

**FAIR RETURN AND CAPITAL STRUCTURE FOR THE
QUEBEC GAS UTILITIES**

EVIDENCE OF

Laurence D. Booth

BEFORE THE

Régie de l'énergie ("Régie")

April 8, 2022

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1 EXECUTIVE SUMMARY

- 2 • Since the 2011 GMI hearing the following are the major changes relevant for conditions
3 in the “money market”

	Unemployment		Manufacturing				Loan				
	Rate	CPI	BEIR	Capacity	T. Bills	LTC Yield	A Spread	KSCFSI	Officers	VIX	TSX
4 July 2011	7.20%	2.74%	2.51%	77.70%	0.97%	3.34%	1.62%	-0.02	-49.64	19.09	12946
January 2022	6.00%	4.80%	1.80%	75.10%	0.17%	1.75%	1.33%	-0.49	-9.38	20.74	21008

5 The unemployment rate is lower with slightly more spare capacity. Although Covid 19
6 supply disruptions have caused a temporary rise in the headline CPI to above the top of
7 the Bank of Canada’s 1-3% target range the break -even rate has not risen to the same
8 degree. Interest rates are lower across the board with T. Bills down by 0.80%, LTC
9 yields by 1.59% with credit spreads narrowing by 0.29%. Broader indices like the Kansas
10 City Financial Stress index (KCFSI) and the Bank of Canada’s loan office survey
11 indicate equivalent relatively easy financial market conditions. In equity markets the
12 volatility is around long run averages while the TSX recently hit all time highs. Overall,
13 the most obvious difference is the lower level of interest rates.

- 14 • I base my LTC yield on the forecast from the Parliamentary budget officer and the
15 Federal government’s budget briefing which itself was based on consensus values from
16 the private sector. Consequently, I use a forecast LTC Yield of 3.37%, which is still
17 below the 3.8% rate I use as a trigger for changing my estimate of the allowed ROE.
18 Further it is also 1.13% lower than the 4.5% I used in the 2011 GMI hearing.

- 19 • My estimate of the market risk premium is in a range of 5.50-6.0% even though the
20 historic evidence in Canada is for 4.80% since 1926. This is the objective historic range
21 produced by a consistent measurement of equity minus bond returns, and not equity
22 returns minus bond yields. It is also supported by survey results and external values by
23 other cited experts such as Duff and Phelps, Professor Aswath Damodaran at NYU, and
24 the Credit Suisse annual.

- 25 • The relative risk of utility holding companies has increased marginally to be closer to the
26 top of their long run value, which I estimate at about 0.52. This is to be expected as the

1 only empirical evidence on utility risk coefficients (betas) is for convergence to their
2 grand mean and not to the overall market mean of 1.0. I have therefore increased my beta
3 range to 0.55-0.60 to be conservative.

- 4 • With current preferred yields of less than 5.0% I judge a reasonable equity cost (minus
5 the flotation allowance) to be 7.0%, which exceeds this preferred cost and is lower than
6 the overall market cost which I estimate to be in a range of 8-9%. This market cost is
7 supported by the capital market assumptions of some of the most respected financial
8 institutions in the world. My cost estimate of 7.0% plus the flotation cost of 0.50%
9 produces a fair ROE of 7.5% and satisfies this risk ranking. Last year the NBEUB
10 established the generic fair ROE at 7.0% which is slightly less than my current estimate.
- 11 • These estimates are broadly consistent with DCF estimates from US utilities once their
12 higher risk is taken into account as well as the well known “optimistic” nature of growth
13 forecasts from a limited number of sell side security analysts.
- 14 • I see no change in the ability of either Energir or Gazifere to earn their allowed ROE
15 despite another ten years of data since my previous reports to the Regie. So, their short
16 run business risk is unchanged. For long run risk, witnesses on behalf of the utilities are
17 advancing new qualitative risk factors due to climate change. However, I have seen such
18 qualitative risk factors consistently introduced in other hearings for the last almost four
19 decades. Invariably these factors do not affect the utility’s ability to earn their allowed
20 ROE. This time may indeed be different, but I do not see enough in the filed evidence to
21 convince me. Instead, I agree with Dr. Hopkins that the utilities should be required to file
22 formal evidence on how possible changes due to climate change will affect their
23 customers and consequently the utility’s ability to earn their allowed ROE. I would
24 suggest that this be in a rate hearing in three year’s time once the situation is clarified.
- 25 • For Intragaz, its revenue requirement is a cost of service for Energir so in practical terms
26 the only risk it faces under the existing contract is non-payment. However, as I indicated
27 in 2012, I regard these assets as indistinguishable from other distribution assets owned by
28 Energir apart from the fact there is a significant minority interest. Consequently, I have
29 no trouble Intragaz being allowed the same financial parameters as Energir.

- 1 • I see nothing on the record to persuade me that the underlying business risk facing the
2 Quebec utilities has materially changed and recommend that their existing capital
3 structures be maintained. In my judgment, the only risk the utility shareholders face is
4 standard market risk due to price fluctuations which is measured by their beta coefficient.
- 5 • My overall assessment is that the current allowed ROEs are too high and should be
6 reduced. Supportive evidence of this is that when the public float of Gaz Metro (Valener)
7 was taken private in September 2019 by Noverco, it was at a price of \$26 which was
8 significantly higher than the prior year ending book value of less than \$20. This is
9 indicative of a market to book ratio of 1.3 well above the target of 1.15 often used to
10 indicate flotation costs. Instead, it indicates that the allowed ROE of 8.90% for Energir is
11 excessive.
- 12 • In terms of Dr. Villadsen’s evidence I point out that the Regie has already ruled against
13 the three assumptions on which her evidence is largely based namely: adjusted betas, the
14 empirical CAPM and leverage adjustments (ATWACC) and there is nothing in her
15 evidence that indicates the Regie should change their prior decisions. If these parts of her
16 methodology are stripped out her basic ROE estimates are not so very different from my
17 own.

1 **I INTRODUCTION**

2 **Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.**

3 **A.** I am a Professor of Finance at the University of Toronto's Rotman School of
4 Management where I also hold the CIT Chair in Structured Finance and where I was the area co-
5 ordinator for Finance for almost 21 years. I was appointed to U of T in 1978 after completing my
6 undergraduate from the London School of Economics and my MBA, MA.in Economics and
7 doctorate from Indiana University. I have had a distinguished academic career with over 100
8 publications in both academic research journals and applied professional journals and three
9 textbooks including the upcoming 6th edition of introduction to corporate finance with my co-
10 authors Sean Cleary, and Ian Rakita. My active research agenda led me to be the supervisor of 16
11 Ph.D. students, almost all of whom hold faculty positions at good universities. I have won
12 numerous teaching awards and in 2003 was awarded the Leader in Management Education
13 award for my contributions to research, teaching and professional engagement. I am on the
14 editorial review boards of several academic journals, where I regularly review research papers
15 and evaluate them for publication.

16 On the professional side, in 1982-4 I entered testimony in a series of cases before the Ontario
17 Securities Commission concerning the regulation of investment dealers and the role of the
18 chartered banks. I first entered rate of return testimony before the CRTC in 1986, when the local
19 telcos were still on cost-of-service regulation. With my late colleague Professor Michael
20 Berkowitz, I then subsequently entered rate of return testimony until his untimely death in 2004.
21 This included the land-mark cases before the BCUC and NEB that led to the adoption of
22 automatic ROE adjustment mechanisms. I then entered testimony on my own in both rate of
23 return, capital structure and business risk cases. The most interesting being the NEB's 2012
24 hearing into the TransCanada Mainline, which dealt with the possible stranding of its Northern
25 Ontario Line assets. As well as being qualified as an expert witness before public utility
26 tribunals, I have also been qualified as a financial expert before the Tax Court of Canada and in
27 variety of civil cases concerning various financial matters ranging from bond ratings to
28 investment banking. With a colleague, Professor Eric Kirzner, I have prepared expert evidence

1 on behalf of the Government of Canada (Justice Department) on a variety of cases involving
2 Indigenous contract disputes and land claims dating back over the last 150 years.

3 **Q. PLEASE DESCRIBE THE PURPOSE OF YOUR TESTIMONY?**

4 **A.** The Industrial Gas Users Association (IGUA) has asked me to offer an opinion on the
5 fair rate of return on common equity (ROE), and to recommend an appropriate common equity
6 ratio for each of the three Quebec Gas Utilities. This is the same brief that IGUA provided me
7 with when I last entered testimony before the Regie on Gazifere in 2010, Energir (then GMI) in
8 2011 and Intragaz in 2012.

9 **Q. DO YOU HAVE ANY PRELIMINARY COMMENTS?**

10 **A.** Yes. In the last GMI hearing in which I appeared, the Regie (D-2011-182) primarily
11 used the CAPM to determine the allowed return on equity (ROE) with the following values:

[307] The table below shows the values the Régie has decided to authorize for each factor.

TABLE 4
Authorized value for each factor

Factor	Bottom of range	Top of range
Risk-free rate	3.91%	4.50%
Market risk premium	5.50%	5.75%
Beta of benchmark utility	0.50	0.60
Adjustment for Gaz Métro's risk level	0.25%	0.35%
Flotation costs	0.30%	0.40%
Subtotal 1: Result produced by CAPM	7.21%	8.70%
Adjustment for results of other models	0.25%	0.50%
Subtotal 2: Return on equity before adjustment for credit spreads	7.46%	9.20%
Adjustment for credit spreads	0.25%	0.40%
Total: Return on equity after adjustment for credit spreads	7.71%	9.60%

[308] Therefore, in view of all the above conclusions, the reasonable rate of return to be authorized for the Distributor is in the range of 7.71%-9.60%.

1 The Regie then set the allowed ROE at 8.90% and maintained the deemed common equity ratio
2 at 38.5%, the deemed preferred shares at 7.5% and 54% debt. Of note is that the preferred shares
3 are deemed so that the impact on the revenue requirement at a 5.5% preferred share cost is the
4 same as allowing an ROE of 8.35% on 46% common equity.¹

5 The Regie's decision was primarily based on the CAPM with a 0.25-0.50% adjustment from
6 other models, primarily DCF estimates, and a 0.25-0.50% adjustment for credit spreads. It also
7 approved a new automatic ROE adjustment model on the same basis as that set for Gazifere in
8 2010 (D-2010-147). This allowed the ROE subsequently to adjust for 75% of the change in the
9 forecast long Canada bond yield from a base level of 4% and 50% of the change in the credit
10 spread from a base level of 1.50%. The latter incorporated the impact of the financial crisis
11 premium the Regie originally set in 2009 (D-2009-156). Other than the change in the financial
12 crisis premium to an adjustment to credit spreads, the structure of the Regie's decision in 2011
13 was the same as in previous hearings.

14 Since 2011 by settlement the ROE and deemed capital structure ratios have not changed and the
15 ROE formula was suspended for GMI mainly due, I suspect, to the impact of very low long term
16 Canada bond yields reflecting the actions of massive central bank borrowing programs
17 elsewhere. However, there is no reason to believe that the Regie's methodology, just after the
18 worst financial crisis in the US since 1937, should be changed after the impact of the Covid
19 pandemic inducing the worse recession in Canada in living memory. In both cases we are
20 through the worst and into the strong recovery phase of the economy with rising interest rates

21 Of importance is a recent decision by a Canadian regulator for a gas distribution utility is that by
22 the New Brunswick Energy and Utilities Board (NBEUB), where the decision copies in format
23 that of the Regie in relying on the CAPM (Matter number 491, October 29, 2021)²

¹ This is $(8.9 \cdot 0.385 + 5.5 \cdot 0.075) / 0.46$. Since the preferred shares are deemed there is no additional preferred share risk premium applied to the common shares.

² The AUC confirmed its existing parameters for a gas distribution utility of an 8.5% ROE on 37% common equity on March 31, 2022 in D27084-D01-2022.

[130] Considering the foregoing, Liberty’s ROE is set at 8.50 percent, to be effective as of January 1, 2022, as detailed below:

CAPM Components	Percentage	Total
Risk-Free Rate	3.07 %	3.07 %
(Market Risk Premium * Beta)	(6.23 % * 0.55)	3.43 %
Flotation Costs	0.50 %	0.50 %
Total ROE, not including Company-Specific Risk Premium		7.0 %
Company-Specific Risk Premium	1.50 %	1.50 %
Total ROE		8.50 %

1
2 Comparing the recent NBEUB with the Regie’s for GMI in 2011 the long Canada bond yield
3 used as the risk-free rate has clearly fallen from the Regie’s mid-point of 4.20% in a 3.91%-4.5%
4 range to 3.07% used by the NBEUB decision or by 1.13%, but the utility component has not
5 materially changed. For example, the market risk premium used by the NBEUB increased by
6 0.60% over that used by the Regie but was applied to a marginally lower beta. Similarly the
7 NBEUB used a 0.50% flotation or issue cost adjustment compared with the mid point of the
8 Regie’s range of 0.35%. As a result, the generic utility component added to the risk-free rate was
9 3.05-3.85% for the Regie or an average of 3.45% versus 3.93% for the NBEUB. However, since
10 the NBEUB utility premium was applied to a lower risk-free rate, their fair ROE was 7.0%
11 compared to 7.66% for the Regie or a drop of 0.66%.

12 Where the Regie and NBEUB differ is in the “non-CAPM” adjustments made by the Regie.
13 These were for insights from other models and the credit risk premium which was an important
14 issue coming out of the financial crisis and was subsequently folded into the Regie’s automatic
15 ROE adjustment model. When these are added, the comparison is the NBEUB’s 7.0% in 2021
16 versus a fair return of 8.36% in 2011 or a drop of 1.36% since 2011 for a generic utility.³

³ The difference is larger given the actual 8.9% allowed ROE.

1 The NBEUB's gas utility was Liberty Utilities New Brunswick (LUNB) the former Enbridge
2 Gas New Brunswick (EGNB). I considered both GMI in 2011 and LUNB in 2021 as above
3 average risk utilities. For GMI the Regie allowed a 0.30% adjustment to the ROE which for GMI
4 meant an allowed ROE of 8.9% on 38.5% common and 7.5% preferred equity. Even though I
5 regarded GMI as more risky than an average Canadian gas distribution utility, LUNB is even
6 riskier as a greenfield gas utility that has not met its expansion targets and found competition
7 from alternative fuels extremely difficult. Consequently, the NBEUB allowed a 1.50% increase
8 to the ROE or 8.50% for the allowed ROE and a 45% common equity ratio.

9 I compare these two decisions simply as reference points in both how the ROE is determined for
10 two "province-wide" gas distribution utilities in adjacent provinces and the magnitudes of
11 changes since 2011. If the Regie followed the generic CAPM based ROE recently allowed by the
12 NBEUB of 7.0% and continued GMI's additional risk premium of 0.3% with 0.375% added for
13 other models, then Energir's allowed ROE would be 7.68% or about 7.90% if the difference in
14 for a generic utility is subtracted from the 8.90% allowed. This is a far cry from the current
15 requested ROE, but the NBEUB was faced with a request from LUNB's American experts of
16 11.5% on 50% common equity, and they allowed 8.5% on 45% common equity, that is, the
17 NBEUB allowed a 3.0% lower ROE and 5% lower common equity ratio than that requested by
18 LUNB and recommended by its expert.

19 The American witness in the LUNB hearing was not Dr. Villadsen and as a rule I do not critique
20 the testimony of other witnesses or "rebut" them. However, I will point out that the Regie has
21 already rejected the core of Dr. Villadsen's evidence in some cases on several occasions in
22 evidence presented by a variety of American witnesses. Since the Regie has already made
23 decisions on the three major areas where I disagree with Dr. Villadsen, I will simply draw
24 attention to the previous decisions of the Regie and since they are points of principle, that is,
25 methodology they apply regardless of the state of the economy. I will not comment in detail on
26 areas of professional disagreement, where the Regie has not so far ruled in a decision.

27 Dr. Villadsen's basic estimates are in her tables. For example, in Table BV 4.6 she has her
28 constant growth DCF estimates for her Canadian sample with an average of 9.93%. These are
29 clearly excessive as the assumption that Altagas can grow *indefinitely* at a constant growth rate

1 of 9.9% forever is clearly not tenable.⁴ Dr. Villadsen recognises this since in Table BV 4.6 she
2 provides her multi-stage DCF estimates where the short run growth rate is tapered to the long run
3 growth rate of the economy⁵ and as a result the DCF estimate drops to 8.71%. Dr. Villadsen
4 provides her CAPM estimates in Schedule BV 4.11 for an average of 9.56% ⁶and her ECAPM
5 average estimate of 9.72%. These are the sort of estimates (8.71-9.72%) that are “within range”
6 of my own estimates where we have a professional disagreement on certain values such as the
7 validity of short run growth estimates, the bias in analyst forecasts etc. However, they contain
8 two sets of calculations that the Regie has consistently rejected.

9 First, both Dr. Villadsen’s CAPM and ECAPM estimates use Blume-adjusted beta estimates.
10 What this means is that they average the actual beta estimate with the market average of 1.0 and
11 as low risk securities this *automatically* increases the beta estimate. This is since the adjustment
12 assumes they will increase toward 1.0. These adjusted betas are used in both Dr Villadsen’s
13 CAPM and ECAPM estimates and as a result both these sets of estimates are biased high
14 estimates of the cost of equity. My Appendix C deals with this process and references the only
15 research on public utility betas to show that the Blume adjustment process is not valid for public
16 utilities. More importantly in D-2011-182 the Regie stated

[224] With respect to the use of adjusted betas, the Régie maintains the position it has taken in previous decisions.⁸⁶ The explanation commonly used in financial research to support an adjustment to raw beta, namely the empirically observable tendency of betas in general to converge in the long term towards the market mean of 1, does not apply in the case of regulated companies. Given the existence of exclusive distribution rights, it is difficult to see how the risk associated with the operation could increase significantly and converge towards the market risk over the years.

17

⁴ These growth rates are based on sell-side analyst short run earnings estimates, which are known to be biased. Further, Altagas no longer has any Canadian regulated distribution assets as they have all now been sold.

⁵ Note the short run growth rate is still in the multi-stage growth rate estimate.

⁶ The high values for the CAPM are due to her use of a short run market risk premium estimate that differs dramatically from the long run market risk premium previously used by the Regie.

1 I have always adjusted actual betas based on my judgment and a tendency for them to revert to
2 their own long run average rather than that of the market. In other words, there is no observed
3 tendency for the Blume adjustment process to hold for utilities and that applies to Canadian as
4 well as American utilities.

5 Second, in Dr. Villadsen's Schedule BV 4-11 she provides ECAPM estimates, which are
6 marginally higher than her CAPM estimates. In D-2011-182 the Régie dismissed Dr. Morin's
7 use of the ECAPM stating

D-2011-182, R-3752-2011 Phase 2, 2011 11 25

7

[200] The Régie has already ruled on the ECAPM.⁷⁵ In the Régie's view, there is no
new information that would warrant a reconsideration of this model.

8

9 As far as I can see Dr. Villadsen's use of the ECAPM is the same as Dr. Morin's even to the
10 extent of the "alpha" coefficient used.

11 The above extracts seem to rule out adjusted betas and the ECAPM since no further evidence has
12 been produced to justify them. However, the interesting point is how the direct estimates of the
13 fair ROE using the constant growth, multi-stage growth, CAPM and ECAPM all come in under
14 10.0% and yet Dr. Villadsen's estimates end up significantly higher. Dr. Villadsen does this by
15 using the *ATWACC* methodology and leverage adjustments used in part by Drs. Vilbert and
16 Kolbe in their evidence in D-2009-156.

17 Dr. Villadsen's procedure follows the same general approach as the Brattle evidence in 2009.
18 First, estimate the after-tax weighted average cost of capital or *ATWACC*⁷ as in BV 4.7 using
19 the multi-stage DCF equity cost to get 5.6% and BV 4.11 using the CAPM equity cost estimate
20 to get 4.8%. Second, determine the ROE that results from the use of book value capital structure
21 weights to be consistent with the *ATWACC* estimates using market value weights. I discuss this
22 approach at length in my Appendix E. However, since the equity market values of Dr.

⁷ Dr. Villadsen does not call it the *ATWACC*, but that is what it is.

1 Villadsen's sample firms exceed the regulated book value of equity for the Quebec distribution
2 utilities, this process *automatically* increases the ROE. For example, in BV-4.8 Dr. Villadsen had
3 the average *ATWACC*, using the multi-stage DCF average DCF equity cost of 8.71%, at 5.60%.
4 However, using the lower book equity weights this increases or levers up the estimated return on
5 equity to 10.50% or a 1.8% increase. Similarly, in BV 4-12, with the CAPM estimated with the
6 adjusted betas from Bloomberg of 9.56%, the *ATWACC* is 4.80%, which with the book value
7 weights increases this to 10.70% or a 2.1% increase.

8 The Alberta Energy and Utilities Board stated explicitly that they would be derelict in exercising
9 their statutory responsibilities to accept these *ATWACC* based leverage adjustments. When faced
10 with this *ATWACC* approach by Brattle experts in 2009, the Regie stated (D2009-156, page 57)

[228] In view of the numerous conceptual difficulties involved in applying the *ATWACC*
according to market values, the Régie finds that establishing book value capital structure and
using traditional approaches based on expert evidence with respect to optimal debt and
equity weightings is a proven method that is compatible with the determination of a
reasonable rate of return on the Distributor's rate base.

[229] **Therefore, the Régie will not adopt the After-Tax Weighted Average Cost of
Capital (*ATWACC*) based on market value as the standard approach for determining
the reasonable return on Gaz Métro's rate base.**

11
12 As far as I can see Dr. Villadsen has provided no new information or justification necessary for
13 the Regie to reconsider its 2009 decision except to broaden the number of leverage adjustments.
14 Even here there is very little discussion of exactly what is going on in deriving the results.

15 I have provided this background information as context and to explain why the estimates and
16 recommendations provided by Dr. Villadsen are so far above the generic fair rate of return
17 decision recently set by the NBEUB of 7.0%. What follows is my own formal testimony. It is
18 structured similar to my GMI evidence in 2011. First, I will consider the current state of the
19 money markets and how it has evolved since 2012. I will then derive my estimates of a fair ROE
20 for a benchmark utility and providing my recommendations. Much of the technical work is in the
21 Appendices, where my CV is at Appendix A, my market risk premium estimates at Appendix B,
22 my relative risk (beta) estimates at Appendix C, my DCF estimates at Appendix D, my *ATWACC*

1 appendix at Appendix E and my business risk appendix at Appendix H. These are free standing
2 appendices where I briefly touch on the main conclusion in this man text.

3

1 **II FINANCIAL AND ECONOMIC OULOOK**

2 **Q. WHY DO YOU START BY CONSIDERING CAPITAL MARKET**
3 **CONDITIONS?**

4 **A.** Because the legal standard for a fair rate of return in Canada stemmed from changed
5 conditions in the money market, where we would now understand the money market to mean the
6 capital market. Also, conventional practise is to base the fair ROE on the forecast long term
7 Canada (LTC) bond yield. The Supreme Court of Canada determined a fair rate of return in *BC*
8 *Electric Railway Co Ltd., vs. the Public Utilities Commission of BC et al* ([1960] S.C.R. 837),
9 where the Supreme Court of Canada had to interpret a statute that provided,

10 (a) The Commission shall consider all matters which it deems proper as affecting the
11 rate:

12 (b) The Commission shall have due regard, among other things, to the protection of
13 the public interest from rates that are excessive as being more than a fair and
14 reasonable charge for services of the nature and quality furnished by the public
15 utility; and to giving to the public utility a fair and reasonable return upon the
16 appraised value of the property of the public utility used, or prudently and
17 reasonably acquired, to enable the public utility to furnish the service:

18 These statutory provisions articulated the "fair and reasonable" standard in terms of rates; that
19 the regulatory body should consider all matters that determine whether the resulting charges are
20 "fair and reasonable." To an economist, "fair and reasonable" means minimum long run average
21 cost, since these are the only costs, which satisfy the economic imperative for regulation, and do
22 not include unreasonable and unfair cost allocations. The statute also articulated the "prudently
23 and reasonably acquired" test in terms of the assets included in the rate base and that the
24 imperative is to protect the public interest.

25 In Canada "fair and reasonable" has also been taken to include the firm's capital structure
26 decision (debt equity ratio), since this has a very direct and obvious impact on the overall
27 revenue requirement. To allow the regulated utility to freely determine its capital structure will

1 inevitably lead to rates that are unfair and unreasonable, otherwise the management of the
2 regulated firm is not fulfilling its fiduciary duties to act in the best interests of its stockholders.⁸

3 In terms of financial charges, the decision in *Northwestern Utilities vs. City of Edmonton* (1929)
4 stated that a utility's rates should consider changed conditions in the money market, where a fair
5 rate of return was further confirmed in the *BC Electric* decision. This decision adopted Mr.
6 Justice Lamont's definition of a fair rate of return put forward in *Northwestern Utilities*,

7 *"that the company will be allowed as large a return on the capital invested in*
8 *the enterprise as it would receive if it were investing the same amount in other*
9 *securities possessing an attractiveness, stability and certainty equal to that of*
10 *the company's enterprise."*

11 This definition is referred to as a market opportunity cost, in that the fair return is what could be
12 earned by investing in similar *securities* elsewhere. Only if the owners of a utility are given an
13 opportunity to earn their opportunity cost will the returns accruing to them be fair, i.e., they will
14 neither reward the owners with excessive profits, nor ratepayers by charging prices below cost.
15 In this way the fair rate of return in Canada is conventionally applied as a market rate applied to
16 the book value of the utility's assets.

17 To any modern financial economist Mr. Justice Lamont's definition of a fair rate of return as an
18 opportunity cost means a market *required* or *expected* rate of return. This is the rate set in the
19 capital or money market as conditions change.

20 **Q. HOW HAVE MONEY MARKET CONDITIONS CHANGED?**

21 **A.** The Bank of Canada's (the Bank) responsibilities are to "promote the economic and
22 financial welfare of Canada" by conducting monetary policy to "foster confidence in the value of
23 money" and promote the safety and efficiency of Canada's financial system.⁹ To do this it
24 manipulates conditions in the financial market "primarily" through changing short term interest

⁸ In the U.S. utilities are generally allowed to determine their own capital structure within certain limits for historic reasons specific to the US and practices that led to the Public Utility Holding Company Act of 1935 and oversight by the Securities and Exchange Commission. It is my understanding that securities regulators in Canada have never had an equivalent oversight function.

⁹Unlike the US there is no dual mandate equivalent to that of the US Federal Reserve.

1 rates.¹⁰ In practise, the Bank of Canada mainly operates consistent with what is termed the
2 Taylor rule, after Professor John B. Taylor at Stanford University.

3 The Taylor rule is as follows:

$$r = r^* + i^* + 0.5 * (i - i^*) + 0.5 * (GDP - GDP^*)$$

4
5 where r is the Bank's actual policy rate, which in Canada is the *overnight rate* or (*CORRA*) and,
6 in the US, the federal funds rate. The inflation rate is then i and GDP is the growth rate in real
7 gross domestic product. The superscript stars indicate the Bank's target rates and a and b are
8 coefficients, which Taylor originally set at 0.50. The Bank of Canada's target rate of inflation
9 has been 2% in a band of 1.0-3.0% for almost three decades and was renewed with the
10 Government of Canada as recently as December 13, 2021, as part of a new five-year pact.

11 For illustrative purposes assume that the target GDP growth rate is set at 2% and that for the
12 overnight rate at 1%, both are real values and do not reflect inflation. Consequently, the
13 "normal" overnight rate would be 3%, which is the sum of the real target overnight rate of 1%
14 and target inflation of 2%. Now suppose both inflation and GDP growth are at 0%. This would
15 be a weak economy with below target economic growth and inflation. Substituting these values
16 into the Taylor rule we get

$$r = 1\% + 2\% + 0.5 * (0 - 2\%) + 0.5 * (0 - 2\%) = 1\%$$

17
18 So, the policy prescription would be to lower the overnight rate from the "normal" "neutral" or
19 target rate of 3% to 1% to stimulate demand. This reduction is based on 1% for the low rate of
20 inflation and another 1% for the sub-par economic growth. The lowered short-term interest rate
21 then stimulates interest sensitive demand such as housing, cars etc., and through them the
22 economy.

