberty (PI) IR-6 May 27, 2021

2. The following table provides the requested information:

	Actual											Forecast					
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Allowed ROE	13.0%	10.9%	10.9%	10.9%	10.9%	10.9%	10.9%	10.9%	10.9%	10.9%	10.9%	10.9%	10.9%	10.9%	10.9%	10.9%	10.9%
Actual ROE	18.7%	17.0%	9.5%	10.4%	10.9%	11.0%	-17.4%	10.9%	10.9%	10.9%	6.4%	10.9%	11.3%	11.3%	11.1%	10.9%	11.4%
Earned ROE	13.1%	10.3%	-224.4%	17.7%	13.1%	36.8%	33.4%	40.5%	41.5%	89.6%	2.7%	4.8%	5.6%	5.6%	5.4%	5.4%	5.3%

*Based on Regulatory Statements
**Based on Audited Financial Statements

	Actual											Forecast					
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
ROE Difference	-5.6%	-6.7%	-233.9%	7.3%	2.1%	25.9%	50.8%	29.6%	30.6%	78.7%	-3.7%	-6.1%	-5.7%	-5.7%	-5.6%	-5.6%	-6.1%

The actual ROE is clearly more volatile than anything suffered by GMI (Now Energir) and reflects the write-off of the bulk of these deferred charges in 2012 as a result of the government legislation. The inability of EGNB to earn its allowed ROE and the volatility of its actual ROE is the quantitative evidence of the greater risk of EGNB.

In response, the NBEUB allowed EGNB a 2.50% additional risk premium in 2010 and 1.5% in 2021 both significantly greater than the historic additional risk premium allowed GMI (Energir).

5 Références : **C-ACIG-0037**

Page 10, footnote 4: "These growth rate forecasts are based on sell-side earnings estimates, which are known to be biased."

Demandes :

5.1 Please provide any research or analysis performed by Dr. Booth to support the statement that short-term growth rate forecasts are biased.

Réponse :

Dr. Booth has not studied analyst growth rate bias since it is such a well trodden academic area having even made it into the popular media where he references the Economist magazine, the Globe and Mail and the Royal Bank of Canada's investment strategy playbook. To repeat the Economist's statement at page 12 of Dr. Booth's Appendix D

"Sell side analysts, whose firms make money from trading and investment banking, are notoriously bullish. As one joke goes, stock analysts rated Enron as a "can't miss" until it got into trouble at which point it was lowered to a "sure thing". Only when the company filed for bankruptcy did a few bold analysts dare to downgrade it to a "hot buy".

Dr. Booth judges it to be somewhat problematic to believe that sell-side analyst forecasts are completely objective, and the empirical evidence is that they are not, that is, they are optimistic or biased high in a statistical sense, in their forecasts. They are, after all, referred to as "sell -side" analysts.

5.2 Please provide any research or analysis performed by Dr. Booth to verify analyst bias in the growth rates used by Dr. Villadsen.

Réponse :

Please see Dr. Booth's Appendix D Schedule 13, where he shows the significant difference between forecast growth rates from security analyst's and their sustainable growth rates achieved by reinvesting their earnings for 6 US gas companies that overlap with Dr. Villadsen's sample. The average sustainable growth rate is 3.37% versus the forecast average of 6.33% indicating the optimism of the analysts. This is verified by the empirical work on page 18 of Appendix D where the utilities in the SP500 index had compound growth rates of both earnings and dividends significantly less than US GDP. Indicating that tapering their growth rate in a multi-stage DCF model to that of GDP is not tenable.

6 Références : **i) C-ACIG-0037**

Pages 23-24, lines 10-2: "In financial markets the Bank of Canada cut the overnight rate of 0.2% and announced a raft of asset purchase programs including buying approximately:

- 40% of the Treasury bills offered at auction each week
- $5 billion of Government of Canada bonds each week
- $50 billion of provincial bonds
- $10 billion of corporate bonds
- $36 billion banker's acceptances
- $3 billion Canada mortgage bonds"

Page 29, lines 11-16: "In 2011Q4 the U.S. Federal Reserve embarked on the most dramatic third round of bond buying (QE3) with an open-ended commitment to buy $85 billion of US government bonds and Federal agency backed mortgages every month. In addition to the Federal Reserve, the Bank of England, the European Central Bank, and the Bank of Japan all embarked on ambitious bond buying programs designed to lower long-term interest rates…".

ii) C-ACIG-0039

Pages 7-8, lines 25-6: ”Finally, 2020 and 2021 are special unto themselves since with a budget deficit of over 10% of GDP in 2020, the Bank of Canada started financing the government deficit by buying 40% of the Treasury bill auction and $5 billion of Government of Canada bonds at auction. In this way the Bank of Canada joined similar programs elsewhere around the world with massive central bank government bond buying programs. These programs have clearly been effective as the coefficient indicates that real yields in Canada were 6.65% below where they would otherwise have been or an additional 4% below the already depressed real yields. The result has been record-low real yields last seen during the petrodollar recycling crisis and the war years.”.

Demandes :

6.1 Please confirm that the Bank of Canada’s asset purchase program following the onset of the COVID-19 pandemic artificially suppressed government bond yields, similar to what happened in the United States. If not, please explain why and provide any evidence to support Dr. Booth’s rationale.

Réponse :

Yes that is why Dr. Booth does not rely on current long term Canada (LTC) bond yields in his evidence, but instead adjusts them.

6.2 Please confirm that the Bank of Canada discontinued its asset purchase program in November 2021, which will put upward pressure on interest rates going forward.

Réponse :

Absolutely that is why LTC yields have significantly increased even since the time of the preparation of his evidence.

6.3 Please confirm that the Bank of Canada increased its target for the overnight rate to 1% on April 13, 2022.

Réponse :