¹⁰ This is what is commonly referred to as "conventional" monetary policy to distinguish it from "unconventional" monetary policy also known as quantitative easing and bond buying.

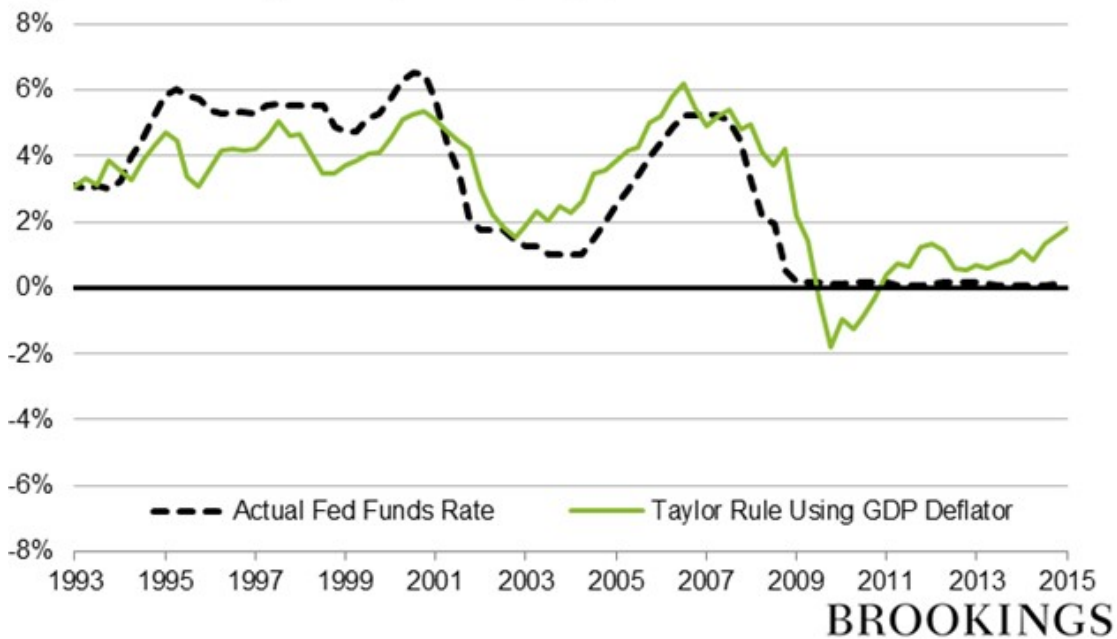
1 In contrast, suppose the economy was growing at above trend at 4% and inflation was at the top
2 of the Bank’s range at 3%. In this case substituting into the Taylor rule we get

$$r = 1\% + 2\% + 0.5 * (4 - 2\%) + 0.5 * (3 - 2\%) = 4.5\%$$

3
4 In this case, with a strong economy and rising inflation, the Bank would set the overnight rate at
5 4.5%, where the higher interest rate slows down interest sensitive demand and through them the
6 overall economy and inflation. As I will discuss later these values while illustrative are related to
7 where the Bank has been and where it seems to be going. These two examples show how the
8 Taylor rule works in “mimicking” the decision process of a central bank trying to maintain an
9 inflation target.

10 In a presentation at the Brookings Institute in April 2015 Ben Bernanke, the former chair of the
11 U.S. Federal Reserve, produced the following graph that clearly shows how the actual US target
12 rate (Federal Funds rate) matched the rate produced by the Taylor rule.

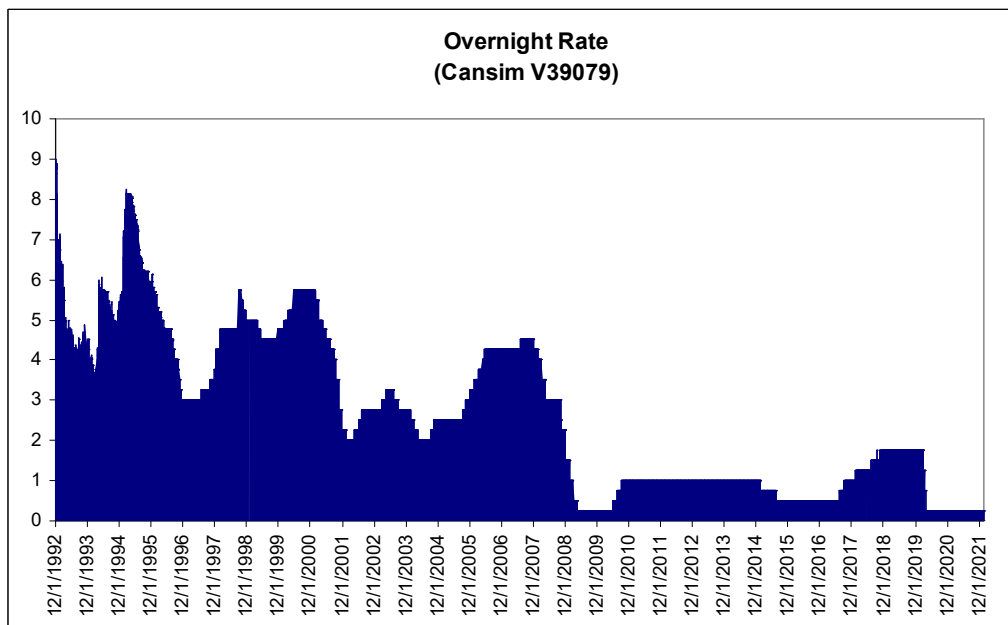
Figure 1: The Original Taylor Rule, 1993-Present



13
14 Although simplistic the Taylor rule points to the two key values that are critical for setting the
15 Bank’s policy rate: the difference between the current and target inflation rate and the output
16 gap, that is, how much spare capacity there is in the economy. It is also why financial markets

1 obsess over these two values as predictors of future financial market conditions and financial
2 costs.

3 In Schedule 1 is basic macroeconomic data since 1987, where we can clearly see the effect of the
4 Bank's agreement with the Government of Canada to bring down the rate of inflation, since it
5 has not exceeded an annual rate of 3% since 1991. However, this came with very significant
6 unemployment into the mid-1990s. Then prior to the financial crisis, we had good economic
7 growth and for a time the unemployment rate was below what used to be regarded as the non-
8 accelerating inflation rate of unemployment (NAIRU) of about 6.0%. Consumer spending was
9 strong as low interest rates supported the purchase of consumer durables and new housing, while
10 the strong investment position in Canada was partly due to a dramatic improvement in Canada's
11 terms of trade as commodity prices increased. This created incipient inflationary pressures so
12 that starting in September 2005 the Bank increased its policy rate from 2.5% to reduce the
13 stimulus injected into the economy. We can see this in the following graph of the Bank's
14 overnight rate.



15
16 Consistent with the Bank's 2% inflation target the overnight rate should be *at least* 3.0%.
17 Consequently, at 4.5% up until December 2007 the Bank's monetary policy was restrictive in
18 increasing borrowing costs and slowing interest sensitive demand. This policy stance was

1 reversed due to the impact of the sub-prime mortgage crisis emanating in the United States. The
2 Bank conservatively lowered the overnight rate to 3.0% in May 2008 and kept it there
3 throughout the summer before being forced to cut the rate dramatically and rapidly to 0.25% in
4 response to the financial crisis triggered by the failure of Lehman Brothers.¹¹

5 Unlike the US, Canada recovered quickly since there were no fundamental problems in the
6 Canadian economy equivalent to the enormous losses suffered by banks in the U.S. where
7 Citibank, Wachovia, Bank America, and Merrill Lynch each alone lost more than \$100 billion.
8 Consequently, the Bank started “normalising” by increasing the overnight rate in June 2010 in
9 response to the obvious signs of recovery.

10 The Bank increased the overnight rate on three separate occasions, each time by 0.25%, to bring
11 it to 1.0% by September 2010. The Prime rate that the chartered banks charge their “best”
12 customers increased to 3.0% in tandem with the overnight rate and at that time expectations were
13 that the Bank would resume increasing the overnight rate through 2011 as the economy
14 strengthened, since 1% was still well below the “normal” rate. In June 2011, for example, the
15 Royal Bank of Canada was forecasting that the long Canada bond yield would be 4.55% by the
16 end of 2012.

17 June 2011 was the time I prepared my GMI evidence where I based my forecast long Canada
18 bond yield on RBC’s forecast. At that time, I stated:

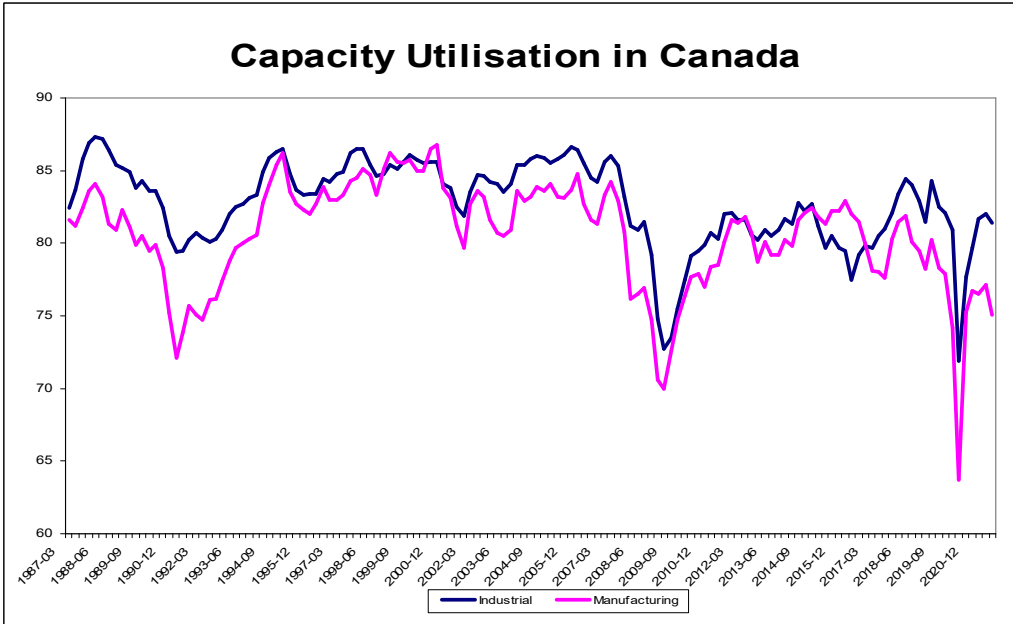
I am a little more pessimistic than RBC, since conditions in the US remain so weak. In fact the US unemployment rate increased on
June 3, 2011 from 9.0% to 9.1% as increased employment did not compensate for an increased labour force. However, the Consensus
Economics forecast for the ten year Canada bond for May 2012 is 4.0%, if the current spread to the 30 year bond of about 0.50% is
added then the equivalent forecast for the 30 year bond yield is 4.50% very similar to that of RBC. Consequently I base my estimates
on a forecast LTC yield for 2012 of 4.50%.

19

¹¹ 0.25% was thought to be the lowest the rate could be set at, since otherwise it would mean negative deposit rates for the settlement balances kept at the Bank. However, in practise, the European Central Bank (ECB) has had negative rates.

1 In addition to the problems in the U.S and the Eurozone both the Bank of Canada and the
2 Government of Canada started to worry that at 1.0% the overnight rate would encourage too
3 much personal borrowing and lead to levels of indebtedness that would have negative
4 implications when interest rates returned to normal levels.¹² The conundrum faced by the Bank
5 was that while it wanted to stimulate the economy by maintaining low interest rates, it did not
6 want a U.S. style debt-fuelled housing bubble that might fuel future problems.

7 Further, the Canadian economy is not an island and increasingly the Bank was concerned about
8 the transfer of events from the Eurozone,¹³ the UK, Japan, the U.S., and China into Canada as
9 they all followed expansionary monetary policies to offset their obvious problems. We can see
10 the impact of events outside Canada in the following graph of the capacity utilisation levels in
11 both the Canadian manufacturing and non-farm sectors.



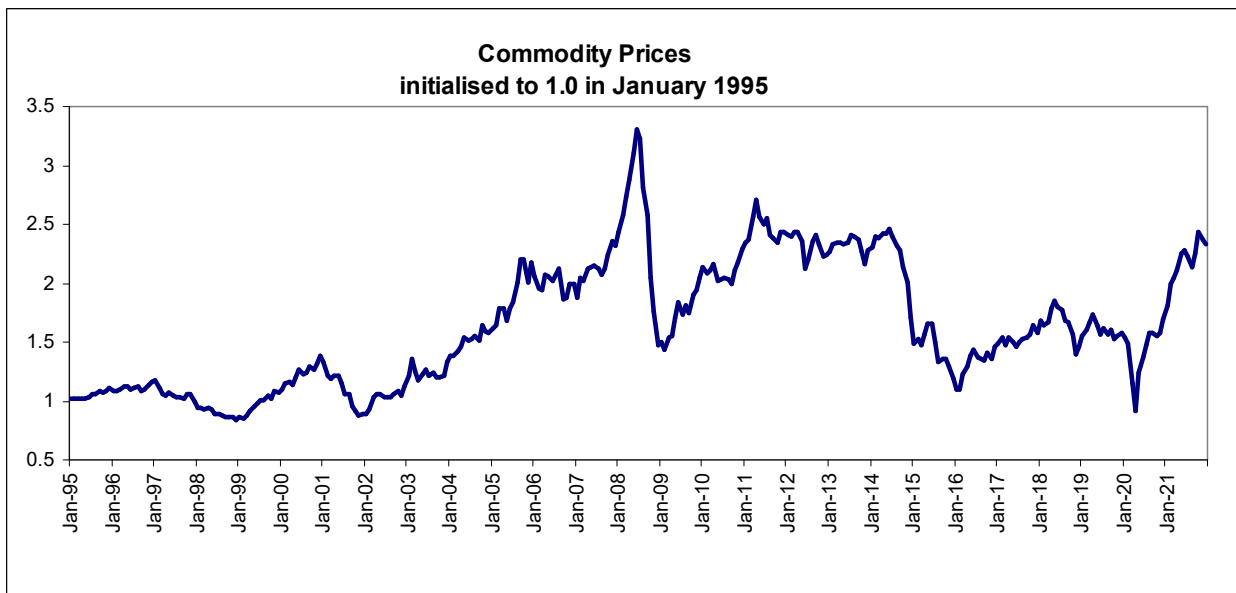
12
13 The sharp drop in capacity utilisation during the recession in the early 1990's is evident as well
14 as the slowdown after the financial crisis in 2009-2010. In both cases, there followed a normal

¹² Note this is 2011 and this fear persists to this day but does not seem to have affected the conduct of monetary policy.

¹³ 2011 seemed at the time to be just past the peak of the Eurozone debt crisis as attention switched from the PIGS (Portugal, Italy, Greece, and Spain) to the U.S.

1 rapid recovery out of recession and a movement towards stabilisation. In my 2011 report in the
2 Executive summary, for example, I pointed out that “The Canadian economy has now recovered
3 from the recession and is drawing down on the remaining spare capacity so we can expect
4 several years of above average growth.” However, unlike earlier periods, Canada stagnated in
5 2012-2016 at a relatively “low” level of capacity utilisation as the recovery did not continue
6 apace. Instead, Canada was hit with the after-effects of the Euro crisis and particularly the slow
7 recovery of our major trading partner, the United States. Then just as the US recovery started to
8 gather speed, Canada was hit by the slowdown in China during 2015 which caused a dramatic
9 drop in commodity prices.

10 We can see the strong increase in commodity prices that started in 2002 as China started to
11 industrialise in the following graph of the Bank of Canada’s commodity price index.



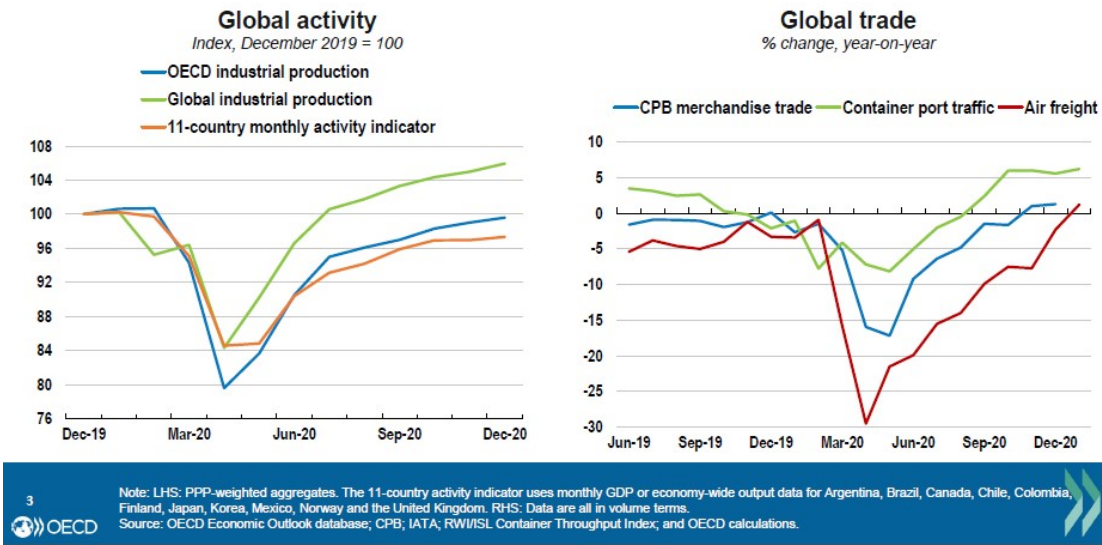
12
13 The Great Recession in the United States in 2009 caused these commodity prices to collapse,
14 but they quickly recovered until the sharp sell-off in 2015 on growing fears of a China
15 slowdown. It was this drop in commodity prices that severely affected Canada’s resource sector
16 and triggered a “technical” recession in 2015Q2, which in turn weakened capacity utilization. In
17 reaction, the Bank surprised markets by cutting the overnight rate twice in early 2015 from 1.0%
18 to 0.50%. However, fears of a slowdown in China proved overblown and the election of
19 President Trump in the U.S. increased business confidence, particularly after a significant tax

1 decrease. As the economy strengthened with a moderate recovery in commodity prices and
 2 capacity utilization, the Bank increased the overnight rate 5 times to reach 1.75% in October
 3 2018. By the end of 2019, the overnight rate was still 1.75%, as capacity utilization was still
 4 below “median” levels and relatively weak commodity prices were still hurting Western Canada.

5 **Q. WHAT HAS HAPPENED SINCE 2019?**

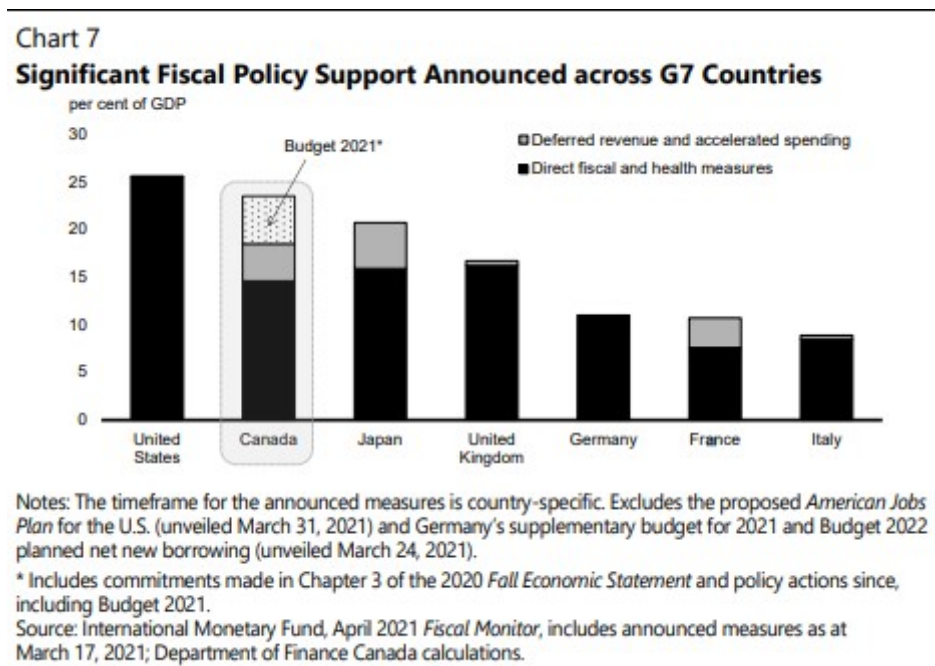
6 **A.** The Covid 19 virus has caused enormous disruption to the global economy and all countries,
 7 including Canada. The following is a graphic from the Organisation for Economic Co-operation
 8 and Development (OECD). After the severity of the transmission of the virus from China began
 9 to be appreciated in February 2020 industrial production collapsed 20% across OECD countries.
 10 In Canada industrial production dropped to 63.7% of capacity and manufacturing output to
 11 71.9%. Both levels were much worse than the depths of the response to the U.S. financial crisis
 12 in 2009 and much quicker. By early Summer, the Royal Bank of Canada was forecasting that Q2
 13 GDP would be 15-30% lower than at the end of 2019 as the unemployment rate jumped to 13.4%
 14 in May 2020 from the pre-pandemic low of 5.6% in January 2020.

High-frequency indicators suggest a rebound in industrial activity



15
 16 Things looked very gloomy in April/May 2020, but the seeds of recovery were already being
 17 sown. In March the Federal Government proposed the Covid-19 Emergency Response Bill with
 18 \$82 billion in emergency spending and an expansion of the Canada Emergency Response Benefit

1 (CERB) in April. In its 2021 budget the Government of Canada enacted an expansionary fiscal
 2 policy, going well beyond temporary support, to offset the longer-term impact of Covid 19.¹⁴
 3 The cost of this permanent program is expected to see the Government debt in Canada, both
 4 Federal and Provincial, rise from the 87% of GDP pre-pandemic to over 115%, a startling
 5 increase. The Government's budget book indicates that Canada's fiscal stimulus will rival that of
 6 the U.S. and exceed all other major developed nations supporting a return to pre-pandemic levels
 7 at the cost of heavier indebtedness long term. In this the government has the support of both the
 8 International Monetary Fund and the OECD.



9
 10 In financial markets the Bank of Canada cut the overnight rate to 0.25% and announced a raft of
 11 asset purchase programs including buying approximately:

- 12 • 40% of the Treasury bills offered at auction each week
- 13 • \$5 billion of Government of Canada bonds each week
- 14 • \$50 billion of provincial bonds
- 15 • \$10 billion of corporate bonds

¹⁴ [Budget.gc.ca/2021/pdf/budget-2021-2n.pdf](https://budget.gc.ca/2021/pdf/budget-2021-2n.pdf)

- 1 • \$36 billion banker's acceptances
- 2 • \$3 billion Canada mortgage bonds.

3 As provinces enacted lockdowns the number of new cases dropped and in December 2020 the
4 Pfizer and Moderna vaccines were both approved. However, provinces increasingly applied
5 restrictions on inter provincial travel as well as the Government of Canada restrictions on air
6 travel. Despite rising infection rates, by July 2021 the unemployment rate had dropped to 7.5%
7 and continued to drop throughout the year ending in December 2021 at 6.0%. In reaction, the
8 Bank of Canada removed the main asset purchase programs and by the end of the year the
9 markets were pricing in several increases in the overnight rate through 2022.¹⁵

10 The upshot is that the Bank of Canada and financial markets generally think that the bulk of the
11 Covid 19 crisis has passed.

12 **Q. HOW DOES THIS RELATE TO GDP GROWTH?**

13 **A.** The Government of Canada's fiscal deficit of 16.1% of GDP in 2020-2021 can only
14 stimulate the economy in the short term. According to the government's survey of private sector
15 economists and its own data in its Budget Brief, GDP declined by 5.4% in 2020 and is forecast to
16 increase by 5.8% in 2021 and a further 4% in 2022. After 2022 GDP growth is expected to revert
17 to its trend estimate of 2.0% as effectively Canada will be back to full employment with minimal
18 spare capacity. In this sense the Government's expansionary budget has simply brought forward
19 the recovery at significant financial cost. As a reference point the Parliamentary budget officer
20 (PBO) has the following forecast¹⁶ which largely confirms the 2021 Budget brief.

¹⁵ This despite the new Omicron variant which seems to be a mild flu for those individuals that are fully vaccinated and boosted.

¹⁶ Economic and Fiscal Outlook, March 2022.

Table 1 Summary of the economic outlook

% unless otherwise indicated	2019	2020	Projection			
			2021	2022	2023	2024-2026
Real GDP growth	1.9	-5.2	4.7	3.9	2.9	1.8
Employment (thousands)	19,049	18,493	19,272	19,703	19,908	20,390
Unemployment rate	5.7	9.5	7.4	5.9	5.4	5.4
WTI oil price (\$US)	57	39	68	79	70	72
CPI inflation	2.0	0.7	3.4	4.0	2.0	2.1
Bank of Canada policy rate	1.75	0.25	0.25	1.00	2.00	2.25

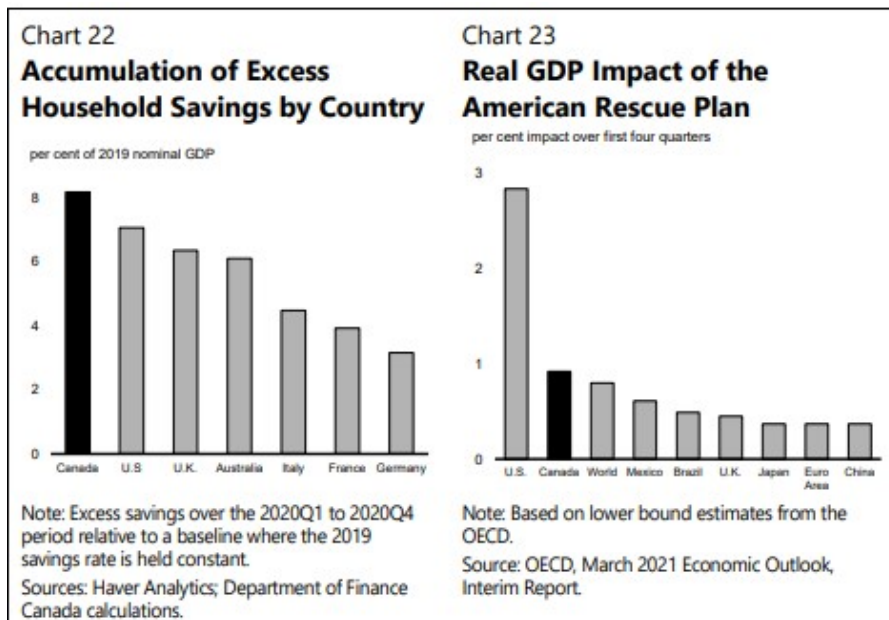
Sources: Statistics Canada and Office of the Parliamentary Budget Officer.

Note: Employment and the Bank of Canada policy rate are end of period values.

1

2 **Q. WHAT IS YOUR OUTLOOK FOR INFLATION?**

3 **A.** The Bank of Canada’s 2.0% target rate of inflation, within a 1.0%-3.0% band, was renewed
 4 with the Government of Canada on December 13, 2021. However, we now know that there has
 5 been significant accumulation of income as savings consistent with what John Maynard Keynes
 6 referred to in the Great Depression as the “paradox of thrift.” Simply put what is good for the
 7 individual may not be good for the economy, which was exemplified during 2020. In the budget
 8 brief the Government of Canada indicated that “excess household” saving reached 8% of GDP,
 9 the highest of any of the major economies.



10

1 As this money was taken out of direct spending it caused aggregate demand to drop, and with it,
 2 market prices and inflation. During 2020 the consumer price index increased by just 0.72%,
 3 which is below the 1-3% range agreed to by the Bank and the Government reflecting this drop in
 4 aggregate demand. However, the process has now gone into reverse. As the economy corrected
 5 itself in 2021 in the face of government fiscal stimulus some of this excess spending is
 6 compounding short-term inflationary pressures which were reflected in the December 2021 year
 7 over year CPI rate of 4.80%

8 However, the Bank of Canada does not target the “headline” CPI rate. Instead, it focusses on
 9 three measures: CPI Trim which removes the more volatile items, CPI-median which uses the
 10 “middle” number and CPI-Common, which is a statistical estimate of the core inflation. The
 11 result is that even when January’s Headline CPI rate hit 5.1% year over year the three core
 12 measures ranged from 2.3-4.0%.

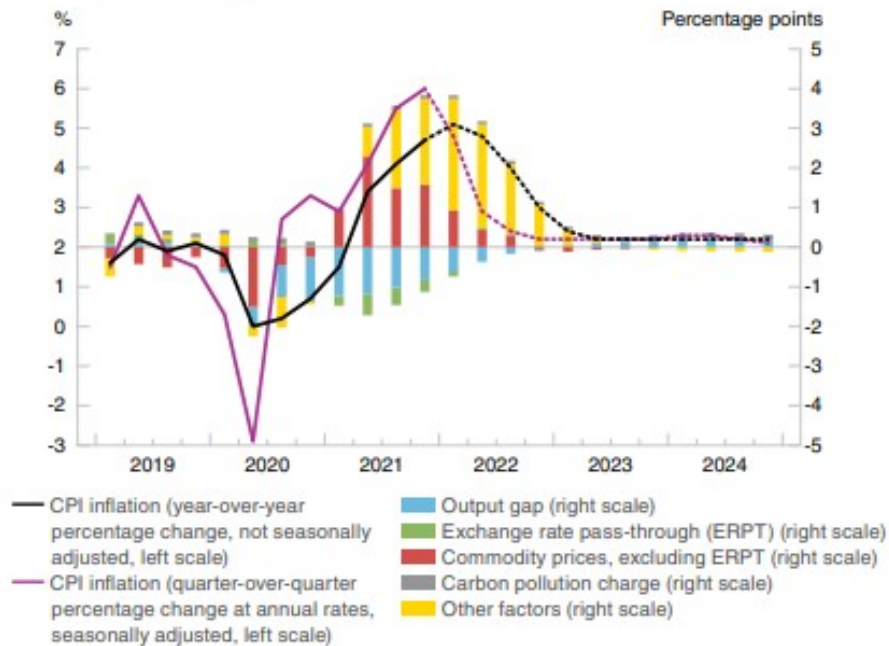


13
 14 In its December Monetary Policy Review the Bank produced the following graph where it
 15 highlighted the underlying causes of inflation. The traditional ones are the output gap and the
 16 pass-through of commodity prices and exchange rate effects. However, what has been driving
 17 inflation over the past year is the “other factors” which is the impact of Covid 19. The Bank
 18 expects these other factors to stabilise in 2022 and inflation to move to slightly above the middle
 19 of its operating band of 2.0%. It is difficult for the Bank to say anything else given its December
 20 13, 2021, renewal of its inflation targets of 2.0% in a band of 1.0-3.0%.¹⁷

¹⁷ Note the US was “late” to targeting a specific inflation rate compared to the Bank of Canada and has now adopted a flexible approach to *average* inflation over the business cycle so will tolerate higher inflation in the short term to offset the prior periods of lower inflation relative to target. The problem with

Chart 15: CPI inflation is forecast to ease as pandemic-related forces fade

Contribution to the deviation of year-over-year inflation from 2%, quarterly data

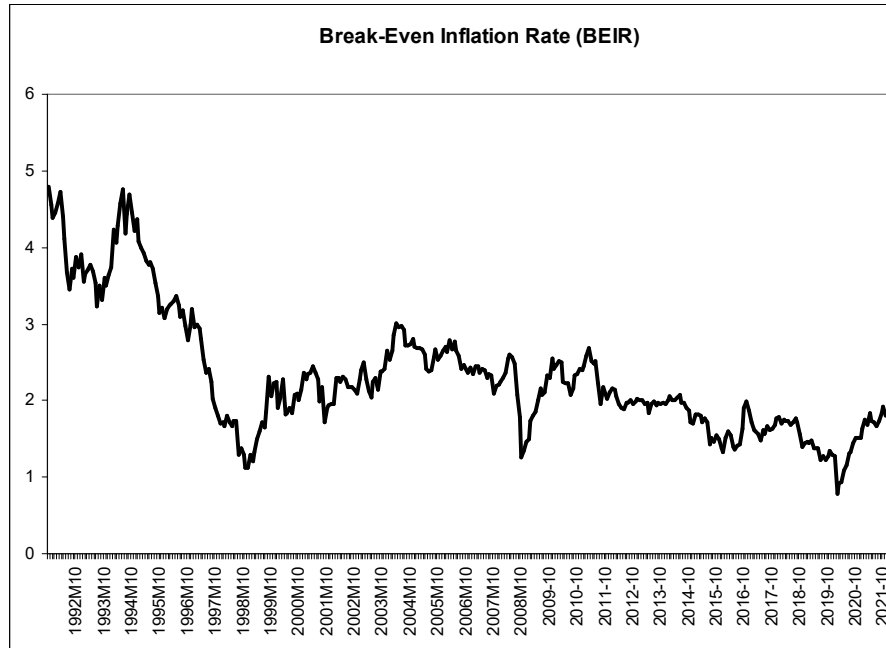


1

2 To check if the bond market agrees with the Bank of Canada, we can look at the market's pricing
3 of the nominal bond, where the interest rate is fixed versus the real return bond, which
4 guarantees the investor protection from inflation. The difference between the yields on these two
5 bonds is called the break-even inflation rate (BEIR), since if actual inflation is higher than this,
6 after the fact, you would have been better off investing in the real bond and vice versa.
7 Consequently, the BEIR is a measure of the market's long-run inflation expectations.

8 The following graphs the BEIR (as a %) since 1991, where we can clearly see the collapse in
9 inflationary expectations in the late 1990's. Since then, the BEIR has generally been slightly
10 above the Bank of Canada's 2.0% inflation target, but never above the 3.0% upper limit. In
11 contrast, more recently the BEIR has been below 2.0% and dropped to a low of 0.79% in March
12 2020. It has recovered since then and finished the year at 1.8% still below the mid-point of the
13 Bank's operating range. The markets seem to be agreeing with the Bank of Canada.

the U.S. approach is that inflationary expectations could easily get anchored at a higher rate than in Canada.



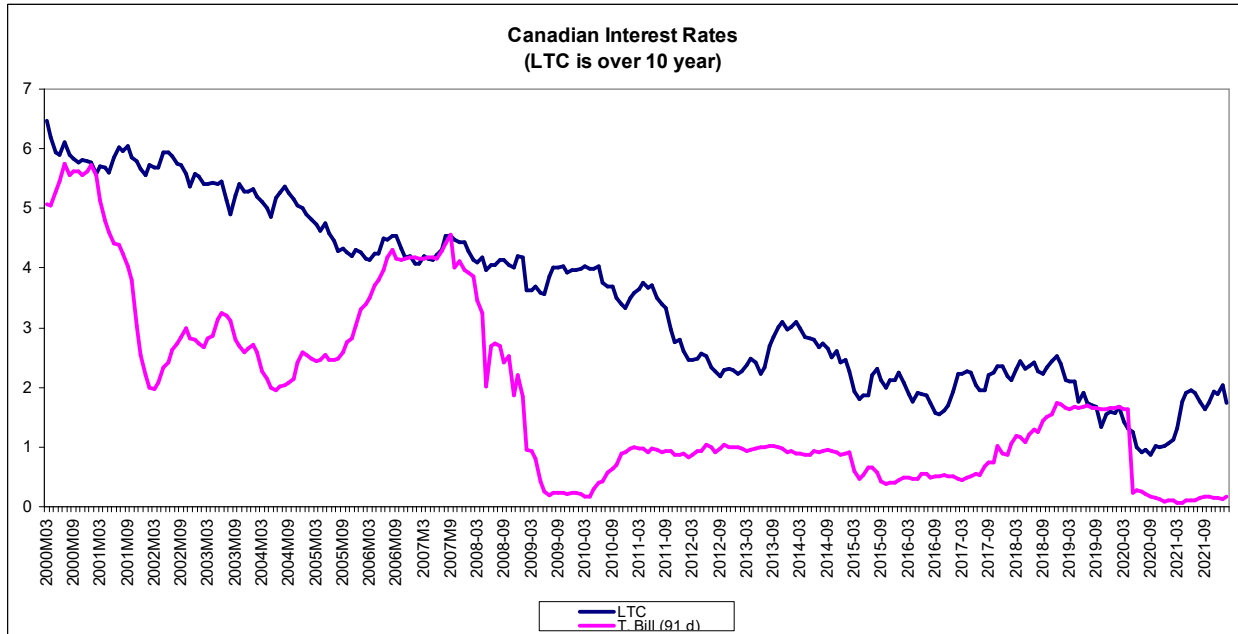
1

2 I view the BEIR as confirmatory evidence, consistent with the bank’s commitment to keep
 3 inflation at an average level of 2.0% in its agreement with the Government.

4 **Q. WHAT HAS BEEN THE RECENT HISTORY OF THE LTC BOND YIELD?**

5 Schedule 2 provides data on the full range of interest rates across the broad maturity spectrum as
 6 of February 21, 2022. The interest rate on the long-term Government of Canada bond (LTC) at
 7 2.17% is almost 2.0% higher than the 0.34% yield on 91-day Treasury Bills. This is referred to
 8 as a “normal” yield curve as typically LTC yields are higher than short-term T Bill yields due to
 9 the added risk of holding long term bonds.¹⁸ Normally yields on LTC bonds are not as affected
 10 by conventional monetary policy as short-term interest rates, since monetary policy usually
 11 works at the “short end” of the yield curve via the overnight rate. As a result, a smaller yield
 12 spread normally reflects the actions of the Bank of Canada trying to slow down the economy
 13 while a larger one is stimulative. The following graph shows the yields on 91-day Treasury Bills
 14 and LTC bonds since 2000, where the gap between them is this yield spread.

¹⁸ Long bonds have purchasing power, that is, inflation risk and interest rate risk if sold prior to maturity.



1

2 Note, for example, that T. Bill yields were essentially the same as LTC yields in 2007. This is
 3 known as a “flat” yield curve and indicates the fact that the Bank of Canada was pushing up the
 4 over-night rate to slow down the economy, since inflation was near the top of the Bank’s
 5 operating range, particularly in Ontario. The Bank’s tightening in 2007 did slow down the
 6 economy and we had a short recession in 2009. However, the cause of this was mainly the failure
 7 of Lehman Brothers in 2008 and the spill-over effects of the U.S. financial crisis.

8 Regardless, 2009 was a bad year and throughout it the Bank lowered the overnight rate to
 9 stimulate the economy as indicated by the widening yield spread. However, despite the Bank
 10 increasing the overnight rate and indirectly Treasury Bill yields in 2010, events in the U.S
 11 trickled over into Canada. In 2011Q4 the U.S. Federal Reserve embarked on the most dramatic
 12 third round of bond buying (QE3) with an open-ended commitment to buy \$85 billion of US
 13 government bonds and Federal Agency backed mortgages *every* month. In addition to the
 14 Federal Reserve, the Bank of England, the European Central Bank, and the Bank of Japan all
 15 embarked on ambitious bond buying programs designed to lower long-term interest rates and
 16 stimulate housing markets and investment.

17 At the time I referred to this as “Operation Twist” since the objective was to twist the yield curve
 18 through “unconventional” monetary policy and flatten the yield spread. QE worked as LTC
 19 yields also fell in Canada despite the absence of similar programs by the Bank of Canada. The

1 reason was that foreign purchasers were increasingly attracted to LTC bonds due to Canada's
2 AAA bond rating and relatively high yields. As a result, the yield spread contracted in Canada
3 not because of Bank of Canada tightening, but because the U.S. Federal Reserve operated to
4 lower both short term *and* long-term interest rates. The fact that this is unusual is why it is
5 referred to as unconventional monetary policy.

6 In 2017 the U.S. Federal Reserve (June 14, 2017) announced it would reduce its holdings of
7 bonds by allowing another \$6 billion to mature each month, a process that came to be called
8 "tapering." Canadian Treasury Bill yields started to increase causing the yield spread to get
9 smaller as markets started to "normalise". This was consistent with a strong Canadian economy
10 and the Bank of Canada increasing interest rates. This continued until December 2019 when the
11 actions of the Fed caused investors to assume that it was deliberately driving up interest rates to
12 slow down a U.S. economy "firing on all cylinders" as the yield spread went negative.¹⁹

13 In hindsight the fear of rising interest rates and the Fed engineering a U.S. recession to slow
14 down the U.S economy seems quaint given that by February 2020 there was talk of a virus
15 coming out of China. By the end of March central banks around the world were reducing policy
16 rates again while governments were engaging in massive fiscal policy expansion to offset the
17 decline in aggregate demand. In Canada even the Bank of Canada resorted to bond buying as
18 well as reducing the overnight rate with the result that the yield spread widened again.

19 Apart from showing the impact of monetary policy, the graph also shows that the LTC yield has
20 been on a long run decline since 2000 when it was over 6.0%. This is a global phenomenon and
21 has generated research at the Bank of England.²⁰ Their research indicates that the collapse is due
22 to a variety of factors such as: demographics and the baby boom generation moving into lower
23 risk investments as they age (0.9%); increased inequality (0.45%); increased precautionary
24 savings in emerging markets (0.25%); reduced demand for real investment purposes (0.7%);


¹⁹ What spooked the markets was the Fed forecasting that a normal Federal funds rate was 2.9% when in 2019 the rate was already 2.9% while they were forecasting it going to 3.4% in 2020, that is, deliberately slowing down the US economy.

²⁰ Rachel and Smith in a staff paper from the Bank of England (#571) provide these possibilities and claim to be able to explain 4.0% of the 4.5% decline in real rates as of 2014 *before* extensive quantitative easing. However, many of these are looking at the same factors through a different lens.

1 increased spread and lower real growth (1.6%). However, LTC bond yields were still at 4.0%
 2 until 2011 when the markets realised that although Canada was recovering, neither the US nor
 3 Europe were in good shape, particularly the weaker Euro area members (Portugal, Ireland,
 4 Greece and Spain, the PIGS). The result was that what started as conventional monetary policy
 5 in the US, UK, Japan, and Europe morphed into these large bond-buying programs known as
 6 “quantitative easing” or unconventional monetary policy.²¹

7 **Q. WHAT IS YOUR FORECAST FOR THE LONG CANADA BOND YIELD?**

8 **A.** The Royal Bank of Canada’s latest forecast (February 9, 2022) is below.

FINANCIAL MARKETS MONTHLY | FEBRUARY 2022 

Interest rate outlook												
%, end of period												
	Actual				Forecast							
	21Q1	21Q2	21Q3	21Q4	22Q1	22Q2	22Q3	22Q4	23Q1	23Q2	23Q3	23Q4
Canada												
Overnight	0.25	0.25	0.25	0.25	0.50	0.75	1.00	1.25	1.50	1.75	1.75	1.75
Three-month	0.09	0.15	0.12	0.16	0.60	0.85	1.10	1.30	1.50	1.65	1.70	1.70
Two-year	0.23	0.45	0.53	0.95	1.25	1.40	1.50	1.65	1.80	1.90	1.95	2.00
Five-year	0.99	0.98	1.11	1.26	1.60	1.70	1.75	1.85	1.95	2.00	2.05	2.10
10-year	1.56	1.39	1.51	1.43	1.80	1.90	1.95	2.00	2.05	2.10	2.15	2.20
30-year	1.99	1.84	1.99	1.68	2.05	2.10	2.15	2.20	2.25	2.30	2.30	2.30
United States												
Fed funds*	0.13	0.13	0.13	0.13	0.38	0.63	0.88	1.13	1.38	1.63	1.88	2.13
Three-month	0.03	0.05	0.04	0.06	0.35	0.63	0.88	1.15	1.41	1.66	1.92	2.18
Two-year	0.16	0.25	0.28	0.73	1.40	1.50	1.65	1.80	1.95	2.05	2.20	2.30
Five-year	0.92	0.87	0.98	1.26	1.85	1.95	2.10	2.20	2.25	2.30	2.35	2.40
10-year	1.74	1.45	1.52	1.52	2.00	2.05	2.15	2.25	2.35	2.40	2.45	2.45
30-year	2.41	2.06	2.08	1.90	2.25	2.30	2.35	2.40	2.45	2.45	2.50	2.50

9
 10 RBC is forecasting that the current overnight rate of 0.25% will increase to 1.25% by Q4 2022
 11 and 1.75% by Q4 2023. The 30-year LTC bond yield will also increase from the current 2.17%
 12 in Canada to 2.30% by Q4 2022 and remain there until Q4, 2023. As a result, the yield spread
 13 will significantly decrease from 1.43% at the end of 2021 to 0.55% by the end of 2024.
 14 Similarly, in the US the current Federal Funds rate of 0.13% is expected to increase to 1.13% by
 15 Q4 2022 and 2.13% by Q4 2023. The US long bond is also forecast to barely increase from the

²¹ In 2017 the Bank of Canada published its own research and reduced their judgment on the neutral real interest rate to 1.0% from the 1.5% they last used in September 2014. J. Dorich et al, “An update on the neutral rate of interest,” *Bank of Canada Review*, Autumn 2017.

1 1.90% at the end of 2021 to 2.40% and then 2.5% by Q4 2023. As a result, the US yield spread
 2 increases from the current 2.02% to 2.17%. The forecast for both the U.S and Canada indicates
 3 some movement towards “normality” at the short end of the yield curve. However, the enormous
 4 amount of excess global liquidity is still affecting long term yields and Canada is still seen as a
 5 safe harbour. We are a long way from RBC’s near-term forecast of 4.55% for the LTC yield in
 6 2011.

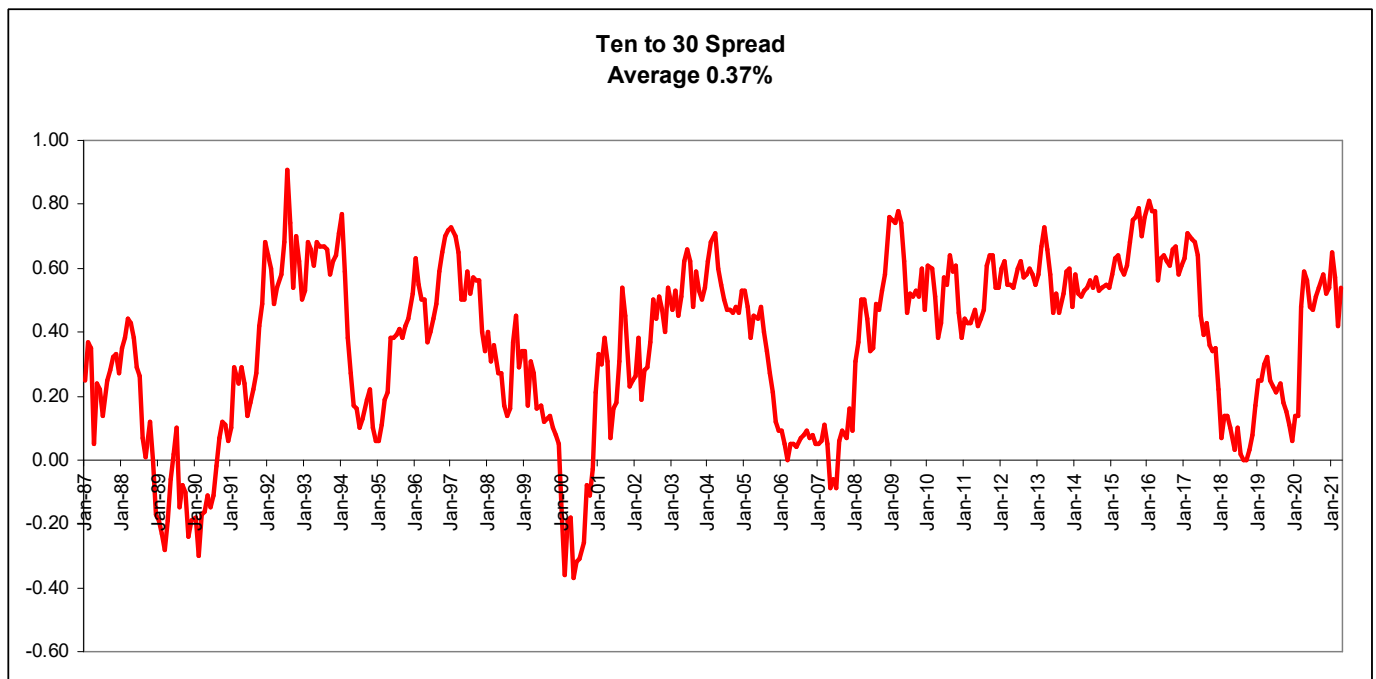
7 For the immediate future, I doubt that long-term interest rates will increase much beyond the
 8 RBC forecast, but in its 2021 budget briefing the Government of Canada had average private
 9 sector forecast data on which it partially based its budget forecast. This forecast had the ten-year
 10 government yield averaging 1.8% in 2022, which already looks marginally low, before
 11 increasing to 2.7% by 2025. Of interest is that they also had the 91-day Treasury bill yield
 12 averaging 0.20% in 2022 before increasing to 1.6% in 2025. Relative to the current RBC forecast
 13 the T. Bill yield has increased a bit quicker than anticipated but the target is similar whereas
 14 RBC is forecasting a smaller increase in the Long Canada rate.

	2020	2021	2022	2023	2024	2025	2020- 2025
3-month treasury bill rate							
Fall Economic Statement 2020	0.4	0.2	0.3	0.5	1.1	1.5	0.7
Budget 2021	0.4	0.1	0.2	0.5	1.1	1.6	0.7
10-year government bond rate							
Fall Economic Statement 2020	0.7	0.9	1.2	1.6	2.0	2.4	1.5
Budget 2021	0.7	1.5	1.8	2.1	2.5	2.7	1.9
Exchange rate (US cents/C\$)							
Fall Economic Statement 2020	74.2	76.1	76.6	77.9	78.9	79.2	77.2
Budget 2021	76.6	79.4	79.8	80.8	81.0	81.0	79.4
Unemployment rate¹							
Fall Economic Statement 2020	9.8	8.2	7.1	6.4	6.1	6.1	7.3
Budget 2021	9.6	8.0	6.5	6.2	6.0	5.9	7.0
Consumer Price Index inflation							
Fall Economic Statement 2020	0.7	1.7	1.9	2.0	2.1	2.1	1.7
Budget 2021	0.7	2.2	2.0	2.1	2.1	2.1	1.9
U.S. real GDP growth							
Fall Economic Statement 2020	-4.3	3.7	3.3	2.6	2.2	2.0	1.6
Budget 2021	-3.5	6.0	4.3	2.2	1.9	1.8	2.1
West Texas Intermediate crude oil price (\$US per barrel)							
Fall Economic Statement 2020	39	46	52	54	58	59	51
Budget 2021	39	60	61	60	60	60	57

15

1 The March PBO report again largely confirms the 2021 budget brief with a slightly higher LTC
2 bond yield of 3.0% in 2024-2026.

3 The following graph has the spread between the 10 and the 30-year bond yield since 1987. The
4 average spread has been 0.37% and varies with monetary policy. As discussed above when
5 monetary policy is tight the Treasury Bill yield increases, and the yield spread tightens or gets
6 smaller, where a negative or flat term structure indicates a high probability of a recession.
7 Conversely, when monetary policy is loose as it currently is, low Treasury bill yields mean a
8 larger spread. We can see the same effect, if moderated, in the graph of the spread between the
9 10 and 30-year bond yield, where currently the spread is relatively large.

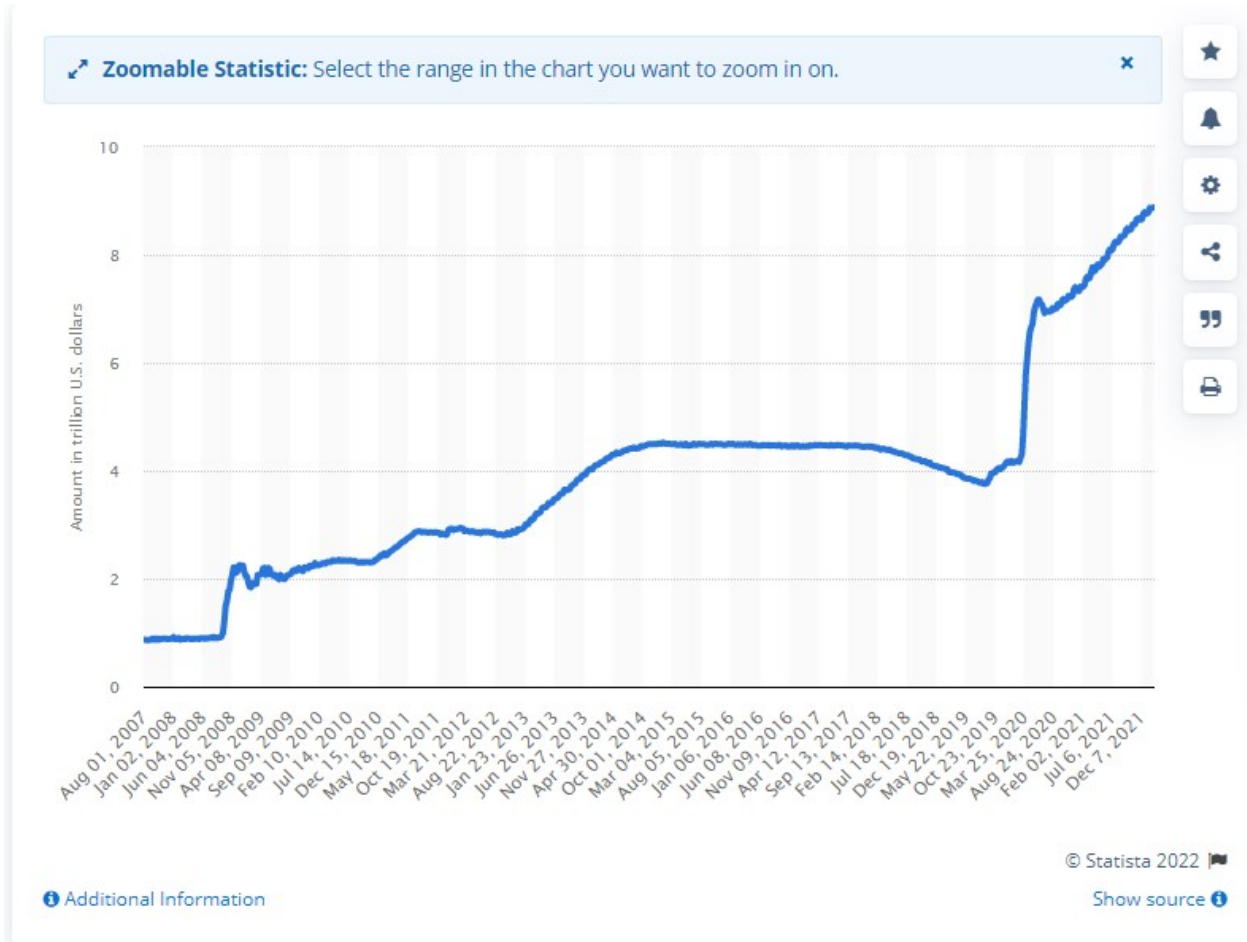


10

11 I have no problem with RBC's near-term forecast that the 30-year LTC bond yield is likely to
12 increase moderately from the current level or the PBO's longer term forecast for the ten-year
13 bond yield at 3.0% by 2024. However, I personally doubt that it will stabilise at 3.0% and would
14 expect it to increase further particularly if inflation moves to the top of the bank's range. If the
15 average spread to the 30-year bond of 0.37% is added it means a medium term PBO forecast for
16 the 30-year LTC bond yield of 3.37%. It is not appropriate to add the current spread between the
17 10 and 30-year bond yield, since the forecast indicates that this spread will tighten as T. Bill
18 yields increase.