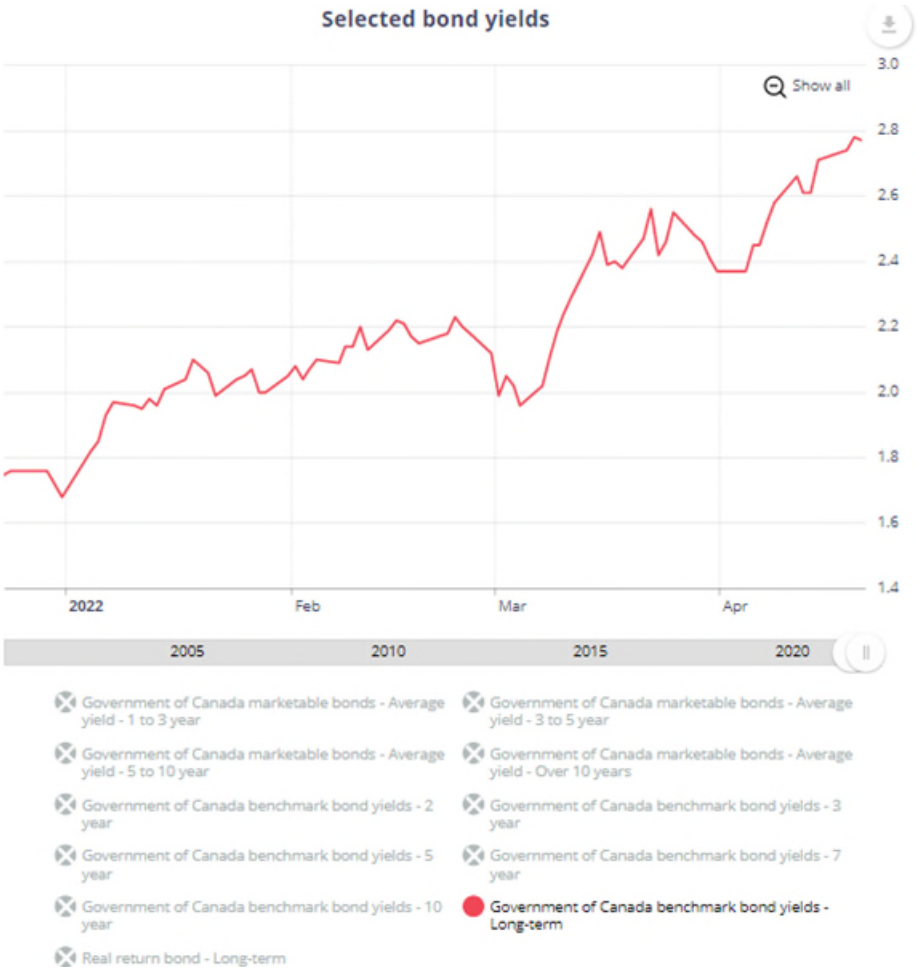
Yes and Dr. Booth expects it to increase again in the near term. However, Dr. Booth does not base his recommendations on the overnight rate, but instead uses a forecast LTC rate adjusted for the impact of central bank bond buying. Please also see Dr. Booth’s answer to the Regie IR#1 on the risk-free rate.

7 Références : i) C-ACIG-0037

Page 31, lines 9-12: ”RBC is forecasting that the current overnight rate of 0.25% will increase to 1.25% by Q4 2022 and 1.75% by Q4 2023. The 30-year LTC bond yield will also increase from the current 2.17% in Canada to 2.30% by Q4 2022 and remain there until Q4, 2023.”

Page 32, lines 7-8: “For the immediate future, I doubt that long-term interest rates will increase much beyond the RBC forecast…”.

ii) Bank of Canada, “Selected Bond Yields,” “Government of Canada benchmark bond yields – Long-term” February 1, 2022 to April 20, 2022. https://www.bankofcanada.ca/rates/interest-rates/canadian-bonds/



Demandes :

7.1 Please confirm that the yields on long-term Bank of Canada bonds, as reported by the Bank of Canada, exceeds RBC’s Q4 2023 forecast of 2.3% since at least March 14, 2022.

Réponse :

Please see Dr. Booth's answer to the Regie information request #1 on the risk-free rate, where the Regie also noted that Dr. Booth stated

I have no problem with RBC's near-term forecast that the 30-year LTC bond yield is likely to increase moderately from the current level or the PBO's longer term forecast for the ten-year bond yield at 3.0 % by 2024. However, I personally doubt that it will stabilise at 3.0 % and would expect it to increase further particularly if inflation moves to the top of the bank's range.

The fact is that the "headline" inflation rate has surprised everyone as a result of the Russian invasion of Ukraine and its impact on commodity prices and food, which have seen two of the biggest increases in the Canadian CPI. RBC like all forecasters and the Bank of Canada were caught out by these significant unexpected developments.

7.2 Please confirm that the yields on long-term Bank of Canada bonds, (2.77%) as reported by the Bank of Canada, exceeds RBC's Q2 2022 forecast of 2.15% by approximately 62 basis points (as of April 20, 2022).

Réponse :

Please see response to Request 7.1.

8 Références : **C-ACIG-0037**

In Section III and IV of Dr. Booth's testimony, he provides extensive commentary on financial market conditions going back several decades.

Demandes :

8.1 Please explain how historic financial market conditions are relevant to current market conditions and in the determination of the forward-looking cost of equity for the Quebec gas utilities.

Réponse :

There's an old phrase "If you don't know where you have been, you don't know where you are going." This is a variation on the "anchoring" behavioural bias: that people anchor their forecasts based on past experience. It is also why economists make such heavy use of partial adjustment models using lagged historical values to forecast future values. We also uncover relationships by looking at the past. For example, the current widespread use of the yield gap between long and short-term interest rates is now "reliably" used by analysts as a recession indicator. However, it was only "discovered" by academics looking at the past. Similarly, utility witnesses often referred to an "inverse" relationship between the interest rate and the market risk premium as interest rates declined. Again, that was largely based on historic observations from the 1970's and 1980's. In all instances our ability to forecast depends on our understanding of prior economic relationship both theoretical and empirical (historical).

9 Références : **C-ACIG-0037**

Page 51, lines 6-8: "In 2001, a survey of 392 US Chief Financial officers published in the Journal of Financial Economics by Graham and Harvey produced the following results".

Page 52, lines 1-2: "…Baker et al performed a similar survey of large and small firms in Canada with the results in the following table.".

Demandes :

9.1 The studies quoted by Dr. Booth are 10 to 20 years old. Please provide any survey or data on commonly used financial models that were published during the COVID-19 period (i.e. since 2020).

Réponse :

The Baker study was published in December 2011, which is relatively recent for academic surveys. Survey results don't get published often, since there is an academic bias in favour of innovative or new results. So, there is little incentive to conduct a survey unless there is a presumption that things have changed.

If there have been any surveys done during the covid era Dr. Booth is not aware of them and if they exist, they won't be published for several more years given the long lead times to go through the review process.

10 Références : **C-ACIG-0037**

Page 51, lines 11-12: "The dividend discount model is known as the DCF model in regulatory hearings and comes in a poor 4th…"

Page 75, lines 24-25: "It also supports the value of currently look at DCF estimates despite the fact they are downplayed by both professionals and academics"

Demandes :

10.1 Please provide copies of standard MBA textbooks, peer-reviewed academic articles, or publications by financial professionals to support the statement that the DCF model is downplayed by academics?

Réponse :

Please see Dr. Booth's own textbook, introduction to Corporate finance, 5th edition, with Sean Cleary and Ian Rakita (in his CV at Appendix A) where the DCF model takes up 9 or so pages of chapter 7. In contrast, risk-based models take up two chapters. Further there are whole journals on risk based "asset pricing models" such as the *Review of asset pricing studies* devoted to the CAPM, APT and multifactor model. As far as Dr. Booth is aware there are no journals devoted to DCF equity valuation models. Dr. Booth would also note the following survey of different valuation approaches conducted for the Chartered Financial Analyst (CFA) institute (taken from chapter 7 of Booth et al). The dividend discount model is what is referred to as the DCF model in regulatory circles and is dead last among 8 valuation models.

TABLE 7.1 Common Share Valuation Approaches

Method Used	Percentage
Price-earnings (P/E) approach	88.1
Discounted free cash flow approach	86.8
Enterprise value multiple approach	76.7
Price-to-book-value approach	59.0
Price-to-cash-flow approach	57.2
Price-to-sales approach	40.3
Dividend-to-price or price-to-dividend approaches	35.5
Dividend discount model approach	35.1

Source: From "Valuation Methods" presentation, October 2007, produced by Tom Robinson, Ph.D., CFA, CPA, CFP®, Head, Educational Content, CFA Institute. Copyright 2007, CFA Institute. Reproduced and republished with permission from CFA Institute. All rights reserved.[8]

11 Références : **i) C-ACIG-0037**

Page 61 lines 10-12: "The following graph is for the utility index beta using data back to 1987".

ii) C-ACIG-0040

Page 16 of Appendix C shows Canadian utility betas against the US market index.

Demandes :

11.1 The figure on page 61 shows that COVID-19 had little impact on utility betas. However, the same chart shows that utility betas increased by about 0.15 to 0.2 during the Financial Crisis. Please confirm.

Réponse :

Dr. Booth would suggest that there was an increase in betas prior to the financial crisis and then they were pretty constant. He would attribute this in part to the dissapearance of the Nortel effect on the Canadian stock market. He would agree that utility betas have been in a reasonably tight range since 2007. The graph clearly shows the impact of interest rate changes on utility prices as defensive stocks and would agree with Dr. Vilbert of Brattle who suggested in 2008 in testimony on behalf of TQM before the NEB that this affected their betas.

11.2 The beta figure on page 16 of Appendix C shows that betas increased by about 0.15 to 0.2 during the onset of COVID-19. Please confirm.

Réponse :

Please see response to Request 7.1.

11.3 Please explain why Dr. Booth's beta estimates on page 61 of his evidence did not increase as a result of COVID-19, despite the significant market correlation in early to mid-2020.

Réponse :

The betas are estimated over 60 months, so the influence of a short period around the covid 19 panic may not be significant. A shorter time period might pick this up, but Dr. Booth uses the conventional approach of 5 years of monthly excess holding period returns.

11.4 Please provide the data underlying Dr. Booth's estimated betas with all formula intact.

Réponse :

Attached as Dr. Booth answer to Dr. Villadsen IR #11

12 Références : **C-ACIG-0037**

> Pages 60-61, lines 9-1: "What is important is that both the market risk premium and the associated risk-free rate have declined from 2010 to 2021, that is, there is no evidence of an inverse relationship between the market risk premium and the level of interest rates over the last eleven years either in Canada or the U.S based on this survey data. Further, I am not aware of any recent research documenting an inverse relationship once inflation collapsed to the 2.0% target level in both Canada and until recently the US.".

Demandes :

12.1 In Dr. Booth's view, will the presence of high inflation would cause investors to require a higher equity rate of return.

Réponse :

Possibly, but the important fact is that the break-even inflation rate is so far well within the 1-3% target inflation range so the markets do not believe the the current high headline CPI inflation rate will continue. Dr. Booth believes that the Bank of Canada will get core inflation under control, since they recently (December 2021) signed an agreement with the Government of Canada to continue the 2% target inflation rate in a 1-3% range.

12.2 Please provide Dr. Booth's evidence that the market risk premium has declined.

Réponse :

This is Dr. Booth's reporting of the survey results from Dr. Fernandez between different points in time as is clearly indicated. Dr. Booth has not decreased his own market risk premium estimate. In fact he has increased it to 5.50-6.0%.

13 Références : **C-ACIG-0037**

Page 62, lines 11-15: "I also check for any beta 'tendency' using the Blume methodology and consistent with my testimony (with my late colleague Professor Michael Berkowitiz) before the NEB in 2001, and two published research papers confirm that utility betas do not trend towards 1.0 as Blume estimated for all stocks. Instead, they gravitate towards their grand mean, which in 2001 Dr. Berkowitz and I estimated at 0.52."

Demandes :

13.1 Please confirm that the above analysis is based on a source/reference that is dated from 2001.

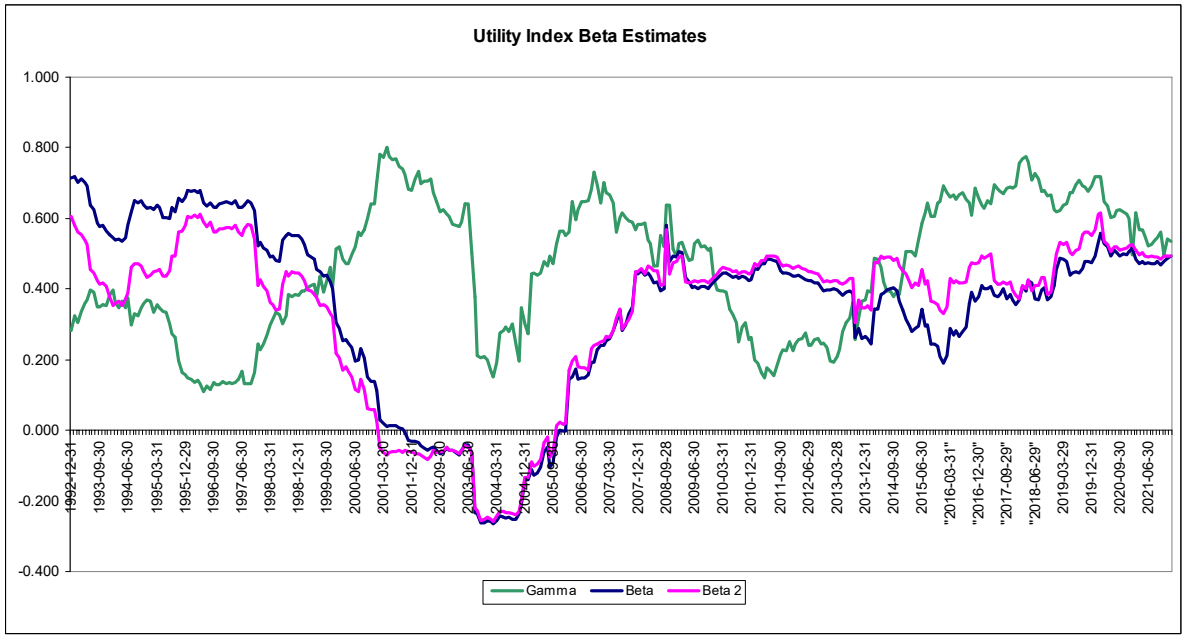
Réponse :

Confirmed as most of these companies are no longer publicly traded it is impossible to replicate the work on Canadian utilities. What is important is that this confirms the only empirical results on US utilities discussed in Dr. Booth's Appendix C. Dr. Booth would also point out that Dr. Villadsen does not reference any work that supports the Blume tendency of betas to revert to one for either Canadian or US utilities.

13.2 If confirmed, is it Dr. Booth's view that the risks faced by utilities have not changed since 2001?

Réponse :

Dr. Booth has never stated this. In the following graph from schedule 1 of his Appendix C it is clear that utility betas, even as a portfolio in a utility index, have exhibited considerable variability. However, what is important is the forecast beta and here Dr. Booth would point out that he is now using a higher range of 0.50-0.55 with a mid- point of 0.525.