1 **Q. WHAT ARE THE RISKS ATTACHED TO THIS FORECAST?**

2 **A.** The main risk is political, since neither short nor long term interest rates are currently being
3 determined by private sector investors. Instead, and since the financial crisis, they have largely
4 been determined by the actions of central banks supporting their government’s active fiscal
5 policy. The following is the balance sheet of the U.S. Federal Reserve system.²²



6

7 Central bank balance sheets are simple, as they “mainly” issue bank notes to buy Treasury bills
8 and determine their policy rate by buying and selling these bills. Before the U.S financial crisis
9 the Fed’s balance sheet was about US\$800 billion. This increased 50% during the financial crisis
10 and then again in 2013 with its more aggressive QE purchases of US government bonds. As the
11 Fed started to taper it did not buy new bonds as they came due or paid interest. As a result, the

²² Source: <https://www.statista.com/statistics>

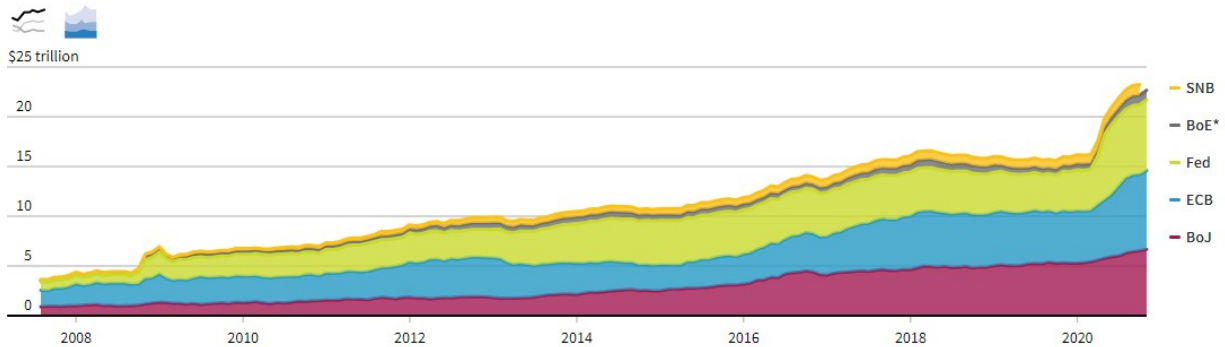
1 Fed's balance sheet slowly started to shrink, then along came Covid 19 and the need for the Fed
2 to intervene again. Currently, the cost of this intervention is almost US\$5 trillion.

3 In these actions the Fed, unfortunately, is not alone as the following Reuters graph indicates.
4 From under US\$4 trillion the balance sheets of the U.S Fed, the Bank of Japan, The European
5 Central bank, the Bank of England, and the Swiss National Bank have ballooned first to US15
6 trillion because of the U.S financial crisis, and the knock-on Euro crisis, to their current level of
7 about US\$ 24 trillion.²³ The big uncertainty is what happens when investors do not want to hold
8 the current level of deposits at the central banks, and when the central banks start to sell these
9 bonds to finance these withdrawals. Clearly if the "added" US\$20 trillion is sold into the bond
10 market, prices will drop dramatically, and yields increase.²⁴

Central bank balance sheets

Assets for the European Central Bank, Bank of Japan, Federal Reserve, Swiss National Bank, and Bank of England

Converted to U.S. dollars at current rate



*Combines the weekly series that stopped in September 2014 and, from then on, the sum of the four assets reported weekly that account for over 90% of the balance sheet by value.

Source: Thomson Reuters Datastream
By Michael Ovaska | REUTERS GRAPHICS

11

12 Q. DOES THIS APPLY TO CANADA?

13 A. Yes. The following comes from the Government's debt management strategy
14 accompanying the budget briefings. In the three years prior to the Covid 19 pandemic, the

²³ Source: Thomsonreuters.com

²⁴ The bond market for these countries is less than US\$100 trillion, so central bank holdings are close to 30% of bonds outstanding, but even more for new bond issues.

1 Federal government's debt was increasing due to expansionary fiscal policy, but not seriously as
 2 a percentage of GDP. However, that changed in 2020 where the forecast for the end of fiscal
 3 2020-21 was for an almost 80% increase relative to fiscal 2016/17.

	2016-17 Actual	2017-18 Actual	2018-19 Actual	2019-20 Actual	2020-21 Projected
Domestic bonds¹	536	576	569	597	915
Treasury bills	137	111	134	152	294
Foreign debt	18	16	16	16	26
Retail debt	5	3	1	1	1
Total market debt	695	705	721	765	1,236
Sources: Bank of Canada; Department of Finance calculations Note: numbers may not add due to rounding. ¹ Includes additional debt that accrues during the fiscal year as a result of the inflation adjustments to Real Return Bonds.					

4

5 At the same time the Bank of Canada's balance sheet has increased from \$120 billion in 2019 to
 6 \$548 billion in 2020. Although the time periods do not match up perfectly the increase of \$328
 7 billion is the bulk of the \$471 billion increase in government debt issues. The fact is that the
 8 federal government in part justifies its increased spending on the basis that interest rates are so
 9 incredibly low but ignores the fact that it is a government department, the Bank of Canada, that
 10 has bought the bulk of its debt issues. In the future, unless foreign and domestic buyers continue
 11 buying C\$ debt, either interest rates must increase or if the bank keeps buying the bonds there
 12 will be higher than anticipated inflation.²⁵

13 **Q. WHAT HAS HAPPENED IN THE CORPORATE FIXED INCOME MARKET?**

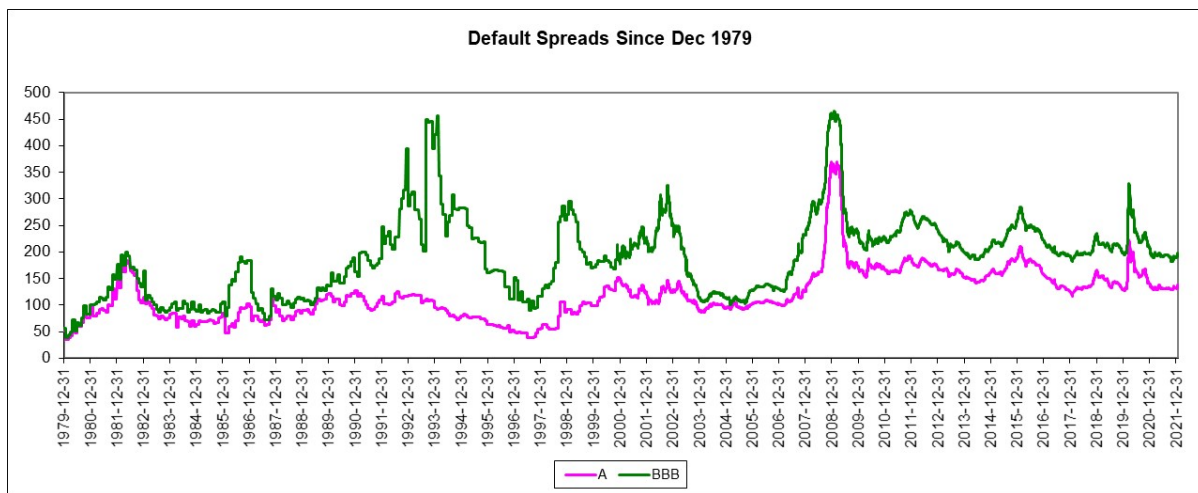
14 **A.** The following graph has the generic credit or default spreads between corporate and
 15 government long-term bonds using the AA, A, and BBB indexes maintained originally by Scotia
 16 Capital Markets.²⁶ I refer to these rates, and the spreads derived from them, as "generic" since
 17 they are an average of representative bonds in each rating category and are not specific to

²⁵ Most recently the Bank of Canada's balance sheet has stabilised at about \$500 billion.

²⁶ The most recent data is from Datastream, which updates the original data from Scotia Capital's Handbook of Debt Market Indices.

1 utilities. Corporate bonds have default risk, since companies can run into financial difficulty,
2 whereas governments borrowing in their own currency like Canada cannot. These yield spreads
3 usually behave in a predictable manner. In a recession as the risk of bankruptcy increases,
4 investors sell off default-risky corporate debt and their liquidity drops. As a result, their bond
5 prices fall and their yields increase, relative to the long Canada bond yield, causing a wider
6 spread. Conversely as the economy recovers and this risk recedes the spread narrows.

7 We can see the high spreads during the long recession of the early 1990s, the panic of the Asian
8 crisis, the bursting of the Internet Bubble and the financial crisis of 2008-9. Usually, the spread
9 increases the most for BBB bonds, which are the riskiest of investment grade bonds.²⁷



10

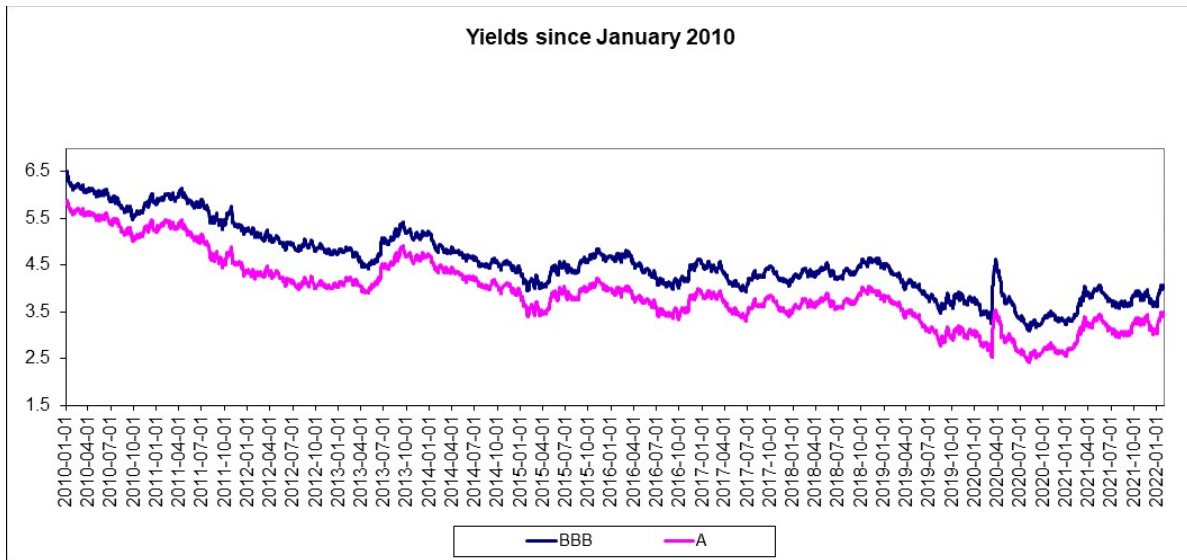
11 The critical spread for most utilities is the A spread since most Canadian utilities have A ratings.
12 At the time of my July 2011 GMI report A spreads were at a 1.62% premium over similar
13 maturity long Canada bonds. Subsequently spreads gradually normalized such that in December
14 2019, which was regarded at the time as the high point they ended the year at 1.28%.²⁸ As
15 information about the impact of the Covid 19 virus seeped into the market, investors started
16 moving cash from riskier investments into long Canada bonds causing their prices to increase

²⁷ The lowest investment grade is BBB-, below which bonds are regarded as speculative and not of adequate quality.

²⁸ Since January 2000 the A spread has averaged 1.47% which is an increase over what was regarded as “normal” before the long decline in long Canada yields since the 6.32% rate recorded at the end of December 1999.

1 and their yields to fall. The worst of the panic was March 24, 2020, when the A spread reached
2 2.22%. Since then, spreads have returned to normal as the Bank of Canada has been purchasing
3 both corporate as well as government bonds. During January 2022 A spreads averaged 1.33%,
4 which was marginally above the pre-covid 19 low point of December 2019.

5 However, companies do not borrow spreads; they borrow at an interest rate. The graph below
6 shows the trend in actual borrowing costs since 2010 for A and BBB rated issuers. At the time of
7 my 2011 testimony interest rates on generic A credits in July averaged 4.99% and BBB credits
8 5.751%. In contrast, in January 2022 A credits averaged 3.36% and BBBs 4.04%. There is no
9 reason why interest rates should all increase or decrease in unison. *However, since my 2011*
10 *GMI report a typical A credit has seen its borrowing cost drop by 1.63% and a BBB by 1.71%.*



11

12 **Q. DO THESE GENERAL COMMENTS APPLY TO UTILITIES?**

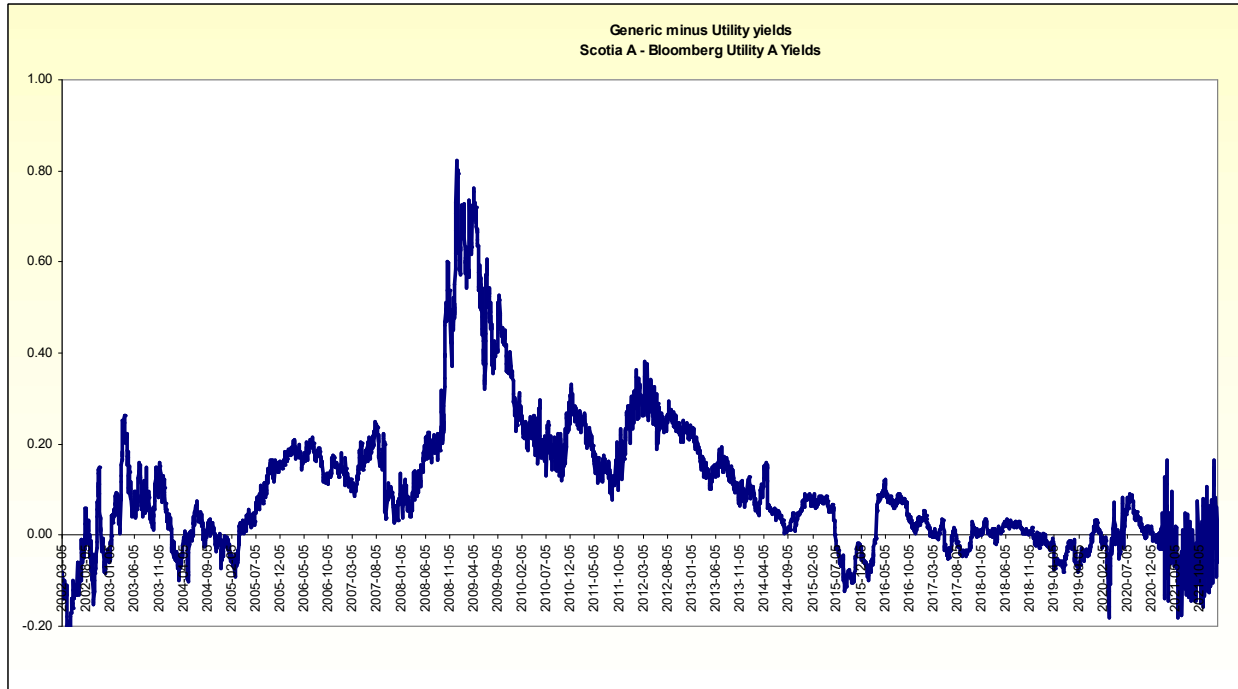
13 **A.** Yes. After the financial crisis, I started looking at the yield difference between utility “A”
14 rated bond yields and the generic “A” bond yields provided by Scotia. I had looked at this at
15 least a decade earlier when the Canadian Bond Rating Service (CBRS) provided the data, but
16 with their takeover by S&P, this data was no longer available. However, Bloomberg started to

1 provide synthetic²⁹ data that served the same purpose. The reason for looking at the difference
2 between these two types of A bonds is that during a recession when firms are more likely to
3 default, the value of regulatory protection serves to emphasise the low-risk nature of Canadian
4 utility debt. As a result, the spread between generic “A” bond yields and utility “A” bond yields
5 widens, which is an indicator of stress in the financial system as well as being relevant to utility
6 financing.

7 The graph below shows this spread since 2002 when the Bloomberg series (C29530) begins.
8 This series has been used by regulators in setting the allowed ROE, such as the OEB in their
9 ROE adjustment formula. Note that during the financial crisis the spread dramatically increased
10 to 0.80% indicating that utility “A” rated bonds were selling on yields much lower than generic
11 “A” rated bonds. Given that a “notch” or modifier such as a + or a – generally means a yield
12 difference of 0.15%-0.25% this difference indicates that utility bonds were being valued as if
13 they were a rating category better than generic “A” rated bonds. This is essentially the value of
14 regulatory protection, that is, when a crisis occurs and investors rush for safety that safety is not
15 just government bonds, but also often utility bonds.

16 Typically, generic bonds have a slightly higher yield than utility bonds, but this depends on the
17 actual bonds in the index. I would not read too much into relatively small differences,
18 particularly as the nature of Canadian utilities has changed due to mergers and acquisition
19 (M&A) activity. At the time of my last GMI report in July 2011 the generic A yields averaged
20 0.15% higher than the yields on Bloomberg’s utility A bonds. In January 2022 the difference was
21 less than 3 basis points or not material.

²⁹ In the sense that it is derived from underlying utility bond data, rather than as a simple average of actual yields.

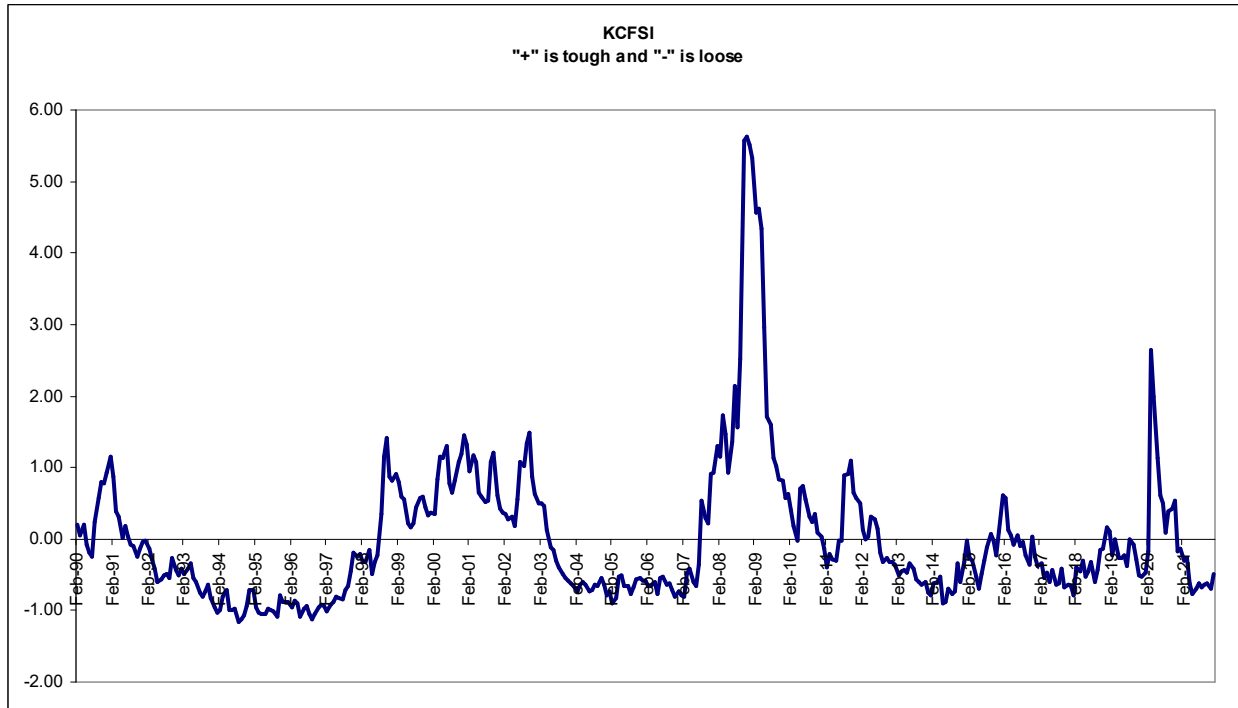


1

2 **Q. WHAT HAS BEEN THE GENERAL STATE OF CAPITAL MARKETS?**

3 **A.** As indicated above the bond market has been heavily influenced by the actions of central
 4 banks and the rush to safety due to the pandemic, stock market correction and volatility in 2020.
 5 It is useful therefore to look at broader measures of the state of the financial system. In the U.S,
 6 the Federal Reserve Bank of Kansas City has developed the Kansas City “Financial Stress”
 7 Index (KCFSI) which is graphed below. This index is designed to capture a variety of financial
 8 indicators in addition to the spreads in the money and bond markets. The additional indicators
 9 include the stock market volatility index, the state of bank share prices, and the behaviour of
 10 stock and bond returns.

11 When the KCFSI is above 0 it indicates that capital markets are under stress and that access to
 12 markets is “tough” similarly when it is below 0 it indicates relatively easy or “stress-free” capital
 13 market conditions.



1

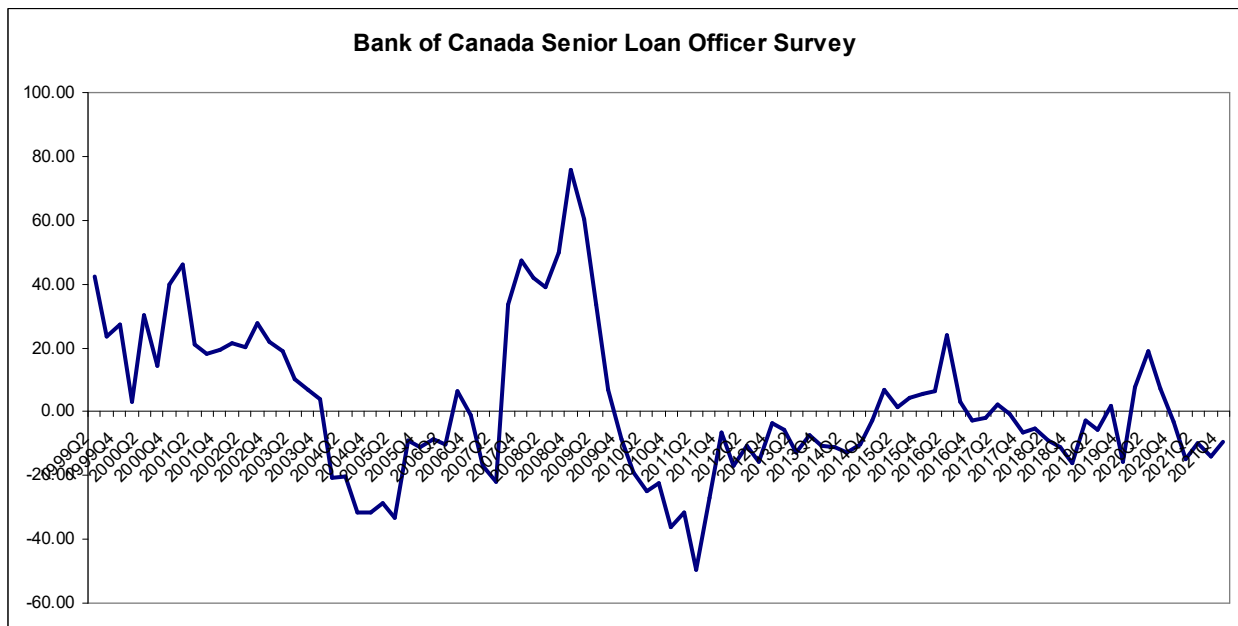
2 The value of the KCFSI is simply that it captures in one number the impact of a variety of capital
 3 market indicators.³⁰ The major insight of the KCFSI is that it emphasises the enormous pressure
 4 in the US financial system during the financial crisis in 2008/9. Unlike the internet bubble and
 5 crash in 2001 which also increased “stress”, the 2008/9 crisis struck at the very core of the US
 6 financial system, which is the banking system. Here liquidity or the ability to trade securities at
 7 close to their true market value, dried up in many parts of the US capital market and the US
 8 government had to intervene on a massive scale.³¹ Since the financial crisis, financial market
 9 conditions have been relatively easy, except for the impact of the pandemic in 2020. However,
 10 the tough market conditions of March and April 2020 quickly subsided due to the intervention by
 11 both fiscal and monetary policy to calm markets.

³⁰ Technically, it captures the common element in all these indicators by using principal components analysis.

³¹ Including bailing out the biggest bank in the US at the time Citibank and the biggest insurer AIG.

1 Currently, financial market conditions are again loose as central banks have committed to keep
2 their policy rates low to support the recovery. In many ways the situation is similar to 2011 when
3 the KCFSI was also just below 0 before increasing in the second half of the year.

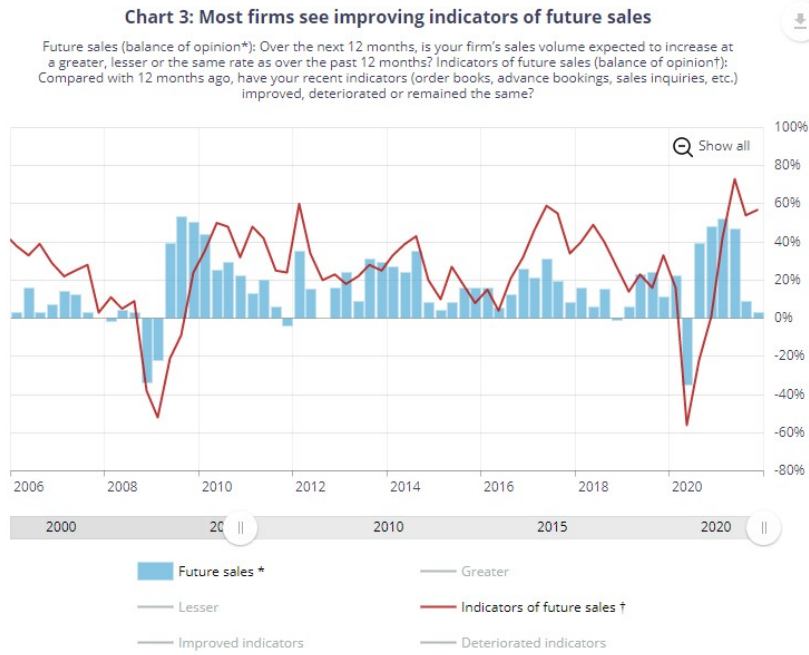
4 The work by the Kansas City Fed followed pioneering work done by researchers at the Bank of
5 Canada. However, the Bank now prefers to rely on alternative measures, where I regard one of
6 the most important the Bank's survey of senior lending officers. The following graph shows the
7 results from the Bank's latest survey (2021Q4) that reflects both the pricing and the availability
8 of credit where the lower the value the easier the credit market.



9
10 We can clearly see the tightening of credit market conditions during the financial crisis, followed
11 by loosening thereafter and a gradual return to normality before the pandemic hit. Further, and
12 consistent with the KCFSI, it shows a deterioration in credit market conditions in the Spring of
13 2020, where the survey respondents reported almost the tightest credit market conditions since
14 the financial crisis and conditions similar to 2016. However, this soon passed and currently we
15 continue to be in easier credit markets and only slightly weaker than in 2011 at the time of my
16 last GMI report.