14 Références : **C-ACIG-0037**

Page 65, lines 5-7: “Is 7.19% A Fair Generic ROE? According to the recent NBEUB decision the answer is yes since their generic ROE was 7.0%.”.

Page 3, lines 8-9: “My cost estimate of 7.0% plus the flotation cost of 0.50% producers a fair ROE of 7.5% and satisfies this risk ranking.”

Page 9, lines 4-7: “Even though I regard GMI as more risky than an average Canadian gas distribution utility, LUNB is even riskier as a greenfield utility that has not met its expansion targets and found competition from alternative fuels extremely difficult”.

Demandes :

14.1 Please explain how a generic allowed return of 7.19% or ‘fair ROE’ of 7.5% meets the fair return standard if the average Canadian gas distribution allowed ROE in 2020 was 9.49% in 2020 (EGI-1, B-0016, pp. 16-17). Does Dr. Booth find that GMI and LUNB are more risky than the average Canadian gas distribution utility?

Réponse :

Dr. Booth's recommendations are based on his empirical work and a risk ranking ranging from preferred shares at below 5% up to the overall stock market at about 8-9%. Dr. Booth's judgment would assess those utilities are somewhere in the middle of that range, since normally they are assessed to be low risk or defensive stocks. This is supported by Dr. Booth's empirical work in his report, his judgment and the observation that current allowed ROE's allow utility shares to trade at well above book value and have been bought back at above book value. Brattle witnesses in the past have stated that this indicates the allowed ROE is too high.

Dr. Booth has judged both LUNB and Energir to be above average in terms of risk, which is why he recommends the continuation of Energir's 46% equity ratio and recommended one of the highest allowed risk premium in Canada for LUNB of 0.75% in 2021.

Please also see Dr. Booth's answer to the confidential information request #1 directed to him by the Régie.

15 Références : **C-ACIG-0037**

Page 78, lines 6-7: "The following is from the Bank of New York Mellon" Source note in the figure is dated November 30, 2020.

Demandes :

15.1 Please explain how a BNY Mellon forecast from 2020 is relevant to estimating the forward-looking cost of equity in 2022.

Réponse :

It is part of a series of documents that are available in the capital market indicating expected rates of return. One could equally say why is the TD forecast from 2016 relevant or any other recent forecast? Forecasts, are almost by definition, out of date as soon as they are published.

16 Références : **C-ACIG-0037**

Page 79, lines 4 and 8: "Blackrock is the largest asset manager in the world and the forecast of long run returns is below.".

Demandes :

16.1 Please provide a citation for the Blackrock forecast, including the date that it was published/updated by Blackrock.

Réponse :

Please see:

https://www.blackrock.com/institutions/en-axj/insights/capital-market-assumptions_AXJ

17 Références : **C-ACIG-0037**

Page 84, lines 1-4: "However, even in the 2018 edition there was no data for gas utilities after 2015 since they had all been acquired. However, for the overall utility index the growth rates were as follows".

Demandes :

17.1 Please explain how a forecast from 2018, which relies on 2015 data, is relevant to estimating the forward-looking cost of equity in 2022.

Réponse :

This question seriously mis-states Dr. Booth's evidence. The historic data from 1967-2017 is presented on page 84 to indicate that the SP500 utilities have not been able to grow their earnings and dividends at close to the GDP growth rate. As Dr. Booth points out this is partly due to the fact that they are larger utilities and there have been well documented problems at companies like PG&E and Duke not to mention Enron. However, this is what investors remember when thinking about US utility holding companies.

Dr. Booth then applies a hair cut to the forecast US GDP growth rate to reflect a more reasonable growth rate in earnings and dividends for US utilities reflecting their historic performance. This process ends up looking very similar to their sustainable growth rates based on current experience.

17.2 Is it Dr. Booth's opinion that the energy industry has not changed since 2015 and that utilities are facing today similar challenges and growth opportunities as they were in 2015?

Réponse :

Nowhere does Dr. Booth state that the energy industry has not changed. What he implies is that the historic record does not justify the assumption that US utilities can now grow their dividends and earnings at the GDP growth rate. That seems to be the factual record and one of the scariest phrases in finance is *this time it is different*.

18 Références : **C-ACIG-0037**

Page 84, lines 7-8: "I would judge the cost of equity based on my CAPM estimates to be in a range of 6.55-7.40% or an average of 6.98%, which with the flotation cost adjustment means an ROE of 7.50%".

Page 9, lines 4-7: "Even though I regard GMI as more risky than an average Canadian gas distribution utility, LUNB is even riskier as a greenfield utility that has not met its expansion targets and found competition from alternative fuels extremely difficult".

Demandes :

18.1 Please explain how an allowed return of 7.50% meets the fair return standard if the average Canadian gas distribution allowed ROE in 2020 was 9.49% in 2020 (EGI-1, B-0016, pp. 16-17).

Réponse :

Please also see Dr. Booth's answer to the confidential information request #1 directed to him by the Régie. Dr. Booth judges an average where PNG is split into three companies and the ROE for two greenfield utilities is included as seriously flawed when applied to a mature gas distribution utility of Energir's size.

18.2 Does Dr. Booth find that GMI and LUNB are more risky than the average Canadian gas distribution utility?

Réponse :

Please see response to Request 18.1.

19 Références : **i) C-ACIG-0037**

Page 87, lines 6-7: "First, they are mainly from utility holding companies rather than the underlying operating companies.".

ii) C-ACIG-0040

Page 11, line 12: Appendix C presents a list of Canadian utility companies that Dr. Booth uses to estimate beta. The companies include TransCanada, Enbridge, Canadian Utilities, Emera, Fortis, and Pembina.

Demandes :

19.1 Is it Dr. Booth's view that entities that are not publicly traded should be used to estimate the cost of capital required by investors? If yes, please explain.

Réponse :

Obviously you can't estimate betas for non-traded entities, since betas measure stock market risk. All we have are holding companies and estimating their risk is what Dr. Booth has frequently referred to as looking through a dirty window to try and see the operating company. However, you can estimate the relationship between beta and different risk measures and then use these for a non-traded entity to estimate what their beta would be if it were traded. This is called an instrumental variables approach.

Dr. Booth has in the past used an instrumental variables approach to estimate the fair ROE for a non-traded entity such as Energir. He first did this in a Teleglobe hearing before the CRTC at least thirty years ago. He has not used that approach subsequently, but would reference the classic work of Beaver, Kettler and Scholes in the Accounting Review (October 1970) where at page 672 they had the following result :

TABLE 6

SUMMARY STATISTICS FOR INSTRUMENTAL VARIABLE EQUATION, PERIOD ONE (DEPENDENT VARIABLE, b_1)

Variable	*Statistic*
Standard deviation of b_1	.337
Constant	1.016
(T-value)	(14.040)
Regression coefficient	
Payout	−.584
(T-value)	(−5.969)
Growth	.835
(T-value)	(2.533)
Earnings variability	3.027
(T-value)	(10.213)
Standard error of estimate	.251
Correlation coefficient (R)	.668
R^2	.447

The intercept of 1.016 is essentially the market average beta of 1.0 and this is then decreased for firms with higher dividend payouts, and then increased for growth and earnings instability. Obviously, Canadian utilities have high dividend payouts, low growth prospects and low earnings instability since they are protected through regulation. So using the Beaver et al work it is simple to plug in these three values for a pure utility to estimate what their beta would be if they were traded.

19.2 Can Dr. Booth please confirm that Canadian companies used in his beta analysis are holding companies and not underlying operating companies?

Réponse :

Yes. As he has pointed out in his evidence the purest utility is Canadian utilities, since both Emera and Fortis now have significant US assets.

20 Références : **C-ACIG-0037**

Page 87, lines 17-18: "I have traditionally used Emera, Fortis, and Canadian utilities as the best proxies".

Demandes :

20.1 Can Dr. Booth explain the number of companies that would be sufficient to estimate the cost of equity in a statistically meaningful way? What is the minimal number of companies that would be required to estimate beta?

Réponse :

In both cases the confidence in the beta depends on the T statistic and the standard error, which is the standard deviation divided by the square root of the number of observations. So there are two alternatives: estimate a small number of companies over a long period of time or a large number of companies over a shorter period of time. Unfortunately, we do not have the luxury of the latter approach anymore.

21 Références : **C-ACIG-0037**

Page 89, lines 15-18: "Is it commonly accepted that US utilities are riskier than Canadian ones? Yes. In 2012, I referenced two reports by Moody's, one in 2005 and another in 2009 where they reviewed their rating methodology.".

Demandes :

21.1 Is Dr. Booth aware of any more recent publications by Moody's and/or the other major credit rating agencies supporting Dr. Booth's assertion that "US utilities are riskier than Canadian ones"?

Réponse :

No. Dr. Booth has looked at more recent documents but has not found any references where they have disavowed their earlier statements. Dr. Booth would admit that many of these conclusions came out of the disatisfaction of the rating agencies with the lack of regulatory protection of bond holders in the US. FERC for example was seriously criticised by S&P for their attitude towards Enron, where they seemed to expect a more vigorous change in regulation after the Enron debacle. It's why S&P generally will not rate a subsidiary's debt higher than the parent's unless it is ring fenced. In most cases, Canadian subsidiaries are ring fenced from their parent's, the most obvious way among many of doing this is to only issue first mortgage bonds.

22 Références : **C-ACIG-0037**

Page 94: Dr. Booth compares the financial metrics for the Quebec utilities with other Canadian utilities. This includes Canadian companies presented in a table on line 13 as well as other utilities discussed on pages 95 and 96.

Demandes :

22.1 Please comment on whether any of these other Canadian companies selected by Dr. Booth have preferred shares in their capital structure? If yes, please comment on how the presence of the preferred shares would affect the financial metrics calculated by Dr. Booth?

Réponse :

Dr. Booth has also looked at Fortis which has a large number of preferred shares outstanding at the holding company level. Dr. Booth has not adjusted any metrics for the existence of preferred shares since they are largely being retired for Canadian utilities since the 1995 repeal of the Public Utility Income Tax Transfer Act (PUITTA).

23 Références : **C-ACIG-0037**

Pages 95-96: Dr. Booth discusses the net income percentages (NI%) of Énergir and Gazifère that result from his generic ROE recommendation.

Demandes :

23.1 Has Dr. Booth performed any calculations to assess the credit rating impact of his recommended ROE on the Utilities? If so, please provide the analysis including any work papers to support the analysis in native format with formulas intact.

Réponse :

Please see the last few pages of Dr. Booth's evidence and his use of the financial metrics from the AUC's 2018 generic decision. Note in the 2007, 2009 and 2011 GMI hearings no equivalent discussion similar to that of Dr. Villadsen's concerning credit ratings was entered into evidence by witnesses on behalf of the utilities, which included Dr. Villadsen's Brattle colleagues in 2009. Most witnesses do not regard it as a building block in estimating the fair rate of return.

24 Références : **C-ACIG-0039**

Page 3, lines 9-10: "In Schedule 1 I graph estimates of the average market risk premiums using Canadian data and these three estimation techniques".

Demandes :

24.1 Please clarify what is meant by "using Canadian data"? Please provide an exact reference to the relied upon securities or indices used to estimate the market risk premium.

Réponse :

Using Canadian data means exactly that Canadian not US or data from other countries. The data is from the Canadian Institute of Actuaries updated for 2021 from Datastream. The equity data is the return on the TSX composite formerly the TSE300 index.

25 Références : i) C-ACIG-0039

Page 10, lines 20-22: "Duff and Phelps purchased the original data from Ibbotson and Sinquefield which as a long history of being used in regulatory hearings and was originally developed at the University of Chicago.".

Page 11, lines 7-8: "Since the inception of the Duff and Phelps service in 2008 their recommended market risk premium estimate has range between 5.0% and 6.0%".

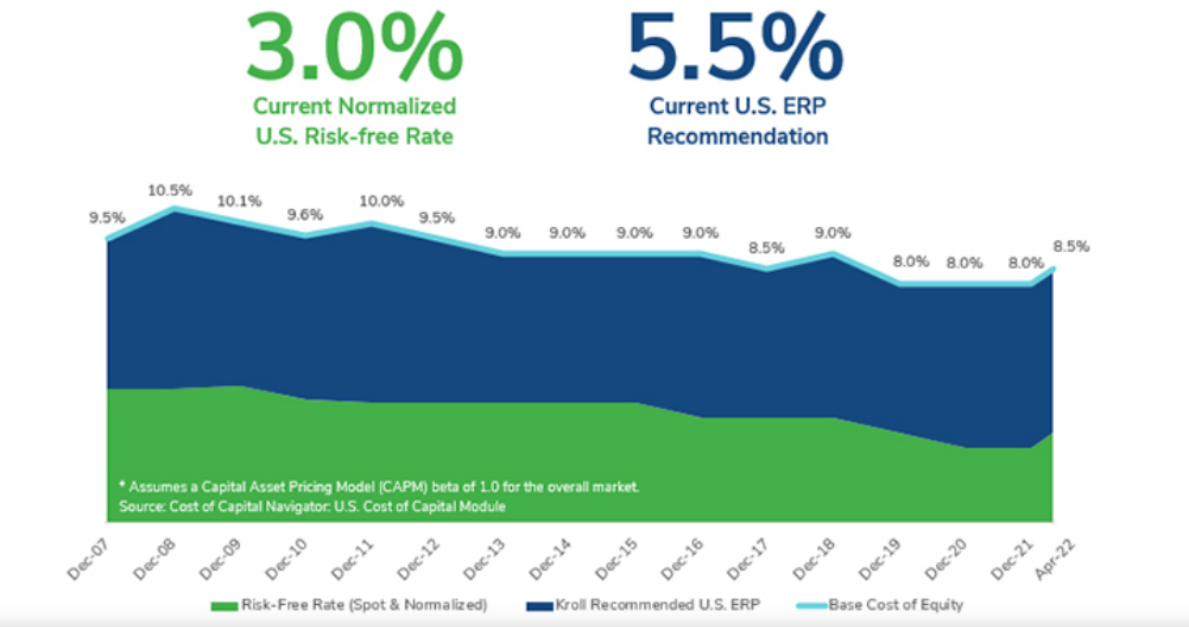
ii) EGI-5, B-0040 Cost of Capital Navigator 2021, Duff and Phelps (Confidential)

Demandes :

25.1 Please confirm that the Duff & Phelps Cost of Capital Navigator states that the U.S. market risk premium (from 1935 to present) has ranged between 6.9% and 7.7% since 2008 and that the current value 7.7% is the highest MRP within that period.