17 The Senior loan officer's survey results mirror that of non-financial executives. In their business
18 outlook survey senior executives continued to reflect positive business sentiment. The following

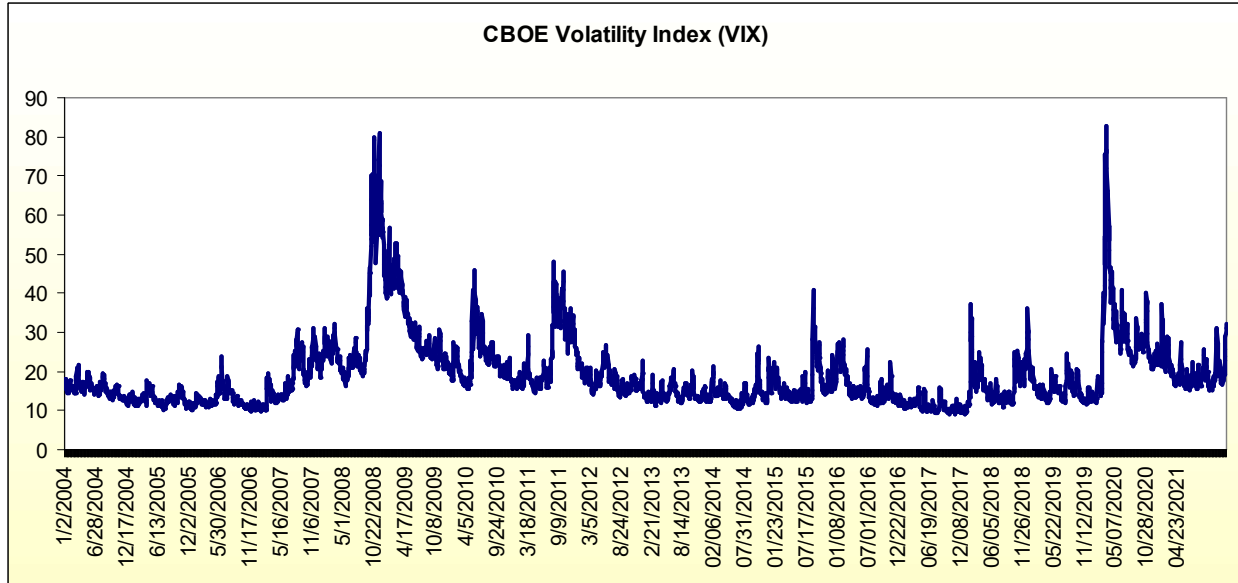
1 indicator from the Bank survey shows elevated business sentiment where the higher the number
 2 the more optimistic is sentiment. Currently sentiment is more optimistic than at any time since
 3 the Bank started reporting the survey results in 2006. The only downside are reports of labour
 4 shortages and the existence of supply chain bottlenecks: both of which are consistent with the
 5 recovery from covid 19 and an unemployment rate near record lows.



6

7 A final indicator is the CBOE volatility index, sometimes misleadingly called the fear index. The
 8 graph below shows the index back to 2004. Similar to the other indexes, we can clearly see the
 9 impact of the U.S financial crisis when the VIX went from its normal value of just under 20% up
 10 to almost 80%. Further, we can see the impact of Covid 19 when it again jumped to 85% on
 11 March 18, 2020 only slightly lower than the peak of 89.5% reached on October 24, 2008.³²
 12 However, currently the VIX averaged 20.7% in January 2022 only marginally higher than the
 13 19% in July 2011 at the time of my last GMI report.

³² On bloody Friday many stock markets experienced their worst ever price drops in some cases over 10%.

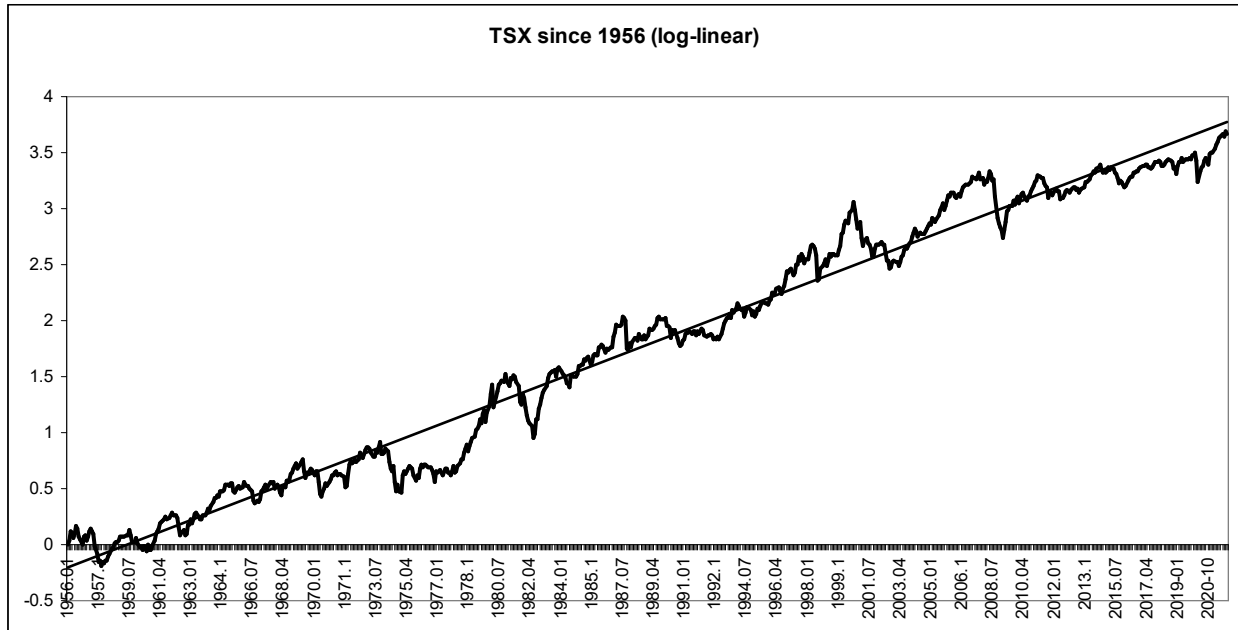


1

2

3 **Q. WHAT ARE YOUR CONCLUSIONS ABOUT CONDITIONS IN THE “MONEY**
 4 **MARKET”?**

5 **A.** The results of the Bank’s surveys, credit spreads, the VIX and the KCSFI show that
 6 overall business sentiment is very strong, credit cheaply available and a return to normality in
 7 terms of stress and volatility. However, these are slightly backward looking indicators, whereas
 8 the stock market is a forward looking indicator. The following graph shows the performance of
 9 the TSX since 1956 with an added trend line. It is a log-linear graph so the slope shows the
 10 growth from one year to the next with the trend line the average growth rate. In 2022 the TSX hit
 11 an all time high of 21,200.82 but in February 2022 it retreated from this high due to concerns
 12 about a possible Russian intervention in the Ukraine. However, note that the stock market has
 13 always been volatile with occasional drops of 50% not at all uncommon as investors panic
 14 Currently the TSX sits below its long run trend line, probably due to the impact of lower
 15 inflation over the last thirty years where there is a lower trajectory.



1

2 Overall, stock markets tend to be forward looking and what we are seeing is optimism in all
 3 sectors. The equity market is booming, credit spreads are narrowing, lending officers eager to
 4 lend, and businesses optimistic. This is clearly the result of prompt action by governments and
 5 central banks in the wake of the pandemic that have effectively placed a floor under potential
 6 losses. The only qualification is the extremely low level of government interest rates that this
 7 action has perpetuated. For several years commentators have been expecting interest rates to rise
 8 to normal levels, but when the Fed revealed their “normal” level for the federal funds rate in
 9 December 2019 it triggered a stock market correction. Since then, central banks have been wary
 10 about removing the stimulus offered by exceptionally low interest rates, particularly due to their
 11 impact on highly indebted borrowers both private and public.³³ Essentially, central banks have
 12 backed themselves into a corner of perpetuating exceptionally low interest rates knowing full
 13 well that this is unsustainable in the long run.

³³ The major concern of the Bank of Canada continues to be the impact of rising short term interest rates on the highly indebted segment of the household sector due to increasingly expensive housing. What used to be a Toronto and Vancouver concern has subsequently broadened and greater inequality between those who have houses (older people), those who don't (Millennials) and those who have just borrowed large sums to buy.

1 **Q. HOW WOULD YOU COMPARE CONDITIONS NOW VERSUS YOUR 2011**
 2 **GMI REPORT?**

3 **A.** I would say that in many respects they are quite similar. The following table highlights
 4 the main statistical comparisons.³⁴ For the real economy the unemployment rate is lower than in
 5 July 2011 but with slightly less capacity utilisation implying some short-term growth potential,
 6 but not much. Inflation is currently higher due to the temporary factors in recovering from Covid
 7 19, but the BEIR is below the 2.0% target. In the financial markets both T-Bill and long Canada
 8 bond yields are significantly lower than in 2011 as is my forecast of the LTC yield. Similarly,
 9 credit market conditions are marginally easier with the A spread lower while the KCFSI and the
 10 Bank of Canada’s loan officer survey both indicate marginally easy conditions. For the equity
 11 markets, volatility is very similar hovering around the long run average of 20% while the TSX
 12 has marginally retreated from its all time high.

	Unemployment		BEIR	Manufacturing		LTC Yield	A Spread	KSCFSI	Loan			TSX
	Rate	CPI		Capacity	T. Bills				Officers	VIX		
13 July 2011	7.20%	2.74%	2.51%	77.70%	0.97%	3.34%	1.62%	-0.02	-49.64	19.09	12946	
January 2022	6.00%	4.80%	1.80%	75.10%	0.17%	1.75%	1.33%	-0.49	-9.38	20.74	21008	

14 Its all too easy to focus on short term indicators that indicate something has changed and that
 15 “this time it is different”. However, over long periods of time the stock market and credit
 16 markets have seen all sorts of special situations, which then simply get folded into the statistical
 17 data.

18 My overall assessment is that in 2011 we were suffering from the impact of the Euro crisis which
 19 itself was a “knock-on” from the U.S financial crisis. Right now, we are recovering from the
 20 Covid 19 crisis effects. The difference being that the U.S financial crisis struck at the core of the
 21 U.S economy, which is the banking system, whereas the Covid 19 crisis did not strike at
 22 anything in particular, but instead everything in general by simply putting everything on hold for
 23 two years.³⁵ This is not to under-estimate the damage it has done, but it has not severely

³⁴ The data is for the immediate periods prior to the dates on my reports.

³⁵ Clearly some sectors like hospitality have been badly hit but these are small business oriented and can recover quickly. It is not equivalent to the huge losses by the major U.S banks that led to dramatic

1 damaged a core sector of the economy which might require years to recover as the financial
2 crisis did in the US.

3

retrenchment. Citibank is still down 90% from its pre financial crisis level. Many important U.S financial institutions have disappeared.

1 **IV RISK PREMIUM ESTIMATES OF THE FAIR ROE**

2 **Q. WHY DID YOU PRECEDE YOUR ESTIMATES WITH A FINANCIAL**
3 **MARKET OUTLOOK?**

4 **Q.** Because the fair rate of return comes out of the financial market outlook. That is to say,
5 when fund managers, hedge funds, private investors, insurance companies decide to buy shares
6 they do so against a backdrop of the conditions in the financial market and what is available as a
7 return on other securities. From this discussion it is clear that we are further along in the business
8 cycle than in 2011. Around that time I started referring to the situation as “Waiting for Godot” as
9 the U.S was so far behind Canada in terms of its recovery from the U.S financial crisis, but we
10 are sensitive to the U.S economy, that is waiting for the US to get their act together. Now the
11 unemployment rate in Canada is at a cyclical low and while there is still some spare capacity in
12 part it is resource dependent due to weakness in Western Canada. Otherwise, there are supply
13 shortages restricting recovery and short-term inflationary pressures. General conditions in the
14 capital market are similar: the VIX is slightly high, the stock market close to record highs,
15 spreads slightly lower, the KCFSI and the business outlook survey similar in showing relatively
16 easy credit, and despite short term inflationary pressures long term inflation is still anchored at
17 close to the 2.0% middle of the Bank of Canada’s operating range.

18 The single most distinguishing feature differentiating 2011 from now is the drop in the LTC and
19 other Canada yields. Other changes are relatively minor. Why this is important is that the yield
20 on Government of Canada securities is the only return in the capital market that is default-free.³⁶
21 Unlike the U.S there are no squabbles in Parliament about a government’s budget and any deficit
22 causing the Government to borrow. In contrast, in the U.S there is legislation that restricts
23 government borrowing to a debt limit even after Congress passes legislation that creates that
24 deficit. This has led some to argue that the U.S government should not pay some salaries,
25 without realising that this is regarded as a default by the rating agencies, which led S&P to

³⁶ The yield is also risk-free in nominal terms if held to maturity and in real terms if it is the real return bond.

1 downgrade the U.S from AAA in August 2011.³⁷ Consequently when we look at LTC yields
2 marginally above 2.0% it indicates that is the expected and required return for the Government of
3 Canada borrowing for at least 20 years.

4 Although all required rates of return, including that on common and preferred equities, do not
5 move one to one with the expected return on LTC bonds, the fact is the LTC bond yield is the
6 base for the capital market's expected rates of return. In the 2011 GMI hearing the Regie set
7 GMI's allowed ROE at 8.9%³⁸ and based this on a forecast LTC yield of 3.91%-4.5%. Using the
8 RBC near term forecast the LTC yield has dropped from 4.55% to 2.30% or by 2.25%. In
9 contrast, my own forecast was slightly lower than RBC's at 4.5% whereas now my long-term
10 forecast is higher at 3.07%, but that is still a 1.43% drop.

11 In contrast to 2011 when it was clear that GMI would be put on some form of ROE adjustment
12 mechanism based on the near-term forecast LTC yield, currently the maturity of that forecast is
13 in doubt. It is over 11 years since the Regie set the allowed ROE for Gazifere and GMI in a full
14 hearing. Moreover, the likelihood seems to be that, absent an ROE adjustment model, the ROE
15 will be set for a longer period of time. For this reason, I will rely on the PBO medium term,
16 2024-2026, forecast of a ten-year Canada yield of 3.0% and add the adjustment to a long term
17 (30 year) LTC yield to get an LTC forecast of 3.37%. In my judgment LTC yields will increase
18 beyond that after 2026 as many of the temporary factors underpinning yields go into reverse.³⁹
19 However, an average yield of 3.37% will balance of the earlier years when LTC yields will be
20 below that and after 2026 when I expect them to be above that. I would note that this 3.37% is
21 well over 1.0% higher than the near-term forecast for the LTC Yield.

22

23

³⁷ S&P confirmed Canada at AAA (April 26, 2021) despite its huge budget deficit.

³⁸ The 8.9% has been constant from 2011 until now whereas Gazifere's was set at 9.10% and declined with the ROE adjustment formula before returning to 9.10% where it remains today.

³⁹ Particularly as the baby boomers age and move into retirement.

1 **Q. WHAT IS THE MOST COMMON WAY OF ESTIMATING A RISK PREMIUM**
2 **MODEL?**

3 **A.** The premier model that incorporates the risk return trade-off between Government of
4 Canada default free securities and risky securities is the Capital Asset Pricing Model or CAPM.
5 This is the model that the NBEUB used last year and that the Regie has relied on in the past. The
6 CAPM simply states,

7
$$K = R_F + MRP * \beta$$

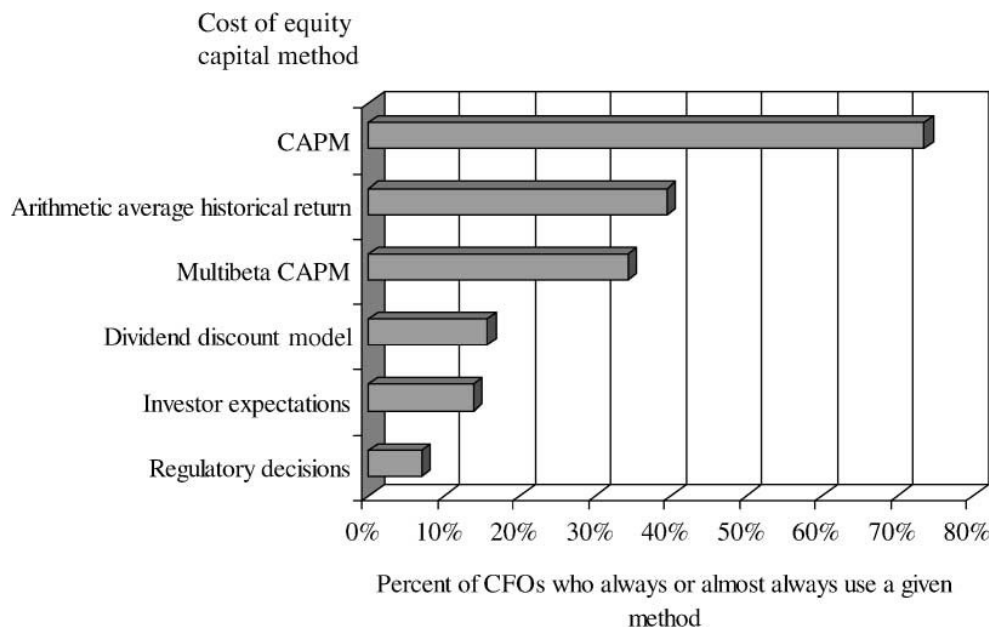
8 In words the investor's required or fair rate of return (K) is equal to the risk-free rate (R_F) plus a
9 risk premium. Where the CAPM differs from other risk premium models is that it specifies that
10 the risk premium is comprised of the market risk premium (MRP) times the security's relative
11 risk adjustment or beta coefficient (β). ***In this regard any fair ROE can always be decomposed***
12 ***into a risk-free rate and a risk premium***, so the CAPM is perfectly general: its contribution is to
13 relate an individual risk premium to the overall market risk premium and its relative risk
14 coefficient.

15 For all securities the weighted average beta coefficient is equal to 1.0. As a result, high risk
16 securities have betas greater than 1.0 and low risk securities have betas less than 1.0.
17 Conceptually, what this means is that low risk securities are regarded as defensive securities,
18 since if the market drops by say 10% their share price is expected to drop by 5% if their beta is
19 0.50. In contrast, for high- risk securities if their beta is 2 their stock price might be expected to
20 go up by 20%. Building a low-risk equity portfolio thus involves holding a portfolio of low beta
21 or defensive securities that are not as volatile as the overall market.

22 Why the CAPM is so widely used is because it is intuitively correct. It captures two of the major
23 "laws" of finance: the ***time value*** of money and the ***risk value*** of money. I will discuss the third
24 law of finance the ***tax value*** of money later, but the time value of money is captured in the long
25 Canada bond yield as the risk-free rate. The risk value of money is captured in the market risk
26 premium, which anchors an individual firm's risk. As long as the market risk premium is
27 approximately correct the estimate will be in the right "ball-park." Where the CAPM gets
28 controversial is in the beta coefficient since risk is constantly changing so too are beta

1 coefficients. Moreover, the risk is relative to the market so a security's beta coefficient can
2 change not because its risk has changed but because the market's risk has changed. These beta
3 changes sometimes cast doubt on the model itself as people find it difficult to understand why
4 they change⁴⁰. However, the CAPM measures the right thing: which is how much does a security
5 add to the risk of a diversified portfolio, which is the central idea of modern portfolio theory.

6 In 2001 a survey of 392 US Chief Financial officers published in the Journal of Financial
7 Economics by Graham and Harvey produced the following results:



8
9 Just over 70% of US CFOs explicitly use the CAPM, while 35% or so use average historic
10 returns, which as I discuss in Appendix B is a key input to estimating the market risk premium
11 and just over 30% use a multi-beta approach. The dividend discount model is known as the DCF
12 model in regulatory hearings and comes in a poor 4th like investor expectations, which are
13 largely from survey results I also discuss later.

⁴⁰ It also makes testing the model incredibly difficult even though finance has attracted some of the brightest minds in applied statistics.

1 The US survey results are for large US companies and relatively old,⁴¹ Baker et al⁴² performed a
 2 similar survey of large and small firms in Canada with the results in the following table. The
 3 most important “factor” was judgment, which is obviously required in any analysis. After
 4 judgment. the main two objective models were the cost of debt plus an equity risk premium and
 5 the CAPM, which is simply a specific way of setting the risk premium. As might be expected the
 6 CAPM is most popular among larger firms, where the Chief Executive officer has an MBA.
 7 Unlike the US survey results, the DCF and multi-beta models rank behind investor expectations,
 8 average risk adjusted returns and accounting ROE. Even for large firms and those managed by a
 9 CEO with an MBA, the DCF and multi-beta models are simply not as important as the CAPM.

Table 6. How Canadian Firms Estimate Their Cost of Equity Capital

This table presents the responses by Canadian managers on how their firms estimate their cost of equity capital. Respondents indicate the frequency level based on a five-point equal interval scale where 0 = never, 1 = rarely, 2 = sometimes, 3 = often, and 4 = always. The table partitions the sample by firm size (large and small) and by whether or not the firm’s CEO holds an MBA. *, ** indicate significance at the 0.05 and 0.01 levels, respectively.

S#	Statement	% of Often or Always	Response Mean				
			Firm Size			CEO with an MBA	
			Full Sample	Large	Small	Yes	No
1	Judgment	60.3	2.33	2.01	2.64***	2.39	2.30
5	Cost of debt plus equity risk premium	52.3	2.01	1.85	2.08	1.89	2.07
3	Capital asset pricing model (CAPM)	36.8	1.52	1.96	1.12**	2.36	1.13***
6	Earnings/price (E/P) ratio	21.8	1.02	0.53	1.20**	0.83	1.09
9	Based on what our investors tell us they require	20.0	1.00	0.85	1.07	1.56	0.76**
8	Average historical returns on common stock adjusted for risk	14.1	0.81	0.46	0.93***	0.94	0.79
7	Accounting return on equity	17.5	0.73	0.74	0.73	0.22	0.88**
2	Dividend growth model (dividend yield plus an estimate of growth)	12.9	0.66	0.48	0.74	0.44	0.73
4	Multi-factor asset pricing model	7.1	0.33	0.19	0.40	0.33	0.33
10	By regulatory decisions	5.9	0.29	0.19	0.34	0.01	0.38

10

11 In response to persistent criticism of the CAPM by some witnesses, I have started to look at
 12 alternatives to the CAPM. The most common are known as multi-factor models. Although not
 13 widely used by professionals, they are popular amongst academics.⁴³ The CAPM is regarded as a

⁴¹ Survey research is difficult to publish, particularly if the results don’t change.

⁴² K. Baker, S. Dutta and S. Saadi, Corporate finance practises in Canada, where do we stand?” Multinational Finance Journal, December 2011.

⁴³Professor Stephane Chretien of Laval University provided testimony on GMI based on the Fama-French three factor model May 11, 2007.

1 one-factor model since market risk through beta is the only source of risk. Instead, multi-factor
2 models extend the CAPM to include additional risk factors. The current “standard” is to include
3 a size premium (the return difference between **S**mall firms **M**inus **B**ig ones or SMB) and a value
4 premium (the return difference between **H**igh **M**inus **L**ow value or growth stocks). This is the
5 Fama-French three-factor model (FF3), which states

$$6 \quad K = R_f + \beta_1 MRP + \beta_2 SMB + \beta_3 HML$$

7 In this case as well as the market risk premium (MRP), an investor requires a premium for
8 investing in smaller market value firms as well as high value stocks. Why the FF3 factor model
9 is controversial is that while some believe that smaller value stocks are riskier and thus deserve a
10 larger risk premium, others believe that the market consistently miss-prices the opposite type of
11 stocks, that is, larger growth stocks. The reason for this is that they tend to be faddish and sexier
12 for financial advisors to sell. As a result, they tend to be over-valued and earn lower rates of
13 return given their risk. During the Internet bubble, for example, it was internet stocks, like Nortel
14 and Pets.com that had very high valuations with few hard assets to support them and yet crashed
15 when the bubble burst.

16 I tend to believe the faddish argument, but regardless using the FF3 factor model versus the
17 CAPM for individual stocks rarely makes much difference. For example, Estrada (2011)⁴⁴
18 estimated the equity cost for the Dow 30 firms using both the CAPM and FF3 models where the
19 average equity cost using the CAPM was 9.70% versus 9.50% from using the FF3 factor model.
20 The complete estimates are in Schedule 3, but the general point is that we are just allocating the
21 stock’s return to different risk factors. However, the sum of those factors should always
22 (approximately) add up to the same number. Using one model versus another does not somehow
23 increase the overall equity cost to a dramatic extent. The Dow 30 stocks have a beta close to 1.0,
24 since they are a portfolio of large value stocks, where the average *has* to add up to 1.0 for all
25 stocks. As we would expect these stocks tend to have negative exposure to the size premium,
26 since they are all large firms and positive exposure to the value premium since they are generally

⁴⁴ Estrada, *Journal of Applied Corporate Finance* (Spring 2011). Estrada’s estimates are for illustration only I do not recommend them or the process he used to get them.

1 value stocks. In this respect, they are like utilities that tend to be relatively large value stocks so
2 that the two additional Fama-French factors tend to offset each other.

3 In terms of the “error” in using one model versus another, the difference ranges from +1.5% to -
4 1.6% or a range of 3.0%. This is not an insignificant difference, but it stems from the confluence
5 of the size and value premiums.⁴⁵ The +1.5% difference is for American Express, which has a
6 17.7% FF3 Factor equity cost estimate versus the 16.2% for the CAPM. This difference stems
7 from the observation that AmEx is a relatively small value stock and generates a premium for
8 both these factors, which offsets the lower beta estimate in the FF3 model. In contrast, Merck is a
9 large growth stock and its much higher FF3 factor beta coefficient is not enough to offset the
10 negative size and growth premiums. As a result, its CAPM equity cost at 9.1% is higher than its
11 FF3 factor cost at 7.5%. The closest to a regulated utility would be AT&T, where the CAPM
12 equity cost is 7.80% versus a FF3 factor estimate of 7.30%; again, its higher beta is more than
13 offset by the impact of the size and value premiums.⁴⁶

14 Despite the popularity of these multi-factor models amongst academics, and increasingly in the
15 investment field, they have doubtful value in regulatory hearings. There are two reasons for this,
16 first they do not make much difference in the overall estimates and second, they need more
17 inputs each of which is likely to be extremely contentious in cross examination. While the size of
18 the market risk premium can be estimated with some degree of accuracy that can-not be said for
19 the size and value premiums. In fact, many believe the size premium has disappeared as
20 coverage of small stocks has increased while for many the value premium causes theoretical
21 problems.⁴⁷ I discuss the multi-factor model mainly because it is the main “competitor” to the
22 CAPM and while other witnesses frequently criticise the CAPM they never discuss multi-factor

⁴⁵ Note also that the range of equity cost estimates is from 4.80% to 17.7% for the FF3 factor model and a slightly smaller 5.3% to 17.5% for the CAPM.

⁴⁶ Note the beta in the FF3 model is not the same as in the CAPM, since it captures market risk after the size and value effects are removed.

⁴⁷ Note the size premium is for very small firms. The lowest decile was for firms with an average market value under \$100 million.

1 models and instead rely on ad hoc models and estimation techniques that have no academic
2 credibility.