Réponse :

Not confirmed the very latest Kroll (formerly Duff and Phelps) recommended market risk premium estimate is 5.5% over a 3.0% normalised risk-free rate as recently updated below[1]:



[1] https://www.kroll.com/en/insights/publications/cost-of-capital/recommended-us-equity-risk-premium-and-corresponding-risk-free-rates?msclkid=242082fecfd011ec9de0189d29ca173b

What is significant is that the overall US market equity cost has not been above 10.0% since December 2011.

25.2 Please confirm that Duff & Phelps Cost of Capital Navigator is based on Ibbotson and Sinquefield data.

Réponse :

That's what Dr. Booth states in his evidence. The Ibbotson data orginally came from a publication in the Journal of Business, when Roger Ibbotson was associated with the University of Chicago.

25.3 Please clarify that Duff & Phelps recommended risk premium estimates that range from 5.0% and 6.0% are based on Kroll/Duff & Phelps analysis and are not based on the Ibbotson and Sinquefield data used in the Duff & Phelps Cost of Capital Navigator?

Réponse :

Dr. Booth extracted the Kroll market risk premium from their news release and assumes it comes from their analysis of the data. Note Dr. Booth's estimate of the Canadian market risk premium is 4.8% but he uses 5.50-6.0% based on other information and would assume that Kroll does the same.

26 Références : **C-ACIG-0039**

Page 13, lines 8-9: "Similar to Duff and Phelps, Credit Suisse now produces an annual 'Global Investment Returns Yearbook.".

Demandes :

26.1 Please provide a copy of the referenced Credit Suisse yearbook or relevant pages hereof.

Réponse :

The relevant page is extracted at Schedule 14 of Dr. Booth's Appendix B.

27 Références : **C-ACIG-0039**

Page 15: Dr. Booth's presents two graphs of the Canadian Risk Premium Estimates. One is calculated forward from 1924 and the other is calculated back from 2021.

Demandes :

27.1 In both of the above-mentioned graphs, the Risk Premium estimates become negative during a portion of the period analyzed. Is Dr. Booth suggesting that during this period the cost of equity is below the risk free rate (as measured using the CAPM for the broad market with a market beta of 1.0)? Please explain and provide corrected figures, if necessary.

Réponse :

The market risk premium is the return on common shares minus the return on bonds. This has been negative and very low for significant periods of time, since bonds have at various points in time been very risky given interest rate volatility, and have outperformed the equity market.

28 Références : **C-ACIG-0040**

Page 3, line 7: In Schedule 1 is a graph of rolling betas on the Canadian utility sub index since 1988.".

Demandes :

28.1 Please clarify which "Canadian utility sub index" Dr. Booth is using in his analysis. Please provide the security ticker or other identifying information.

Réponse :

It is the utility subindex of the Toronto Stock Exchange created by S&P after they took over the management of the Toronto indexes.

28.2 Please provide a list of the companies included in the "Canadian utility sub index".

Réponse :

The composition of the index changes every year and as S&P reorganises the indexes. Its current composion is at:

https://www.investcom.com/tse300/s&putility.htm

29 Références : **C-ACIG-0040**

Page 8, lines 12-15: "However, low beta estimates for utilities do not mean they are under-estimated and need adjustment towards 1.0, since utility betas perennially low due to their low risk and this is not caused by estimation error. Instead, as Gombola and Kahl demonstrated utility betas are better mechanically adjusted by weighting with their grand mean.".

Pages 19-20: Dr. Booth presents average and median betas for U.S. Gas utilities from 1993 to 2022.

Demandes :

29.1 Please confirm that cited study by Gombola and Kahl's is based on the 15-year sample period from January 1967 to December 1981?

Réponse :

Correct.

29.2 Is it Dr. Booth's position that the systematic risk faced by regulated utilities has remained constant since 1960s, 1970s, and early 1980s?

Réponse :

Dr. Booth has not studied changes in US utility risk over such a long time period, but the question is whether utility risk converges to 1.0 not whether or not it is constant and that was the point of Gombola and Kahl's research.

29.3 Please confirm if the "average" and "median" betas shown on page 19 of Appendix C have not remained constant over time?

Réponse :

Estimated betas reflect what happens during the estimation window and are unlikely to remain constant and they haven't.

29.4 Please confirm that the "average" and "median" betas shown on page 19 of Appendix C have increased since about 2021?

Réponse :

Betas seem to have reverted to their long run value, which is what the empirical research shows.

29.5 Please confirm that the "average" and "median" betas shown on page 19 of Appendix C are higher in 2022 than at the time of last GMI hearing that Dr. Booth testified in 2011 (D-2011-182)?

Réponse :

In 2011 Dr. Booth used a beta range of 0.45-0.55, now he uses a range of 0.50-0.55.

30 Références : **C-ACIG-0040**

Page 10, lines 9-10: Another issue is the frequency with which betas are estimated. The standard in academic work is to estimate them over 5 years of monthly data.".

Page 10, lines 13-17: "However, it is well known that betas are biased when estimated over high frequencies such as using weekly data. The reason for this is that many stocks do not trade that actively, so the prices are a bit 'stale' and do not reflect recent events.".

Demandes :

30.1 Please provide any academic papers or textbooks references to support Dr. Booth's assertion that 5 year monthly betas are the standard in academic work today (e.g., during the most recent five years).

Réponse :

The data bases that academics use have monthly data or daily data. The latter is used for event studies the former for asset pricing or beta estimation. As to five years of data, this has been standard at least since Dr. Booth was an MBA student, since statistical estimation needs a minimum number of observations. Note Dr. Vilbert of Brattle used five years of data for his beta estimates in 2009 (R-3690-2009 page 56-59), where he also unadjusted ValueLine's adjusted betas for his gas LDC sample. Dr. Booth has not canvassed current academic uses, but since the data bases have not changed finds it difficult to see how beta estimation has changed.

30.2 Please clarify what Dr. Booth means by "many stocks do not trade thatactively"?

Réponse :

This is called thin trading. Some smaller stocks do not trade and when they do it is on a dealer basis, where you trade at a wider spread between the bid and ask. If they don't trade the last price is stale, or out of date, indicating stability which does not reflect market conditions.

30.3 Please explain what threshold Dr. Booth is using to determine if a stock is actively traded and whether the securities price is 'stale'? Please provide any studies or analysis to support this threshold?

Réponse :

Dr. Booth has not used any threshold. He is simply pointing out the intervaling effect in beta estimates and Hawawini's work that stocks with relatively large market values tend to have statistically biased high betas when measured over shorter time intervals, such as weekly data. Utilities tend to have relatively large market values due to the extensive use of tangible assets.

31 Références : **C-ACIG-0040**

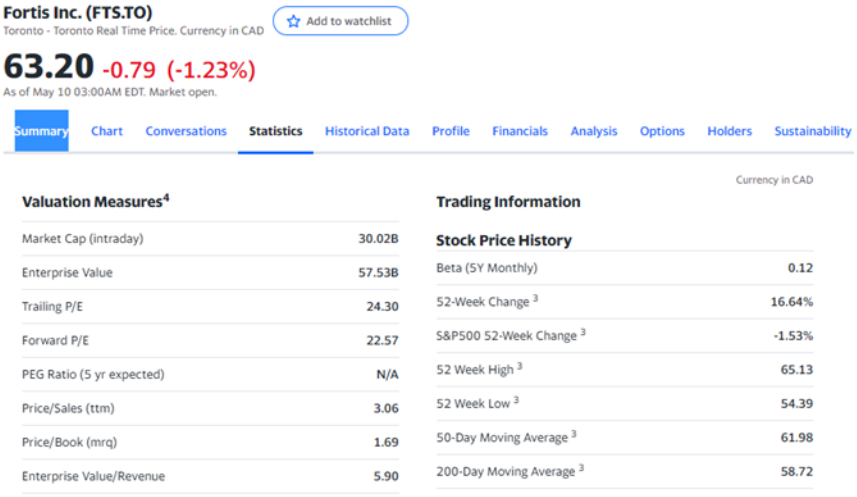
Page 11, lines 7-11: "We would therefore not expect all beta estimates from different sources to be the same; this requires that everyone use the same estimation window which is highly unlikely. To look at the range of estimates I collected the following beta estimates as reported by independent organizations CFRA, Reuters, Yahoo, and the Royal Bank of Canada on January 28, 2022, as well as my own estimates with data up to December 2021.".

Demandes :

31.1 Please explain the methodology CFRA, Reuters, Yahoo, Royal Bank of Canada, and Dr. Booth used to derive their betas. Please provide the estimation window (*e.g.*, 5 years, 3 years, etc.), sampling frequency (*e.g.*, weekly, monthly, etc.), benchmark index (*e.g.*, TSX, S&P 500, etc.) and date of each beta estimate.

Réponse :

Dr. Booth uses 5 years of monthly data and suspects that these other services do also since the estimates are so similar. For most of them their methodology is not listed in their reports, but clearly they do not use the Blume methodology. Please see Dr. Booth's Appendix C. Yahoo states that the betas are estimated over 5 years of monthly data as indicated in the exhibit below for Fortis taken as a screen capture May 11. 2022.



Fortis Inc. (FTS.TO)
Toronto - Toronto Real Time Price. Currency in CAD
Add to watchlist

63.20 -0.79 (-1.23%)
As of May 10 03:00AM EDT. Market open.

Summary | Chart | Conversations | Statistics | Historical Data | Profile | Financials | Analysis | Options | Holders | Sustainability

Currency in CAD

Valuation Measures[4]	
Market Cap (intraday)	30.02B
Enterprise Value	57.53B
Trailing P/E	24.30
Forward P/E	22.57
PEG Ratio (5 yr expected)	N/A
Price/Sales (ttm)	3.06
Price/Book (mrq)	1.69
Enterprise Value/Revenue	5.90

Trading Information	
Stock Price History	
Beta (5Y Monthly)	0.12
52-Week Change [3]	16.64%
S&P500 52-Week Change [3]	-1.53%
52 Week High [3]	65.13
52 Week Low [3]	54.39
50-Day Moving Average [3]	61.98
200-Day Moving Average [3]	58.72

31.2 To the extent not already provided as a schedule in Appendix C, please provide a copy of the source documents, reports, and/or databases from which Dr. Booth sourced his beta estimates.

Réponse :

Dr. Booth estimated his betas from orginal data purchased from the TSX updated from Datastream and the Centre for Security Prices (CRSP) data again updated from Datastream.

32 Références : **C-ACIG-0040**

Page 12, lines 10-14: “It is also of importance that the way these estimates are derived appears to be consistent with conventional practice. One of the biggest data providers in Canada is the Financial Post, where their Corporate Analyzer data base includes ten year financial data for largely publicly listed Canadian companies.”

Demandes :

32.1 Please confirm that other large financial data providers such as Bloomberg and Value Line publish adjusted betas.

Réponse :

No. Value Line is not a large data provider. It is a subscription based US service aimed at wealthy individual investors at a cost of $US 600. Bloomberg is a data provider but gives the user options on estimating betas with or without adjustment over a variety of time horizons. Dr. Booth could access a Bloomberg terminal and estimate actual or unadjusted betas over a five year horizon from monthly data. Dr. Booth, however, would not refer to these as Bloomberg betas they are simply betas estimated from Bloomberg data using parameters specified by Dr. Booth. The original data is from the TSX.

33 Références : **C-ACIG-0040**

Page 13, lines 2-3: "What is clear from the above analysis is that the market recognizes that Canadian utilities are significantly lower than average risk.".

Page 13, lines 18-20: "Given the marginal increase in the betas I would therefore tend to be conservative and increase the range to 0.50-0.55 with a mid-point of 0.525 which has historically been about the grand mean of the utility betas."

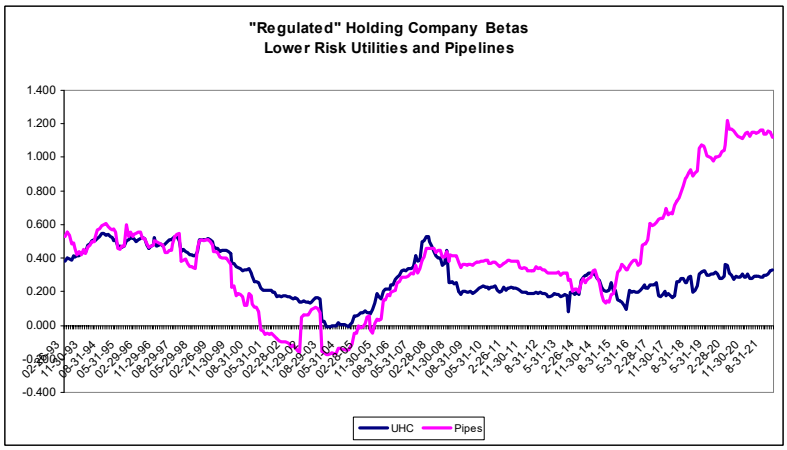
Page 11: Dr. Booth shows the average beta for a sample of Canadian utilities to range from 0.42 to 0.74. On page 12 of Appendix C, Dr. Booth shows the average beta for a sample of US gas utilities to range from 0.39 to 0.46.