3 **Q. WHAT ABOUT THE EMPIRICAL CAPITAL ASSET PRICING MODEL**
4 **(ECAPM)?**

5 **A.** The ECAPM is a good example of an ad hoc model without any credibility and one
6 which is rarely if ever discussed in academic textbooks or research. The reason is that although
7 the CAPM is the premier model for estimating expected rates of return, early tests showed that it
8 tended to over-estimate returns for high-risk ($\beta > 1$) and under-estimate returns for low risk ($\beta < 1$)
9 stocks. What the ECAPM then does is add an arbitrary number to the intercept and subtract the
10 same number from the market risk premium to proxy for the empirical results. This is illustrated
11 in the graph below. However, I have never seen the ECAPM discussed in a finance textbook or
12 used to estimate the equity cost outside of a regulatory hearing by witnesses on behalf of utilities.
13 Instead, as indicated above the FF3 factor model or now their new “5 factor” model is often
14 discussed.⁴⁸

15

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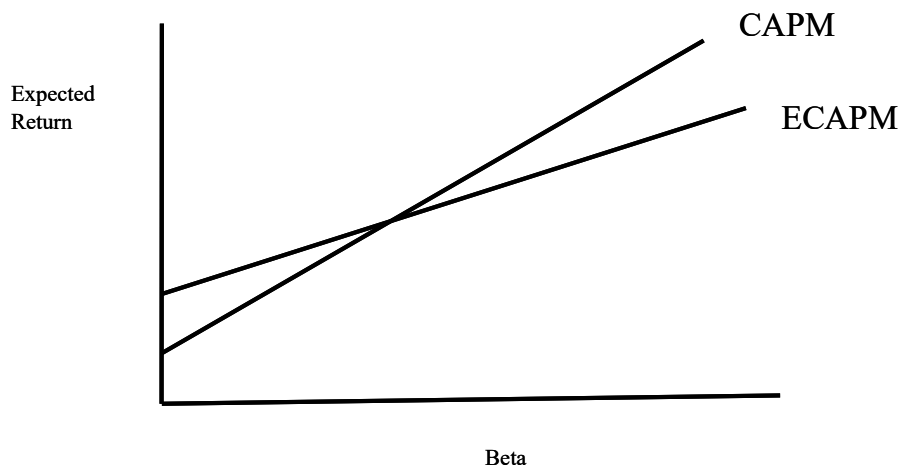
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⁴⁸ In their research Fama and French do not recommend their model for cost of capital estimation but more to judge the performance of a mutual fund and its style, that is, whether the fund is a small cap value fund or large cap growth.

1 The reason for the absence of any material discussion of the ECAPM is that it has no intuition
2 and implementing it in the way it was derived from the empirical testing of the CAPM generates
3 what are sometimes referred to as “nonsense” results. For example, in the 2009 GMI hearing Dr.
4 Vilbert of the Brattle group used the ECAPM and was asked in an information request

Question :

6.3 Please re-estimate Dr. Vilbert’s ECAPM estimates using the current Treasury Bill yield consistent with the empirical tests on which it is based.

Réponse :

The results of the requested estimates would all be economic nonsense because the estimated cost of equity would be less than the 6.61 percent yield on A-rated utility debt prevailing at the time of the preparation of Dr. Vilbert’s written evidence. This can be seen by noting the application of equation (3) on p. 39 of Dr. Vilbert’s written evidence. Using the parameters suggested in the question, i.e., risk-free rate of 0.83 percent, a MRP of 5.75%, an average adjusted beta of 0.62, and the maximum ECAPM adjustment parameter of 3% used by Dr. Vilbert, the estimated cost of equity is 5.55 percent, less than the yield on A-rated utility debt.

5

6 Further, Dr. Vilbert did not even apply the ECAPM in the way it was tested as I will explain.

7 First, the ECAPM is based on tests that generally use the 30-day return on the 90-day Treasury
8 bill as the risk-free rate. As a result, the tests are based on trying to see whether the CAPM
9 predicts 30-day stock returns. As Dr. Vilbert stated that is equivalent to starting at that time with
10 a risk-free rate of 0.83%. Such a practice is only appropriate for very short horizon (30 days)
11 investments. In regulatory hearings it is customary to use the CAPM with the *forecast* LTC bond
12 yield since equities have longer time horizons than even the longest maturity LTC bond. This use
13 of the CAPM with a forecast long Canada yield will be referred to as the “classic” CAPM, even
14 though this is not the way that it is discussed in finance textbooks or tested. At the current point
15 in time, I am using a forecasted medium term LTC yield of 3.37% which is already *much* higher
16 than the current 30-day T Bill yield of about 0.17%. As a result, the intercept is significantly
17 higher than the 1.5% alpha often used in the ECAPM.

18 The second problem is that these tests used the actual betas estimated over short time periods,
19 generally of at least two years of monthly returns, and were simply mechanical: whatever the
20 beta estimated over the previous period it was used in the test as a forecast beta. This is not how

1 betas have ever been used in a regulatory context. I have always used judgement in adjusting
2 betas back to their average value, a practice the Régie has accepted in the past. In contrast, Dr.
3 Vilbert 12 years ago and Dr. Villadsen now both use “Blume adjusted betas” which I will discuss
4 later. If Dr. Vilbert had answered the question in 2009 and used the actual betas in the way the
5 CAPM was tested his 5.55% estimate would have been even lower as utility betas are almost
6 always much lower than Blume adjusted betas.

7 In 2011 Dr. Morin presented ECAPM estimates and in its decision the Régie stated (D-2011-56),

[269] Upon review, the Régie maintains the position it adopted in decisions D-2007-116
and D-2003-93, to the effect that the beta values of regulated companies converge towards
their own mean and not the market mean, which by definition is 1⁵⁰.

8

9 Further, after considering the ECPM evidence of Dr. Morin the Régie decided

[238] **For these reasons, the Régie has decided to rely primarily on the Capital Asset Pricing Model in reaching its decision.** This is the method the Régie has applied in previous decisions and it is the most widely used approach in Canada. This model is recognized and used both in financial circles and by the majority of the experts appearing before regulatory bodies.

10

11 For these reasons and the fact that you can always couch any estimates within the CAPM
12 framework I will first consider the CAPM with a forecast risk-free rate equal to the LTC rate of
13 3.37%.

14 **Q. WHAT IS YOUR ESTIMATE OF THE MARKET RISK PREMIUM?**

15 **A.** As indicated above usually the critical element of a fair return is the overall return on the
16 equity market, since utilities are simply a sub-set of the equity market. So, for example, if equity
17 investors want 9% for investing in the equity market as whole, then their required return for
18 investing in a local distribution utility should be less than that. Since the expected return on the
19 LTC bond is the observable long term expected rate of return, one way of estimating this equity
20 return is by adding the market risk premium on top of that expected return or yield.

1 In Appendix B I estimate the market risk premium of common equities over long-term Canada
2 bonds at 4.80% and the equivalent in the U.S at 6.36%. These estimates are based on capital
3 market history going back to 1926 so encompasses various economic periods such as the bleak
4 1930s of slow growth and falling prices, as well as booms and serious inflation such as the
5 1970's. While the Canadian data points to a market risk premium of under 5.0%, I continue to
6 give weight to the US evidence for three main reasons. First, most of the restrictions keeping
7 Canadian capital within Canada have been removed, resulting in significant capital outflows and
8 higher expected returns on Canadian investments. Second, the fiscal position of the Government
9 of Canada improved dramatically after 1997 removing an inflation premium built into LTC
10 yields. Third, the Canadian bond market has received significant foreign capital inflows
11 depressing yields below where they would have been with a segmented or closed capital market.
12 The result has been lower interest rates in Canada than the United States for most of recent
13 history. This has removed the historic bias of a smaller Canadian market risk premium over a
14 higher government bond yield when compared to the US.⁴⁹

15 My Appendix B is a free-standing analysis of the market risk premium, but I consider the survey
16 results of Professor Fernandes⁵⁰ particularly relevant as confirmatory evidence. In particular, the
17 extract below from his 2021 survey has the following estimates.⁵¹ With 1,756 responses, the
18 average (median) estimate of the market risk premium in the US was 5.5% (5.5%) whereas with
19 38 responses it was 5.6% (5.5%) in Canada. In other words, the average and median estimates
20 were both within the 4.8-6.4% range of Canadian and U.S historic estimates. With so many
21 responses in the U.S, there is bound to be a wide range, but in Canada the range for the market

⁴⁹ Some utility witnesses have shifted to estimating the historic return as the total return on equities (dividends plus capital gains) over what they refer to as an “income” return. In practise, there is no such thing as an income return. An investor buying a 30- year bond suffers capital gains and losses unless the bond is held to maturity. The only relevant “income” return on a Canadian government bond is that on a one-year Government of Canada bond, where the current yield is 1.23%. Plus, the treatment is asymmetric as the capital gain from lower rates is included in the equity return, but not the bond return.

⁵⁰ “Market risk Premium and Risk-Free Rate Used for 88 countries in 2021: a survey,” IESE Business School, Pablo Fernandes et al IESE, June 21, 2021.

⁵¹ The yellow highlighting is in the original.

- 1 risk premium was 3.5%-9.20%, that is, the extreme high value for the market risk premium from
- 2 38 responses from finance professionals in Canada was 9.20%.

Table 2. Market Risk Premium (MRP) used for 88 countries in 2021

MRP	Number of Answers	Average	Median	MAX	min
USA	1756	5,5%	5,5%	8,0%	3,1%
Spain 2021	539	6,4%	6,4%	11,4%	4,0%
Angola	11	11,5%	11,7%	15,0%	6,0%
Argentina	16	17,4%	16,5%	60,0%	4,0%
Australia	31	6,4%	6,3%	10,0%	2,0%
Austria	96	5,9%	6,0%	8,0%	4,0%
Bangladesh	13	7,0%	7,1%	15,0%	1,1%
Barbados	10	11,1%	11,3%	12,4%	8,0%
Belgium	98	5,9%	6,0%	8,0%	4,0%
Bolivia	11	9,1%	9,4%	10,5%	6,6%
Bosnia	9	10,1%	10,3%	11,4%	6,8%
Brazil	42	7,7%	7,8%	12,0%	2,0%
Bulgaria	15	6,8%	6,7%	8,1%	6,3%
Canada	38	5,6%	5,5%	9,2%	3,5%
Chile	21	6,3%	6,3%	9,0%	2,8%
China	30	6,2%	6,0%	17,0%	3,0%
Colombia	13	6,9%	6,8%	8,7%	6,0%
Costa Rica	9	9,4%	9,5%	10,5%	6,8%

- 3
- 4 It is also interesting that many argue that there is an inverse relationship between the level of
- 5 interest rates and the market risk premium. This was probably true when high expected inflation
- 6 forced up the level of Canadian long-term interest rates into the higher teens,⁵² but in my 2010
- 7 Gazifere testimony I reproduced the following from the 2010 Fernandes survey.

⁵² In a decision during this period the Ontario Energy Board apparently allowed an ROE *below* the yield on the long Canada bond, so the market risk premium was negative. This was a “one-off” market reaction caused by the determination of the Bank to crush inflation which was in danger of getting out of hand. The inverse relationship between the market risk premium and interest rates is not to be expected now the Bank is committed to a 2% inflation rate.

Table 12. Market Risk Premium used in 2010 and in 2009 by Professors, Analysts and Companies

		2010				2009			
		USA	Euro	UK	Other	USA	Euro	UK	Other
Professors	Average	6.0	5.3	5.0	7.8	6.4	5.4	4.9	8.9
Analysts	Average	5.1	5.0	5.2	6.3	5.5	5.1	5.3	6.3
Companies	Average	5.3	5.7	5.6	7.5	5.5	5.8	5.9	7.3
Professors	St. dev.	1.7	1.7	1.6	4.2	2.4	1.9	1.5	3.8
Analysts	St. dev.	1.1	1.3	1.4	2.2	1.3	1.2	1.2	2.0
Companies	St. dev.	1.8	1.5	1.8	3.2	1.8	1.6	0.8	2.3
Professors	Median	6.0	5.0	5.0	7.0	6.0	5.0	5.0	7.1
Analysts	Median	5.0	5.0	4.5	5.9	5.0	5.0	5.0	6.0
Companies	Median	5.0	5.5	5.5	7.0	5.5	5.5	5.8	7.0
Professors	Respondents	462	194	49	145	448	194	49	140
Analysts	Respondents	104	197	31	269	99	189	29	197
Companies	Respondents	205	543	30	123	189	521	28	109

1
2 At that time the median market risk premium in the US was 6.0% down from 6.4% in 2009.
3 However, I used a 4.50% risk free rate which meant an overall expected return on the market of
4 10.50% for 2010. In contrast, in his recent surveys Fernandes now asks directly for the risk-free
5 rate to match with the market risk premium estimate to get the required return on the overall
6 equity market. In 2021 for the US, this was an average (median) risk free rate of 2.8% (2.8%)
7 and for Canada both 2.0% (1.8%). As a result, the average and median expectation for the market
8 return in both the US and Canada was 7.3%.

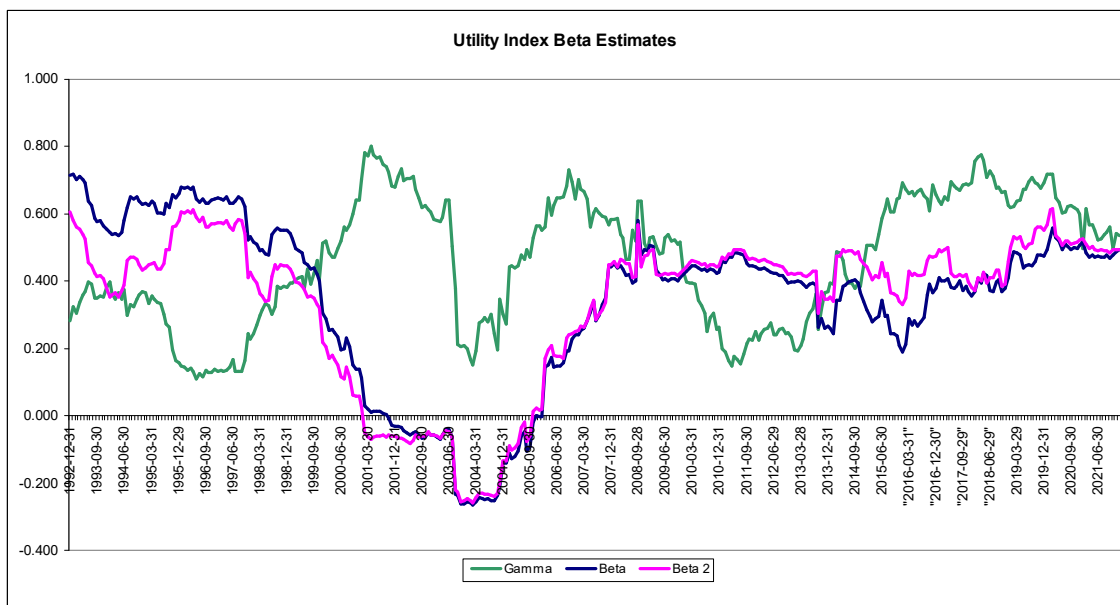
9 What is important is that both the market risk premium *and* the associated risk-free rate have
10 declined from 2010 to 2021, that is, there is no evidence of an inverse relationship between the
11 market risk premium and the level of interest rates over the last eleven years either in Canada or
12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

1 recently the US.⁵³ In my judgment the inverse relationship existed for a short period of time
2 when we had record high interest rates, designed to cut inflation, more than 30 years ago.

3 In Appendix B I also look at the three other sources of market risk premium estimates commonly
4 used. Duff and Phelps which uses what used to be the Ibbotson and Sinquefeld data recently
5 (September 2021) revised their estimate to 5.5%,⁵⁴ while Professor Aswath Damadoran of NYU
6 currently estimates it at 4.24% and the Credit Suisse annual using data from 1900-2020
7 estimated it at about 4.2%. **Overall, I judge the U.S historic evidence to suffer from some
8 survivorship bias and judge a reasonable estimate to be 5.50-6.0%**

9 **Q. HOW DO YOU JUDGE THE RELATIVE RISK OF A BENCHMARK UTILITY?**

10 A. My Appendix C discusses relative risk adjustments or betas. The following graph is for
11 the utility index beta using data back to 1987.



12

⁵³ The high interest rates in the 1970's into the 1980's were due to higher inflation, which has come down due to the inflation targeting agreement between the Bank of Canada and the Government of Canada.

⁵⁴ I confess a conflict of interest since I author an appendix for Duff and Phelps on the cost of capital in their 2021 Valuation Handbook.

1 The beta is estimated in the normal way with five years of monthly data, both with and without
2 the impact of interest rate changes affecting the long Canada bond. Both beta estimates are very
3 similar indicating a typical value in the 1990's of about 0.50 and then the drop during the tech
4 boom as the stock market was dominated by Nortel and then a gradual recovery to the current
5 level of almost 0.50. I check these beta estimates against other estimates using:

- 6 • individual Canadian companies instead of the utility index
- 7 • the U.S instead of the TSX as the market proxy
- 8 • publicly available beta estimates from RBC, Yahoo and two independent research
9 companies
- 10 • a sample of U.S gas distribution utilities

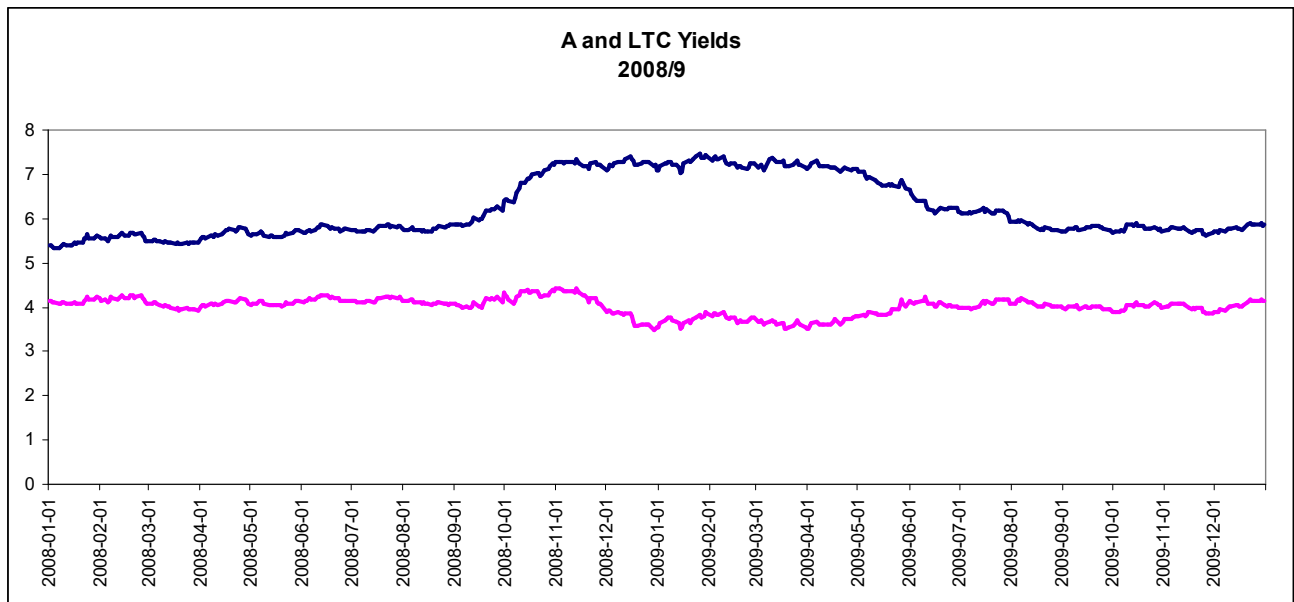
11 I also check for any beta "tendency" using the Blume methodology and consistent with my
12 testimony (with my late colleague Professor Michael Berkowitz) before the NEB in 2001, and
13 two published research papers confirm that utility betas do not trend towards 1.0 as Blume
14 estimated for *all* stocks. Instead, they gravitate towards their grand mean, which in 2001 Dr.
15 Berkowitz and I estimated at 0.52. Putting slightly higher weight on the most recent beta
16 estimate for the utility index of 0.50 and that for the purest Canadian utility which is Canadian
17 Utilities I judge a range of 0.50-0.55 to be reasonable with a mid-point of 0.525.

18 **Q. WHAT IS YOUR CAPM ESTIMATE FOR A BENCHMARK UTILITY?**

19 **A.** With a market risk premium estimate of 5.5-6.0% and a beta range of 0.50-0.55 the range
20 for the utility risk premium is 2.75%-3.30%. This is almost identical to what the Regie used in
21 the GMI hearing in 2011. The near-term forecast for the LTC yield is 2.3% but using the PBO
22 medium forecast and adding the average spread from the 10 to the 30-year yield consistent with a
23 long-term average gives an LTC yield of 3.37%. If 0.50% is added as a flotation cost adjustment,
24 to convert to an allowed ROE on the book value of utility equity, a conventional or generic
25 CAPM estimate for a benchmark utility prior to 2008 would have been in a range 6.62%-7.17%
26 for a mid point of 6.9% or just below that used by the NBEUB. 2008 was the year of the
27 financial crisis when the ROE adjustment formulae were still being used.

28 **Q. WHY WERE ROE ADJUSTMENT FORMULAE SUSPENDED?**

1 A. The main reason was the flight to quality that occurred during the U.S financial crisis as
2 investors sold risky securities and parked their cash in government securities. What then happens
3 is that A spreads widen and LTC yields fall. Although this is totally normal and happens every
4 time there is a “panic” in the stock market there was an impetus to refine the adjustment
5 formulae. The “problem” is illustrated below for the yields during the U.S financial crisis.



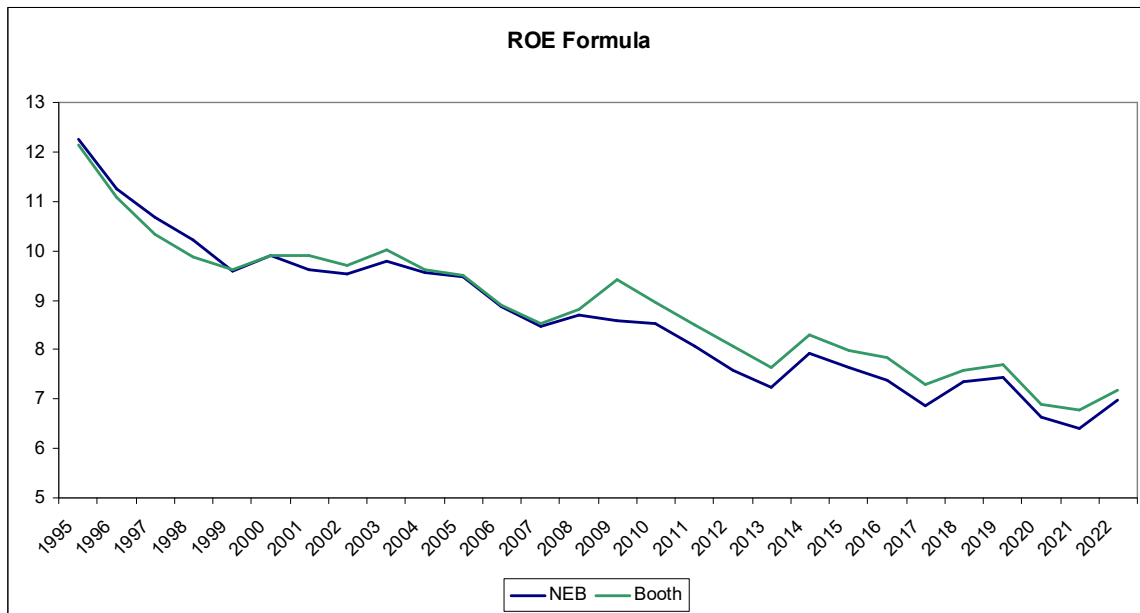
6 We can clearly see the shock of Lehman Brothers failure in October 2008 as the market realised
7 there was a serious problem. “A” bonds were sold off and their yields jumped causing utility
8 borrowing costs to increase, while LTC yields fell and with them allowed utility ROEs tied to the
9 LTC yield. Although, the ROE formulae tied the ROE to *forecast* and not current LTC yields
10 there was a consensus that the formulae needed to be adjusted. This was particularly true in
11 Ontario due, in part, to the fact that their ROE formulae for many utilities operates on October
12 data, that is, data generated right in the middle of Lehman’s collapse.

14 To make the CAPM more sensitive to economic conditions other than just the forecast yield on
15 the LTC bond, most refinements moved to incorporate the credit spread between risky corporate
16 debt and default free Government of Canada bonds. As discussed earlier this reflects current
17 market conditions, similar to the VIX and KCSFI, with the added advantage of being
18 automatically expressed as an “interest rate”.

1 In the Gazifere hearing the Regie heard testimony from Ms. McShane to add a 50% adjustment
 2 to changes in credit spreads from one year to another but to also change the adjustment to
 3 forecast LTC bond yields to 50% from 75%. In contrast, I recommended the adoption of the
 4 credit spread adjustment but to maintain the 75% adjustment to forecast LTC bond yields largely
 5 on the basis that back testing would indicate that prior allowed ROEs were not correct. The
 6 Regie accepted my recommendation for Gazifere and for GMI in the 2011 hearing. My
 7 recommendation was based on the NEB 2001 review when they decided the formula was
 8 working fine and the forecast LTC bond yield 6.12% at the time where I used 0.94% as the base
 9 credit spread from the Scotia Capital market indices. So, my 2011 ROE formula was basically

$$\text{ROE} = 9.90\% + 0.75 * (\text{LTC Yield} - 6.12\%) + 0.50 * (\text{Spread} - 0.94\%)$$

11 Below is a graph with the results of applying this methodology along with the ROE from the
 12 original National Energy Board ROE formula



13
 14 It is clear that the formula dealt with the problem of very high credit spreads resulting from the
 15 financial crisis as the 2009 allowed ROE would have been 9.41% with the modified ROE
 16 formula instead of 8.57%. However, as spreads have come down the difference between the
 17 NEB and modified NEB formula has got smaller primarily because credit spreads have come
 18 down, but both are still linked to the forecast LTC yield. This is what I predicted in the 2009

1 CMI hearing, that credit spreads are to a great extent cyclical. For 2022 the NEB formula ROE is
2 6.98%, whereas my modification gives 7.19% which is slightly higher since credit spreads are
3 still 0.40% higher than the 0.94% average prior to the financial crisis. With a 0.50 adjustment
4 this means a continuing 0.20% credit risk premium added to the NEB formula.

5 **Q. IS 7.19% A FAIR GENERIC ROE?**

6 **A.** According to the recent NBEUB decision the answer is yes since their generic ROE was
7 7.0%. The main problem with the NEB ROE formula is that it is keyed off the near-term interest
8 rate forecast of 2.2% for 2022 so it is already somewhat out of date. However, I judge it be close
9 to a fair ROE for 2022 but the sub 7% ROEs of 2020 and 2021 I have some difficulty with,
10 particularly as they already include the flotation cost adjustment. The “problem” is that starting
11 in late 2011 the U.S Federal Reserve and other major central banks, except the Bank of Canada,
12 started their bond buying programs in earnest with the specific policy objective of driving down
13 long-term interest rates. In the “search for yield” some of this cash came into Canada as a AAA
14 rated country driving down Canadian interest rates, particularly as the supply of such bonds was
15 relatively limited due to then government budget surpluses. Actual LTC bond yields which were
16 still around 4.0% as I was preparing my 2011 GMI report dropped to 2.14% a year later (July
17 2012) defying Canadian economic forecasters and the assumed LTC yield in the Regie’s 2011
18 GMI Decision of 4.50%.

19 In subsequent testimony, for example before the BCUC in 2016, I recommended that the
20 modified ROE formula only be applied when the forecast LTC yield exceeded 3.8% since basing
21 a fair ROE in the equity market based on known distortions generated by policy makers in the
22 bond market I could not reconcile as being fair. I just could not accept a negative after-tax yield
23 on a Government of Canada bond as being consistent with any rational equilibrium financial
24 model.

25 In my testimony since 2014 I have been making an adjustment for the very low level of long
26 Canada bond yields in part caused by bond buying programs outside Canada that have crossed
27 over into Canada. In Appendix B Schedule 6, I develop a model to explain the behaviour of the
28 real yield on long Canada bonds, defined as the nominal yield minus the average of past, current,
29 and future CPI inflation. Ignoring the indicator or dummy variables for WW2, the 1970s when

1 there was huge liquidity during the Petro-dollar recycling period and the period since the
2 financial crisis, the model essentially says that the real LTC bond yield is 1.35% plus a premium
3 based on bond market uncertainty and the size of the government deficit. The model does well in
4 explaining the very high yields when there was huge volatility in the bond market and Canada
5 was running deficits approaching 10% of GDP.