Demandes :

33.1 Please explain why Dr. Booth considers that "significantly lower than average risk" Canadian utilities have average betas that are higher than a.) Dr. Booth's historic grand mean and b.) the average betas for U.S. natural gas utilities?

Réponse :

Significantly lower refers to their actual betas relative to the mean of all stocks in the market of 1.0. The other statements are incorrect. The current average beta for Canadian utilities (Schedule 2 Appendix C) is 0.49, which is lower than their grand mean whereas the three main Canadian utility average is 0.32 (Schedule 5) and the average of the US gas companies is 0.44 (Schedule 7). Dr. Booth suspects that Dr. Villadsen is looking at the average inclusive of the Canadian pipelines, which are clearly riskier as shown in Dr. Booth's Appendix C Schedule 4 repeated below.



34 Références : **C-ACIG-0040**

Page 13, lines 14-15: "From this analysis, I have generally set the generic risk assessment for a Canadian utility in a beta range of 0.45-0.55.".

Page 13, lines 18-20: "Given the marginal increase in the betas I would therefore tend to be conservative and increase the range to 0.50-0.55 with a mid-point of 0.525 which has historically been about the grand mean of the utility betas.".

Page 11: Dr. Booth shows the average beta for a sample of Canadian utilities from RBC (0.71), Yahoo (0.53), CFRA (0.72), Reuters (0.42), and Dr. Booth's calculation (0.74).

Demandes :

34.1 Please confirm that Dr. Booth's recommended Canadian utility beta range is lower than the average beta calculated using RBC, CFRA, and Dr. Booth's estimates?

Réponse :

No. Dr. Booth's range is 0.50-0.55. Dr. Booth suspects the drafter of this question is looking at the data on page 11 of Appendix C, but that includes the three pipelines as well as the three utilities. The average for the Canadian utility beta is 0.31 for RBC, 0.30 for CFRA and 0.30 for Yahoo. The Reuters estimates are different since they use the US market as the benchmark. See Dr. Booth's answer to 33.2 above.

34.2 Please explain why Dr. Booth disregarded RBC, CFRA, and his own calculations when setting his recommended Canadian utility beta range?

Réponse :

Please see response to Request 34.1.

35 Références : **C-ACIG-0041**

Page 4, lines 4-10: "If market-to-book ratios exceed one for a regulated company, most economist immediately assume that the firm's return on equity exceeds the return required by stockholders, implying that the regulator should lower the firm's allowed rate of return. This is a standard proposition. For example, in Kolbe, Read, and Hall (1984) they state (page 25) 'on balance we believe that setting the allowed rate of return equal to the cost of capital is the policy that best meets the standard of fairness."

Demandes :

35.1 Please confirm that the presence of non-regulated subsidiaries or multiple regulated utilities with different allowed rates of return would cause the company's market-to-book value to not equal one? If not, please explain and provide supporting evidence.

Réponse :

It depends on how important the non-regulated business are. However, the proposition that market to book ratios should equal 1.0 only applies to the regulated activities, since their earnings are based on an allowed ROE applied to that book value.

35.2 Please confirm that the presence of expected growth opportunities would cause investors to value the company higher than simply the book value of the firm? If not, please explain and provide supporting evidence.

Réponse :

Not correct. It is well known that true growth opportunities, where the firm can invest at higher than its cost of capital, would cause the stock price to reflect the present value of these net present values. However, simply growing by investing at the firm's cost of capital should have no impact on the stock price or the market to book ratio, since the investor can do this themselves by reinvesting their own dividends. The AUC noted this in its 2011 Decision (2011-474, paragraph 136) when it stated.

"***The Commission acknowledges that investors should, in theory,be indifferent to growth if growth is only expected to provide a risk adjusted return readily available elsewhere in the market.***"

36 Références : **C-ACIG-0041**

Page 4, lines 24-25 and page 5, lines 3-5: "In the short-run, Schedule 2 demonstrates that the growth in dividends per share can be artificially manipulated by increasing the dividend payout…It is important in this case to base the estimate of the investor's required return on a long run sustainable growth rate, estimated from the underlying growth in earnings and dividends and the two components of growth.".

Demandes :

36.1 Has Dr. Booth conducted any analysis to determine if such manipulation does occur and how often it occurs? Please indicate if his analysis finds that such manipulation is occurring in a way that could affect the cost of equity estimation for the gas companies in this proceeding?

Réponse :

Dr. Booth has not done this, but security analysts do it on a frequent basis where it is referred to as dividend cover and done to assess the risk of a dividend cut. This section was written when Dr. Booth emphasised DCF equity cost estimates and he required that basic checks be done to see whether any forecast dividend was sustainable.

37 Références : **C-ACIG-0041**

Pages 9-10, lines 21-2: "Finally we can look at the growth rate of the TSX dividends directly rather than indirectly by looking at their payout and profitability. Below are three estimates for the dividend per share growth since 1956 on the TSX".

Demandes :

37.1 Please provide all work papers and analysis to support the cited numbers, in native format with raw data and formulas intact.

Réponse :

Please see Booth answer to Villadsen IR#37.xls

38 Références : **i) C-ACIG-0042**

Page 2, lines 22-23: "It is a very general proposition in finance that if the investor expects to get what they require the market value is equal to the cost or in this case the book value.".

Page 7, line 20-22: "For non-regulated firms this is correct since the objective of calculating the WACC is to maintain these higher market values! However, it is totally incorrect for a regulator who is taking with awarding a fair return regardless of what happens to the stock price.".

ii) C-ACIG-0040

Page 11: Dr. Booth presents a table of Canadian companies that he uses to estimate beta.

Demandes :

38.1 Please confirm that a firm's book value is indicative of a company's existing assets. That is, the book value does not represent any growth opportunities not currently reflected in a company's financial statements.

Réponse :

Correct, but Dr. Booth would note that for utilities regulation is designed to remove the exercise of market power that would generate positive net present value projects and thereby influence the market to book ratio.

38.2 Please explain how the market's expectations of future growth opportunities would affect the market-to-book ratio.

Réponse :

For utilities it shouldn't for the reasons given in 38.2 and the answers to information request # 35.

38.3 Please confirm that the publicly listed Canadian companies used in Dr. Booth's analysis have non-zero growth rates from analysts.

Réponse :

Not confirmed as Dr. Booth has not examined their growth prospects since US analysts do not extensively cover them. However, he would expect them to be non-zero with much of the growth coming from accounting effects, rather than organic growth.

38.4 Please confirm that the presence of non-regulated subsidiaries in a utility holding company would cause the market-to-book value to likely not equal 1.0.

Réponse :

Confirmed.

38.5 Please confirm that the publicly listed Canadian companies used in Dr. Booth's analysis have non-regulated business segments.

Réponse :

The purest utility is Canadian utilities but even it has some non-regulated operations. Both Fortis and Emera have significant US operations which could be regarded as more lightly regulated but they are still regulated.