6 However, since the financial crisis while we have seen bond market uncertainty go down, real
7 yields have gone down even more, mainly due to demographic changes, reduced real growth and
8 other factors discussed in my Appendix B as well as central bank bond buying. My forecast of
9 3.37% for the 30-year bond still reflects the longer run factors that have depressed bond yields
10 since 2010. If these factors are removed as the baby boomers die off and economic growth picks
11 up, then LTC yields will increase. Further, the Bank's estimate of the neutral overnight rate of
12 1.0% in real terms or 3.00% nominal implies a "normal" 30-year long Canada yield of 4.25%,
13 which is still higher than the current forecast for 2024-26. I therefore judge current forecast LTC
14 yields as still being anomalous. The problem is that I do not see them increasing substantially
15 due to both government financing problems with a \$1.4 trillion debt and the impact on house
16 prices and financially indebted Canadians.

17 In the past, I have stated that the allowed ROE from automatic ROE adjustment models should
18 not change unless the forecast LTC yield is above 3.8%. This estimate was partly based on the
19 level of preferred share yields relative to A yields, where preferred yields are equity yields and
20 quintessentially "made in Canada" due to the operation of the dividend tax credit. I cannot do
21 this with as much accuracy since the TSX data I used is no longer available. However, the
22 average yield on conventional preferred shares issued by Canadian Utilities is approximately
23 4.9% or 0.60% lower than the deemed preferred share yield used by the Regie in 2011. This
24 indicates a 0.60% drop since the time of that decision when I recommended an allowed ROE of
25 8.10%. This in turn would mean a forecast LTC yield of 3.90% (4.5%-0.60%) rather than the
26 current medium-term forecast of 3.37%, which indicates the depressed state of LTC yields even
27 in a medium-term forecast.

28 I continue to judge it reasonable to add an adjustment for bond buying programs to increase the
29 forecast LTC yield to 3.8% which means adding a 0.43% adjustment for anomalously low LTC

1 yields. This increase also accounts for any change in credit market spreads since the spread will
 2 contract with an increase in the LTC yield and my judgment is that it would be normal, but for
 3 the anomalously low LTC yields. My overall CAPM fair return estimates are therefore as
 4 follows:

5		Low	High
6	Forecast long Canada bond yield	3.37	3.37
7	Adjustment for bond buying	0.43	0.43
8	Utility risk premium	2.75	3.30
9	Adjustment to ROE	0.50	0.50
10	<i>Estimate</i>	<i>7.05</i>	<i>7.60</i>
11			

12 The average estimate is basically 7.33% in a range from 7.05% to 7.60%. However, I have been
 13 using 7.50% for the generic utility since the start of global central bank bond buying in 2011.
 14 This 7.5% generic ROE recommendation is 0.60% less than the 8.1% recommendation I made in
 15 2011 and approximately the drop in preferred share yields since that time. As I have testified to
 16 on numerous occasions preferred shares are very much a made in Canada product due to the
 17 Canadian Income Tax Act's treatment of dividend income.

18 Note I prefer to make a direct adjustment to the forecast long Canada bond yield, but this
 19 estimate is also broadly consistent with adding 0.75% to the market risk premium and using a
 20 range of 6.25-6.75% as below:

21		Low	High
22	Forecast long Canada bond yield	3.37	3.37
23	Utility risk premium	3.12	3.71
24	Adjustment to ROE	0.50	0.50
25	<i>Estimate</i>	<i>7.00</i>	<i>7.58</i>
26			

27 This simply shows that any recommendation can be couched as a CAPM risk premium even if
 28 derived from other factors. I prefer to make a direct adjustment to the LTC bond yield since it is
 29 clearly anomalous whereas survey and historical data clearly brackets the market risk premium.

1

$$K = \frac{d_1}{P_0} + g$$

2

I show in Appendix D that this model holds for the overall stock market because the stock market is constrained by the growth rate in the economy. However, it causes severe problems when used for individual companies. For example, Standard and Poors published an annual called the “Analyst Handbook” with critical data aggregated at the industry level for firms in the S&P500 index. For the period from 1967-2020 the following were the critical growth rates in earnings (EPS) and dividends per share (DPS) for the S&P500 firms and U.S GDP.

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	GDP	EPS	DPS
Average	6.25%	11.14%	6.00%
Median	5.88%	10.98%	6.40%
Volatility	3.18%	39.87%	6.26%
Compound	6.20%	5.57%	5.03%
OLS	6.19%	6.04%	5.65%
QREG	6.19%	6.34%	5.75%

8

9

Over this long period the average annual growth rate in GDP was 6.25%, the median 5.88%, the compound 6.20%. In addition, an ordinary-least-squares (OLS) and a median regression (QREG) estimate of that growth rate were both 6.19%.⁵⁷ These are all slightly different ways of estimating the average growth rate but tell a similar story. Volatility is the standard deviation or variability of these annual GDP growth rates.

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The second two columns are for the average dividends per share (DPS) and earnings per share (EPS) of the firms in the S&P500 index. First, if we focus on the long run estimates, which are the compound, OLS and QREG estimates we see that both EPS and DPS growth rates are very similar but in the case of DPS slightly less than the GDP growth rate. These minor discrepancies could be because the S&P500 is for large firms, since we are ignoring emerging growth stocks until they are large enough to be included in the index, while lately some firms have been buying back shares instead of paying dividends. Also, the DPS is sensitive to the fact that firms delay

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⁵⁷ OLS minimizes the variance around the average value and a median regression around the median. QREG is less affected by outliers than OLS, but both are more efficient than the simple average.

1 dividend increases until they know they don't have to cut them, so it is more sensitive to start
2 and end dates. However, it is hard not to escape the fact that both DPS and EPS growth rates will
3 approximate the GDP growth rate in the long run for the overall stock market. This is logical,
4 since otherwise corporate profits would be a declining share of GDP, when in fact they show
5 over long time periods no trend.⁵⁸

6 The second observation is that the average EPS growth rate is so much higher than the average
7 growth rate in GDP and DPS. How can this be? The answer is by looking at the volatility, where
8 we see that EPS volatility is much higher than that for either GDP or DPS growth. This is
9 because the higher the volatility, the greater the discrepancy between average and compound
10 growth rates.⁵⁹ To illustrate, in 2007 the EPS of the S&P500 was 66.17 and collapsed in 2008 to
11 14.88 due to the financial crisis, this is a growth rate of -77.51%. In 2009 the EPS rebounded to
12 50.97 or a growth rate of 242.54%. The average of these two numbers is 82.51% which indicates
13 a very large growth and yet in 2009 the EPS on the SP500 was less than it was in 2007, so there
14 had been no growth at all. In contrast, firms smooth their dividends so that the DPS in 2007
15 increased to 28.39 in 2008 before being cut to 22.73 in 2009. In this case the DPS growth rates
16 were + 1.8% and -21.1% for an average of -9.6%. Both DPS and EPS on the S&P500 index
17 show losses in 2009 relative to 2007, yet the greater volatility of earnings produces a counter
18 intuitive result for EPS.

19 The upshot of this is that *any* DCF estimate relying on short run earnings growth to proxy for
20 long run DPS growth is biased high: the shorter the horizon for the average growth estimates the
21 bigger the bias. This is before consideration of the well-known bias involved with sell side
22 analyst forecasts discussed in Appendix D. Schedule 4 includes a recent extract referring to
23 analyst bias and the fact that it is relevant and well accepted by investors.⁶⁰ However, even if
24 analysts are not biased, by focussing on short term EPS growth this unambiguously over-

⁵⁸ If anything, there is a suspicion that earnings are becoming an increasing share of GDP in both the U.S and Canada.

⁵⁹ This is the same effect as discussed in Appendix B estimating the market risk premium

⁶⁰ There is an enormous literature on the bias involved in analyst growth forecasts. Very few academics judge analyst forecasts to be objective or accurate forecasts of what is expected to happen.

1 estimates the long run expected DPS growth and this is what is needed in the Gordon model.
2 Further even if a multi-stage model is used this does not remove the bias, it simply moderates it
3 since the biased short-term growth estimate is still used in the first stage of a multi-stage
4 model.⁶¹

5 The fact that it is difficult to envisage a situation where dividends and earnings can consistently
6 increase substantially as a share of GDP constrains the DCF estimate for the market. to
7 considering short run growth and any departures from the economy's long run growth potential.
8 In the DCF model I use the long run growth rate since 1961 which has been about 3.0% with the
9 current dividend yield. Using the Bank's median inflation target of 2.0%, I estimate the DCF
10 required return on the equity market at 7.35-8.01% for Canada. For the U.S a similar estimation
11 procedure estimates the DCF U.S equity market return at slightly over 9.0%. Overall, I judge the
12 DCF estimate for the market to be in the range 8.0-9.0% or 6.0-7.0% real after adjusting for 2%
13 inflation, which is consistent with long equity market returns. These estimates are broadly
14 consistent with those provided by the respondents to Fernandez's survey in Appendix D.

15 Survey results in both the US and Canada show that DCF estimate of the fair rate of return is not
16 placed in as high regard as the CAPM estimate for individual firms. Partly in response, I have
17 traditionally viewed my DCF estimates as "checks" on my CAPM estimates, since in my view
18 CAPM estimates have usually been in the right "ball-park." However, the recent very low long
19 Canada bond yields have forced me to re-evaluate this and look at what drives the difference
20 between the DCF and simple CAPM estimates. This is because they should be consistent.

21 The CAPM equation is as follows:

22
$$K = R_F + MRP * \beta$$

23 In words, the required (fair) return is the risk-free rate (R_F) plus the risk premium comprised of
24 the market risk premium (MRP) times the beta coefficient (β). For the market we can simply set

⁶¹ This bias is even more pronounced for individual stocks since their EPS volatility is higher than for the market as whole.

1 the beta to one since this is definitional, so the required return is the risk-free rate plus the market
2 risk premium.

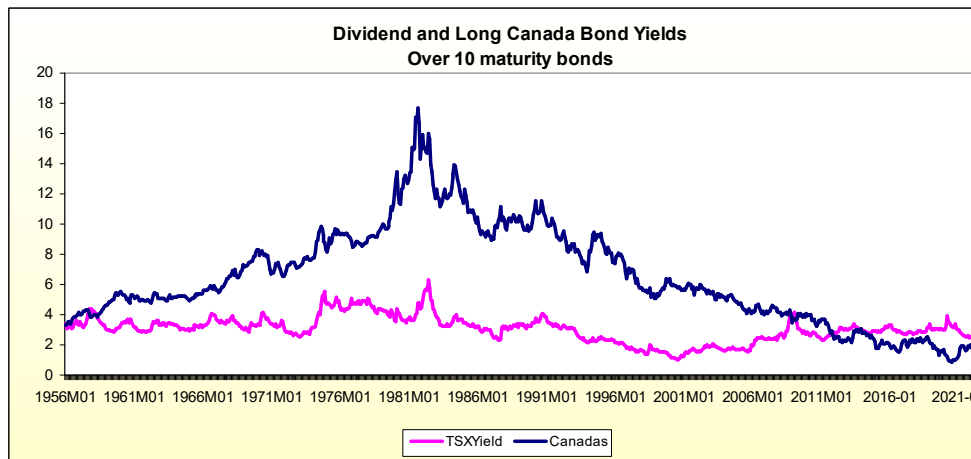
3 The constant growth version of the DCF model is most appropriate for the market as whole for
4 the reasons discussed above and in my Appendix D and states:

5
$$K = \frac{d_1}{P} + g$$

6 For the overall market the forecast dividend yield can be estimated with very little error, so the
7 estimation error is with the forecast long run growth rate. As a result, if the CAPM and DCF
8 estimates differ significantly, then it is mainly due to the difficulty in estimating the growth rate
9 and the market risk premium in the CAPM.⁶² Since both the DCF model and CAPM should give
10 the same answer, we can set them equal which indicates that for the market as a whole

11
$$DCF - CAPM = \frac{d_1}{P} - R_F = MRP - g$$

12 We can assess the relative value of the DCF and CAPM by graphing these “known” parts of both
13 models for the overall market, which are the long Canada bond yield and the TSX dividend
14 yield.



15

⁶² Note since for the CAPM we are dealing with the market return the following analysis is general for *any* risk premium model

1 If the market risk premium is equal to the expected long run dividend growth rate the dividend
2 yield should equal the LTC Yield⁶³. However, it is immediately obvious that this has not been
3 the case, where the difference between the two was greatest in the 1970s and 1980s when from
4 Schedule 1 inflation was greatest. This is because the LTC yield includes the expected inflation
5 rate whereas the dividend yield does not. However, also note that consistently since 2011 the
6 dividend yield on the TSX has been *higher* than the LTC bond yield even though investing in the
7 equity market an investor expects dividend growth, whereas the LTC bond yield is fixed with no
8 possible growth. This is highly unusual and reflects the massive central bank bond buying that
9 started in earnest just after the 2011 GMI hearing and distorts the LTC yield.

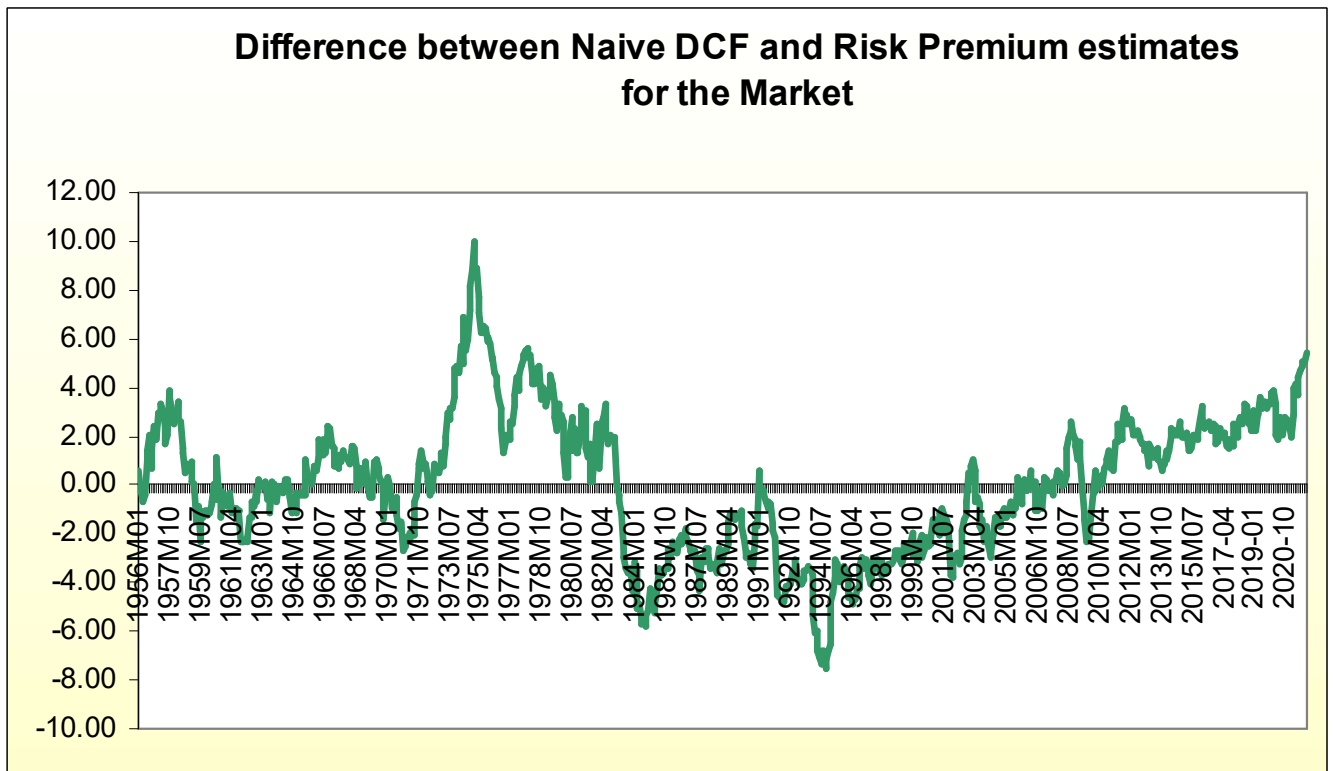
10 However, this means it is possible to come up with a simple or “naïve” estimate of the market
11 return by adjusting for this inflationary bias. For example, I can assume that for the DCF model
12 the forecast growth rate is the actual CPI inflation rate at the time, based on year over year
13 changes, and then add a 3.00% real growth rate. This gives a simple growth rate forecast to add
14 to the dividend yield and thus a simple or naïve DCF estimate for the market as whole. Similarly,
15 we can add a long run market risk premium of 3.0% to the long Canada yield for a simple CAPM
16 estimate. For the entire period, the average naïve DCF estimate is 9.87%, while the average
17 naïve CAPM estimate is 9.53%, or a difference of only 0.34% between the two, so “on average”
18 over the last 65 years it would seem that the market risk premium has been 0.34% higher than
19 the real growth rate.

20 To see how robust this simple procedure is, the following graphs the difference between the two
21 estimates for every month since 1956. The graph indicates that the difference was very large
22 from the mid 1970’s until the early 2000’s, but not consistent. The reason was twofold.

23 *First*, in the 1970s inflation was increasing and was directly captured in the DCF estimate
24 whereas bond investors did not believe that the Bank of Canada would allow these high levels of
25 inflation to continue. This resulted in very *low* real yields on LTC bonds and a positive
26 difference between the DCF and CAPM estimates. In other words, during this period the naïve

⁶³ Basic economic theory links the market risk premium to the underlying growth rate since the growth rate reflects the availability of future resources relative to the current period. Rapidly growing economies have high required rates of return to persuade people to give up current resources and invest.

1 DCF estimate was higher than the risk premium estimate. For example, in December 1974 the
 2 TSX dividend yield was 5.55% and year over year inflation 12.65% so a simple DCF estimate
 3 with 3% dividend growth was 22.07%. In contrast, the LTC yield of 8.84% was less than the
 4 inflation rate, so that adding a 3.27% market risk premium gives 12.11% which was less than the
 5 prevailing inflation rate causing a massive positive difference.



6

7 Once investors caught up to the impact of high inflation the reverse set in, since the budget
 8 deficits at the Federal level convinced the market that the government would inflate its way out
 9 of its deficit problems. As a result, while the year over year inflation rate dropped dramatically,
 10 LTC bond yields did not at first similarly drop, leading to very *high* real yields and simple
 11 CAPM estimates that exceeded the DCF estimate. For example, in October 1994 the TSX
 12 dividend yield was 2.29% and year over year inflation -0.23% as Canada was effectively in
 13 recession, so the DCF estimate for the market was only 5.12%. In contrast the LTC yield was
 14 9.24% so the simple CAPM estimate was 12.51% or a very large negative difference.

15 From 1983 until 2005 the difference was consistently negative with the peak in 1994 at the time
 16 the NEB and BCUC put in place a CAPM based automatic ROE adjustment model. During this

1 period adding any reasonable risk premium to a forecast LTC yield gave higher and more
2 reliable results than from using the DCF model. From 2011 on the reverse has happened again as
3 very low real yields again makes a simple DCF equity cost for the market consistently higher
4 than that for the CAPM. For example, December 2021 at the 2.54% dividend yield and 4.80%
5 year over year inflation the simple DCF equity cost is 10.54% whereas with a 1.75% LTC yield
6 the simple CAPM equity cost is 5.09% for a 5.45% difference.

7 The *second* reason is simply that the real GDP growth rate and the market risk premium have not
8 remained constant since 1956 and the year over year inflation rate is not a perfect forecast of
9 future inflation. I testified extensively in the 1990s to the effect that the market risk premium was
10 very low due to the high real interest rates and the risks attached to investing in government
11 bonds. Subsequently, I have increased my estimates of the MRP as this risk has been removed
12 and now use an estimate of 5.5-6.0%, rather than the 3.5% I used in the 1990's. Similarly, the
13 long run real growth rate has dropped significantly. Queen's University has created Canadian
14 GDP data going back to 1871 and splicing this with official Statistics Canada data from 1962
15 gives an average real GDP growth rate of 4.6% not significantly different from the realised
16 Canadian market risk premium estimate of 4.80% in my Appendix B, but much higher than the
17 3.0% since 1961.⁶⁴

18 However, with these qualifications we can "ballpark" the broad range for the DCF estimate for
19 the market just as we can for risk premium models like the CAPM. The December 2020 naïve
20 estimates prior to the short-term inflationary spike in 2021 were 6.85% for the DCF estimate and
21 4.47% for the CAPM, where the latter uses the average market risk premium estimate of 3.34%
22 over the 1.13% LTC yield. I regard both as low and naïve, but the 2.38% difference indicates the
23 need for an adjustment to the market risk premium and is broadly consistent with the increase I
24 have made from 3.5% to 5.50-6.00%. It also supports the value of currently looking at DCF
25 estimates despite the fact they are downplayed by both professionals and academics.

⁶⁴ U.S average economic growth rate since 1926 has been 6.1% again not significantly different from the realised U.S market risk premium of 6.36%.

1 **Q. IS THERE ANY OTHER EVIDENCE ON THE VALIDITY OF THESE TYPES OF**
 2 **EXPECTED RETURN ESTIMATES?**

3 **A.** Yes. What is important is that there is another side to estimating the fair ROE and cost of
 4 equity capital. This is that the required rate of return on the part of the investor (cost of equity
 5 capital) is also the expected rate of return. Otherwise, they wouldn't invest. Defined benefit
 6 pension funds and all sorts of other investment funds need this data to determine their asset
 7 allocation. On January 5, 2016, TD Economics updated its October 19, 2012, report on long term
 8 returns of the type needed in defined benefit pension plans.⁶⁵ The important point about the TD
 9 Economics forecast is that the going forward risk premium for equities minus LTC bonds was
 10 5.00% and the expected return on the TSX 7.0%. Both estimates were at a time when the LTC
 11 bond yield was only 1.9%. If this seems low, they expected the return on the S&P 500 to be
 12 4.5% and these are long run, that is, ten-year forecast returns. The 5% difference between
 13 equities and bonds is not the market risk premium, since adjustments need to be made in a
 14 regulatory setting, but it is certainly in the right ballpark.



15

TABLE 1: LONG TERM FINANCIAL ASSET RETURNS (CAD)				
Returns for specific assets	History	Forecast	Forecast details	
	2005-2015 (past 10 years)	2015-2025 (next 10 years)	2015-2019 (next 4 years)	2019-2025 (6 years thereafter)
Cash	1.6%	2.0%	1.0%	3.0%
GoC	4.5%	2.0%	0.0%	3.5%
Provincials	5.2%	3.0%	0.5%	4.0%
Corporates	5.5%	3.5%	2.0%	5.0%
S&P/TSX Composite	4.3%	7.0%	6.5%	7.0%
S&P500	8.6%	4.5%	2.0%	7.0%
MSCI EAFE	4.9%	7.0%	7.5%	7.0%
Income	4.9%	4.0%	2.5%	5.0%
Balanced	5.1%	4.5%	3.0%	5.5%
Growth	5.3%	5.5%	4.5%	6.5%

Note: Figures are total annual returns rounded to the nearest half of a percentage point. Returns on international indices are converted to CAD.
 Source: Bank of Canada, Bloomberg, TD Economics

⁶⁵ TD Economics, Canadian Long-Term Financial Asset returns: An Economic Perspective, January 5, 2016.

1 **Q. WHAT ADJUSTMENTS ARE NEEDED?**

2 **A.** As TD Economics notes, its return forecast is for ten-year or geometric returns, so they
3 must be converted to arithmetic one-year returns. To make this adjustment for very long returns
4 we add half the variance of the arithmetic return as explained in my Appendix B, with data in
5 Schedule 8. Historically the standard deviation of equity returns has been about 18.22% (0.1822)
6 so the variance is 0.0338 and half this is 0.0169 or 1.69%. Similarly, the volatility of the long
7 Canada bond return has been 8.77%. I would suspect that this overstates the future volatility in
8 long bonds since it is unlikely, we will see LTC yields at almost 20% again, but this means a
9 variance of 0.0077 and half this is 0.38%. Converting these long run returns to arithmetic returns
10 means a market risk premium of 6.3% as follows:

	Long run	1/2 the variance	Arithmetic
11 Equities	7.0%	1.69%	8.69%
12 LTC Bonds:	2.00%	0.38%	2.38%

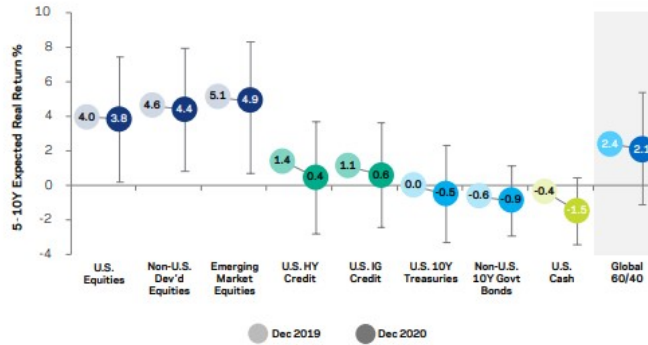
14 Of interest is that the TD Forecast splits the period into a near term (2015-2019) and later period
15 (2019-2025). For this later period, they forecast increasing returns to the LTC bond with its
16 return increasing from 2% to 3.5% while the return on the TSX is constant at 7%. This means
17 TD's estimate of the longer-term market risk premium declines to 4.79% from 6.3%. This range
18 from 4.79-6.3% is wider than my range of 5.5-6.0% but reflects their 2016 expectation of low
19 near term returns from LTC bonds.

20 **Q. ARE GENERAL FORECASTS AVAILABLE?**

21 **A.** Yes. There are now lots of capital market forecasts readily available from reputable firms
22 and I have looked at several. The first is from AQR,⁶⁶ which is a value investing shop,

⁶⁶ Capital market assumptions for major asset classes, 1Q2021.

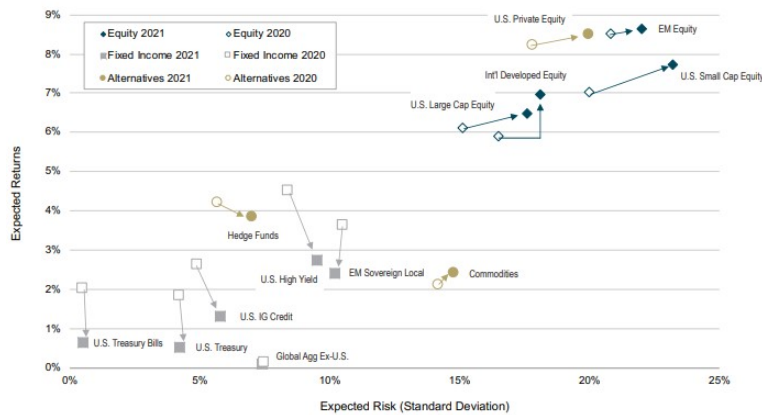
Exhibit 1: Medium-Term Expected Real Returns for Liquid Asset Classes



Source: AQR, see Exhibits 3-5 for details. Estimates as of December 31, 2020. "Non-U.S. developed equities" is cap-weighted average of Euro-5, Japan, U.K., Australia, Canada. "Non-U.S. 10Y gov. bonds" is GDP-weighted average of Germany, Japan, U.K., Australia, Canada. Error bars cover 50% confidence range, based on analysis from the 2018 edition and adjusted for current expected volatilities. These are intended to emphasize the uncertainty around any point estimates. Not only are the return forecasts uncertain, but also any measures of forecast uncertainty are debatable. Forecasting requires humility at many levels. Estimates are for illustrative purposes only, are not a guarantee of performance and are subject to change. Not representative of any portfolio that AQR currently manages.

- 1
- 2 For US equities they are forecasting real returns of 3.8% down from 4.0% in 2019, which with
- 3 2.0% inflation puts the nominal return at about 5.8% subtracting the return on ten year US
- 4 Treasuries gives a market risk premium of about 4.3%, since their forecast is for a negative real
- 5 return on Treasuries.
- 6 The following is from the Bank of New York Mellon⁶⁷

Exhibit 1: Snapshot of Risk and Return for the 2021 Capital Market Assumptions

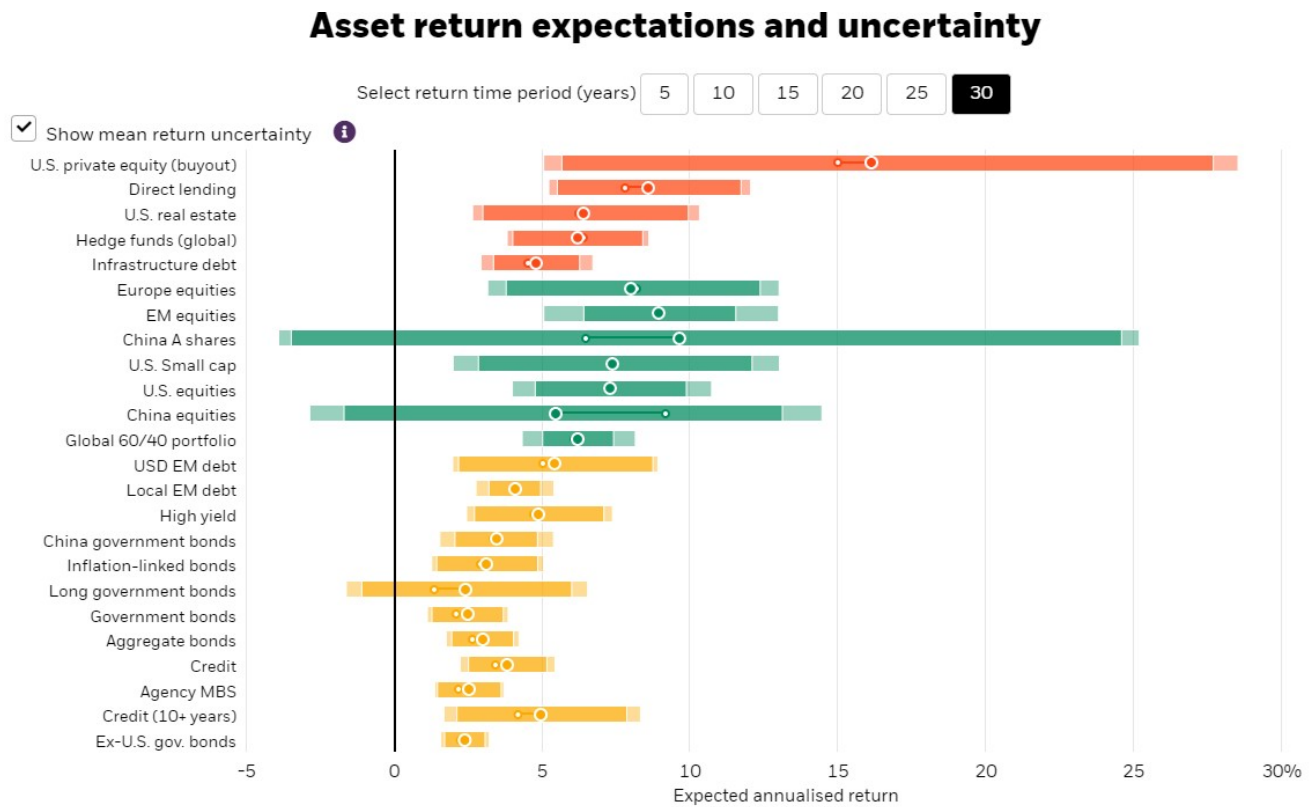


Source: BNY Mellon Investor Solutions. Data as of November 30, 2020.

- 7
-
- ⁶⁷ 10-year capital market return assumptions. Calendar year 2021

1 BNY is forecasting long run 10 year equity market returns of 6.0% for large US equities (large
 2 cap) and US Treasuries at 1.0% for a 5% market risk premium which like TD would be adjusted
 3 to a short run return.

4 Blackrock is the largest asset manager in the world and the forecast of long run returns is below.
 5 The expected return is the circled number nt he middle of the possible range of values. Like
 6 BNY Mellon and AQR they have US equities at about 7.0% and US Government bonds at about
 7 2% for a 5% market risk premium.



8

9 The final forecast is from J.P Morgan the largest US bank where the forecast is the most recent
 10 one.⁶⁸ It is so comprehensive I have put the main elements in Schedule 5. For US equities they
 11 have a long run return assumption of 4.1-4.6% with the lower number for large capitalisation
 12 stocks and the higher number for small caps. For long US Treasuries they have a forecast of
 13 0.40% so the market risk remium is 4.2-5.0%.

⁶⁸ 2021 Long-Term Capital Market Assumptions, J.P Morgan Asset Management.

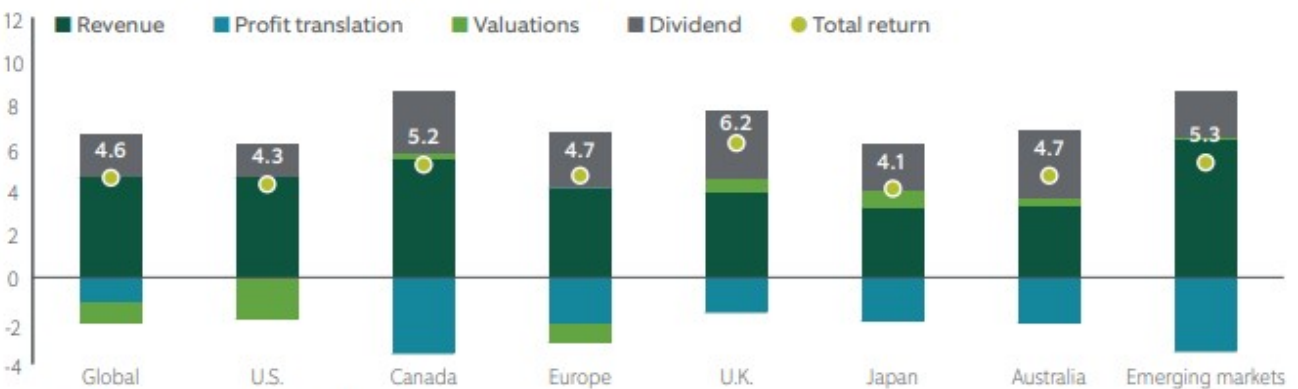
1 What is important from this brief review is that these capital market assumptions are from some
2 of the leading financial institutions in the world. The important big picture is the consensus,
3 similar to that from the Fernandes survey, that long run equity returns are in the 6-8% range and
4 the market risk premium 4-6%. There is no indication of any substantial difference between
5 these reports and my own estimates.

6 Finally, below is the recent forecast by Northern Trust (August 11, 2021)

EXHIBIT 11: EQUITY MARKET PUSH AND PULL

Retreating valuations and profit margins will temper ongoing revenue growth, leading to modest equity forecasts.

Northern Trust Five-Year Annualized Equity Return Forecast by Country (%)



Source: Northern Trust Asset Management

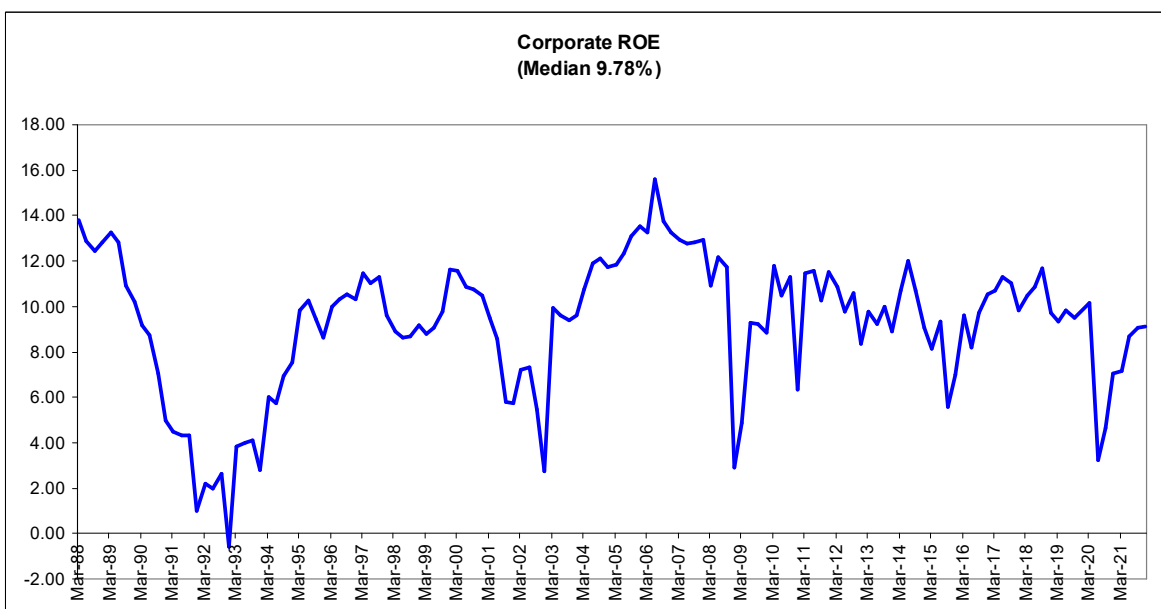
7

8 Northern Trust sees a reversion to trend after the excellent markets of the last several years. They
9 are forecasting a medium term equity market return of 5.2% for Canada and 4.3% for the U.S.
10 Their “best pick” is for the UK equity market with a 6.2% forecast return.

11 Q. IS THERE ANY OTHER EVIDENCE SUPPORTING YOUR ESTIMATE?

12 A. Yes. Ultimately, stock market returns are driven by the returns earned by companies and
13 the productivity of the underlying economy. Highly productive, rapidly growing economies are
14 generally short of financing, so the cost of capital is higher and vice versa. Below is the average
15 ROE for “Corporate Canada” as estimated by Statistics Canada. This is the quarterly version of
16 the average data in Schedule 1. From 1988 until 2021-Q4 the median ROE has been 9.78%. I
17 regard this as representative of the typical ROEs earned by Canadian firms. These corporate

1 ROEs are obviously tied to the market rates of return earned by investors. For example, in 1925
 2 John Maynard Keynes pointed out⁶⁹ that there were two sources of returns from investing in the
 3 stock market. The first he called the *investment return* which Keynes defined as “forecasting the
 4 prospective yield of an asset over its entire life.”⁷⁰ In modern terminology this would be the
 5 internal rate of return on the firm’s cash flows, or an approximate ROE. The second component
 6 he called the *speculative* return, which involved forecasting the psychology of the market and
 7 what Keynes referred to as the change in the “basis of valuation.” In modern terminology this
 8 would be a change in the price earnings ratio. Keynes discussed this speculative return as being
 9 generated by the “state of confidence” and “animal spirits” but he also pointed out it is affected
 10 by the level of interest rates.⁷¹



11
 12 Keynes’ point would be that a firm may earn an ROE of 10%, but if the valuation of that firm
 13 changes by 10% then the investor would earn both a speculative return as well as an investment
 14 return. This total return is what we look at when we examine stock market returns over long

⁶⁹ Quoted in John Bogle, *The Lessons of History*, September 12, 2011, John Maynard Keynes, 1925, *Review of Common Stocks as Long Term Investments*, Edgar Lawrence Smith

⁷⁰ This definition comes from chapter 12 of the *General Theory of Employment Interest and Money*, Macmillan London, 1936

⁷¹ Page 149 of the *General Theory*

1 periods of time. However, in aggregate the change in the basis of valuation cannot go on forever.
2 We cannot continue to have a state of high confidence, any more than interest rates can continue
3 to increase or decrease forever: both will tend to revert to some long run average. However,
4 professional investors according to Keynes are mainly concerned with speculative returns or
5 forecasting the change in this basis of valuation six months out. In contrast, buy and hold or
6 fundamental investors are mainly concerned with the investment return: finding good companies
7 and holding them regardless of the speculation in the stock market.

8 Warren Buffet is probably the most successful fundamental investor of the last fifty years. He
9 repeated Keynes' argument by stating:⁷²

10 ***“The most the owners in aggregate can earn between now and judgment day is what***
11 ***their businesses in aggregate earn. (Italics in original). True by buying and selling***
12 ***that is clever or lucky, investor A may take more than his share of the pie at the***
13 ***expense of investor B. And yes, all investors feel richer when stocks soar. But an***
14 ***owner can exit only by having someone take his place. If one investor sells high,***
15 ***another must buy high. For owners, there is simply no magic - no shower of money***
16 ***from outer space – that will enable them to extract wealth from their companies***
17 ***beyond that created by the companies themselves.”***

18 Buffet's main criticism was for the financial professionals who help individuals to trade so that
19 in aggregate investors lose part of the pie to fees. However, Keynes, Bogle and Buffet all point
20 out the basic fact that short run stock market returns can deviate from the returns earned by
21 firms, that is the investment return or ROE, but in the long run this is all there is!

22 This discussion of what generates stock market returns is provided since in the long run the
23 average stock market return should approximate the average investment return or ROE,⁷³ that is
24 the speculative return should average out to zero. There are two ways in which we can look at
25 the investment return; the first is to look at average rates of return on equity and the second to
26 look at a DCF model for the overall market.

27 The second way of looking at the investment return is that used by Jack Bogle, the founder of
28 Vanguard Mutual funds. He estimated the investment return using the constant growth DCF

⁷² Berkshire Hathaway's 2006 Annual Report, reported in Fortune (March 20, 2006).

⁷³ It is an approximation since it depends on the market to book ratio at the start of the period.

1 model, where at the start of each year he added the subsequent five-year earnings growth to the
2 dividend yield. He then took this analysis back to 1900 and provided the graph in Schedule 5.
3 This marginally understates the investment return since he should have used the forecast
4 dividend yield, but as he noted it did not materially affect the results. He estimated this
5 investment return at 8.8% or slightly less than the average US stock market return of 9.1%.
6 However, since he underestimated the investment return the difference is *de minimis*. Just like
7 Keynes, Bogle also noted the persistent tendency for reversion towards the mean, which is
8 another way of saying that high or low stock markets and PE multiples do not last. As Bogle
9 noted (page 11)

10 “Over the long run it is the durable economics of enterprise – enterprise – that has
11 determined total return: the evanescent emotions of investing – speculation – so important
12 over the short run, has ultimately proven to be meaningless.”

13 The approach of Keynes, Buffet and Bogle is a standard approach used by fundamental investors
14 who look at individual stocks, rather than trying to time the equity market. The basic message is
15 that the equity market return is tied to the ROE earned by the overall stock market, which has
16 been slightly less than 10% in Canada.

17 **Q. ARE THERE ANY DCF ESTIMATES FOR INDIVIDUAL UTILITY SHARES?**

18 A. The DCF model is appropriate for “pure” utilities, unfortunately these are now few and far
19 between due to mergers and acquisitions activity. However, we can get some insights from the
20 data in my Appendix D Schedule 15 where I estimate the median DCF cost using analyst
21 forecast data at 9.15% for a sample of small less diversified US gas utilities and the average
22 8.66%. However, these estimates reflect the well-known analyst optimism bias where they
23 persistently forecast optimistic growth rates and then gradually lower them to zoom in on the
24 actual growth closer to its realisation. Schedule 8 has a recent Economist take on the well-known
25 analyst optimism bias. Using more realistic sustainable growth rates the median DCF equity cost
26 is basically 7.25%.

27 We can assess the validity of sustainable versus analyst growth forecasts by looking at the
28 historic experience. Until 2018 S&P produced an Analyst Handbook that had earnings and
29 dividends for the utility sector like that for the Index as a whole. Further, S&P sub divided

1 utilities into gas, electric and multi-utilities. However, even in the 2018 edition there was no data
 2 for gas utilities after 2015 since they had all been acquired.⁷⁴ However, for the overall utility
 3 index the growth rates were as follows:

	EPS	DPS	GDP
Average	4.25%	3.10%	6.49%
Median	3.91%	4.10%	5.99%
Volatility	20.46%	12.81%	3.18%
Compound	2.04%	2.37%	6.45%
4 OLS	1.34%	1.67%	6.11%

5 Over the period from 1967-2017 US GDP grew⁷⁵ on average (median) 6.49% (5.99%), both
 6 slightly above the full period due to the absence of the 2020 negative growth rate. In contrast,
 7 these US utilities had average (median) dividend per share growth of 3.1% (4.10%) with average
 8 (median) earnings growth of only 4.25% and 3.91%. The compound growth rates are even worse
 9 at 2.04% for earnings and 2.37% for dividends, while the least squares regression results are
 10 worse still at 1.34% and 1.67%. The reason for the latter two is that they implicitly put more
 11 weight on the later performance where the utility EPS was \$12.01 in 2017, but was also \$12.36
 12 in 2009, and \$10.48 as far back as 1993. So, there is little evidence of significant earnings
 13 growth.

14 This evidence from the S&P500 utility data is for the larger utilities included in the S&P500
 15 index and this reflects the problems of holding companies like Duke Energy and PG&E.
 16 However, this is also in the minds of investors in utility stocks in the U.S. From this data it is
 17 extremely difficult to justify U.S utilities growing at rates higher than the U.S GDP growth rate
 18 as is implied in the use of analyst growth forecasts. It is also difficult to justify including growth
 19 at the GDP growth rate when a multi-stage DCF model is used. I would regard long run growth
 20 at 65-68% of the GDP growth rate as being reasonable based on actual experienced median
 21 growth rates.⁷⁶ This would mean 3.3-3.4% long run growth rates based on a 5% GDP growth

⁷⁴ What is playing out in the utility sector is very similar to what happened prior to the passage of the PUHCA in 1935.

⁷⁵ These are nominal growth rates and include inflationary growth.

⁷⁶ Actual ratios are EPS (3.91/5.99) or 65% and DPS 4.1/5.99 or 68%.

1 rate, which is similar to the average sustainable growth rate for these U.S gas utilities of 3.37%,
 2 but slightly lower than the median sustainable growth rate of 3.59%. However, a reasonable DCF
 3 equity cost is 6.8-6.9% when added to their current typical dividend yield of 3.51%. This
 4 estimate is a bit lower than that obtained using the sustainable growth rate, but consistent with a
 5 risk hierarchy and an overall stock market equity cost of 8.00-9.00%.

6 **Q. WHAT IS YOUR FAIR ROE FOR A BENCHMARK UTILITY?**

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

9 **Risk Premium**

	Low	High
11 Forecast long Canada bond yield	3.37	3.37
12 Adjustment for bond buying	0.43	0.43
13 Utility risk premium	2.75	3.30
14 Adjustment to ROE	0.50	0.50
15 Estimate	7.05	7.60

16
 17 My DCF analysis I use to directly estimate the overall equity market return which has informed
 18 my assessment of the appropriate market risk premium. This is extremely important since it is
 19 the basic ingredient in any risk premium approach as it indicates the market's trade-off between
 20 risk and return.

21 **DCF & Other return estimates:**

22 DCF equity market return:	8.00-9.00%
23 Average Canada ROE since 1980:	9.78%
24 Asset Manager long run equity returns:	7.00-9.00%
25 DCF Costs for SP500 utilities:	6.8-6.9%
26 DCF Equity cost U.S gas utilities	7.25%

27
 28 These DCF estimates are for the equity cost and would need an adjustment to get the fair rate of
 29 return similar to that from the CAPM.

1 A final consideration is that Energir's common shares are non-traded, and any equity comes
2 from its parent. This is a common problem in Canada as there are very few pure utilities as most
3 are part of a holding company. With Emera and Fortis both engaging in a costly mergers and
4 acquisition program in the U.S the purest utility left in Canada is Canadian Utilities. It is
5 dangerous to draw conclusion from one company's common shares, but that qualification does
6 not apply to the same degree to its preferred shares. What is more, preferred shares are part of
7 shareholder's equity like common shares except that they normally have a dividend preference as
8 well as a priority preference in liquidation. However, the important feature s that they are taxed
9 in the same way as common shares where dividend income attracts the dividend tax credit unlike
10 interest income from the LTC bond which is taxed as ordinary income. For that reason, my late
11 colleague Dr. Berkowitz and I always provided part of my risk premium evidence based on an
12 equity premium over preferred shares.

13 One utility with several classes of shares outstanding is Canadian Utilities where on February 24,
14 2022, they had the following dividend yields:

15	CU Redeemable second preferred shares series D:	4.90%
16	CU Redeemable second preferred shares series F:	4.83%
17	CU Redeemable second preferred shares series G:	4.76%
18	CU Redeemable second preferred shares series H:	5.09%

19

20 What is important is that any ROE recommendation fit in with a basic risk ranking where the
21 average dividend yield on the CU Preferred shares is 4.9%, that on the overall stock market 8.0-
22 9.0% and my CAPM average ignoring the flotation cost allowance of 6.83%. In my judgment
23 this reflects a reasonable risk ranking.

24

1 **VI. THE USE OF U.S. ESTIMATES IN CANADA**

2 **Q. WHAT IS YOUR JUDGMENT ON THE USE OF US ESTIMATES IN CANADA?**

3 **A.** Dr. Villadsen bases her evidence heavily on U.S returns from US utility holding
4 companies. I continue to regard these estimates as biased high when applied to pure Canadian
5 regulated utilities for three reasons.

6 * First, they are mainly from utility holding companies rather than the underlying
7 operating companies. This means they are further away from the cash flow and rely on
8 the payment of dividends to service their own debt and to make dividends.

9 * Second US financial markets exhibit more risk than the Canadian markets and
10 have generated higher risk premia in the past. As is demonstrated in my Appendix B,
11 where I estimate the market risk premium for both countries.

12 * Third, although the principles of regulation are largely the same between the US
13 and Canada, as is widely recognised the implementation is different as was demonstrated
14 in the 2000's with the US regulation of their banks.

15 **Q. WHAT DO YOU MEAN BY THE DIRTY WINDOW PROBLEM?**

16 **A.** It is almost impossible to find a traded utility with the same characteristics as Energir,
17 particularly in Canada. I have traditionally used Emera, Fortis, and Canadian Utilities as the best
18 proxies. However, this has become more questionable each successive year. Morningstar, for
19 example, recently stated this about Fortis:

Business Strategy & Outlook Andrew Bischof, CFA, CPA, Senior Equity Analyst, 29 Jul 2021

Fortis manages regulated electric and gas utilities and independent transmission assets across North America. Acquisitions have made Fortis predominantly a U.S. utility, with roughly two thirds of earnings at its U.S. operations.

Its prized asset in the U.S. is ITC Holdings, which gives Fortis an opportunity to benefit from a long runway of U.S. transmission investment opportunities from aging infrastructure to supporting renewable energy growth. Regulatory treatment is constructive, with ITC's allowed returns on equity being higher than state-allowed returns and forward-looking rate making reducing regulatory lag. In April, FERC issued a supplemental notice of proposed rulemaking that could eliminate the 50 basis point incentive adder that regional transmission organization members receive. Given transmission's role in supporting the Biden administration's renewable policy agenda, we continue to believe transmission will receive favorable regulatory treatment.

1

2 Similarly, for Emera Morningstar states

Florida Drives Emera's Growth Opportunities

Business Strategy & Outlook Andrew Bischof, CFA, CPA, Senior Equity Analyst, 12 Aug 2021

Emera has transitioned to a predominantly U.S. utility that generates a majority of its earnings from Teco Energy after its transformative acquisition. While Emera's Canadian utilities operate under a constructive regulatory framework, Emera's U.S. utilities offer significantly more growth opportunities and higher allowed returns.

We think Emera has made a wise transition away from noncore regulated and unregulated operations and toward investment opportunities at its regulated utilities. We like that management divested its unregulated, no-moat generation unit. We viewed the susceptibility the unit had to volatile commodity prices and capacity prices unfavorably.

3

4 It is quite clear that the stock prices of both Emera and Fortis are now being driven more by U.S.
5 regulatory practise than Canadian. Their historic betas still predominantly reflect their Canadian
6 operations but going forward Morningstar judges this to be no longer true.⁷⁷ At least both
7 companies remain predominantly regulated companies and have diversified into similar low risk

⁷⁷ Morningstar itself is a US company and took over DBRS, but it does not issue an analyst report on Canadian Utilities.

1 areas. However, when we look at these diversified UHCs we are looking through a dirty window
2 to get insights into Canadian utility operating companies.

3 **Q. WHY DO YOU JUDGE THE U.S. AS HIGHER RISK THAN CANADA?**

4 **A.** In 2010 we were still reeling from the financial crisis caused by poor bank regulation in
5 the U.S when I referenced our then Prime Minister commenting at the G20 summit

6 *“Unregulated financial markets do not work. Canada has known that for a long time. I*
7 *thought frankly, we all knew that from events of many decades ago – but obviously the*
8 *United States went on a different path*

9 It is remarkable enough that our Prime Minister criticised the U.S so directly, particularly when
10 the principles of regulation for the banking system are under the Bank for International
11 Settlements (BIS) and the same for both the U.S and Canada. The fact is it was the United States
12 that triggered the Great Stock Market Crash of 1929 leading to the Great Depression and almost
13 every major crisis since then, including the Financial Crisis of 2008/09. The only major
14 exception to this is the recent Covid 19 crisis that has affected almost every country in the world.

15 **Q. IS IT COMMONLY ACCEPTED THAT US UTILITIES ARE RISKIER THAN**
16 **CANADIAN ONES?**

17 **A.** Yes. In 2012 I referenced two reports by Moody’s, one in 2005 and another in 2009
18 where they reviewed their rating methodology⁷⁸ Both of these reports reflected the jolts to the
19 capital market from the Tech wreck and the financial crisis. The first one cited three major
20 factors that determined how it rated the supportiveness of regulation. These were (paraphrasing)

- 21 • Protecting the system to ensure reliable supply.
- 22 • Protecting the consumer from monopoly over-charging or a sudden large rate
23 increase.
- 24 • Attempting to achieve a balance between satisfying shareholders versus efficiency
25 to hold down prices.

⁷⁸ Rating methodology: global regulated electric utilities, Moody’s March 2005.

1 Second in 2009 Moody's reviewed this report and issued a new one⁷⁹ where they refined their
2 assessment into the following four major areas where the % indicates the weights applied by
3 Moody's,

- 4 • Regulatory framework: 25%
- 5 • Ability to recover costs and earn profits: 25%
- 6 • Diversification: 10%
- 7 • Financial strength and liquidity: 40%

8 Further in discussing the US and Canada Moody's stated,

9 *“Moody's views the regulatory risk of US utilities as being higher in most cases than that*
10 *of utilities located in some other developed countries, including Japan, Australia and*
11 *Canada. The difference in risk reflects our view that individual state regulation is less*
12 *predictable than national regulation; a highly fragmented market in the US results in*
13 *stronger competition in wholesale power markets; US fuel and power markets are more*
14 *volatile; there is a low likelihood of extraordinary political action to support a failing*
15 *company in the US; holding company structures limit regulatory oversight; and*
16 *overlapping and unclear regulatory jurisdictions characterize the US market. As a result*
17 *no US utilities, except for transmission companies subject to federal regulation, score*
18 *higher than a single A in this factor.”*

19 Moody's went on to discuss how 4 of the 6 investor-owned bankruptcies in the US resulted from
20 regulatory disputes culminating in insufficient or delayed rate relief for the recovery of costs
21 and/or capital investment in utility plant. Moody's further stated, “as is characteristic of the US,
22 the ability to recover costs and earn returns is less certain and subject to public and sometimes
23 political scrutiny.” I would emphasise here Moody's phrase “as is characteristic of the US” since
24 this reflects how legal principles are implemented rather than differences in those principles.
25 This phrase betrays an underlying cultural attitude towards risk that is different from Canada. I
26 am aware that since then Moody's has reappraised some of the effects of state regulation in the
27 U.S and given greater weight to secured financing but the U.S is still a different country with
28 different values.

29 What must be remembered is that utilities are low risk investments with hefty dividend yields. In
30 Canada, *Canadians* get the dividend tax credit which lowers the effective tax rate on dividends

⁷⁹ Infrastructure Finance; Regulated Electric and Gas Utilities, August 2009.

1 from *Canadian* securities to 40.11% for a resident of Quebec who is in the highest tax bracket.⁸⁰
2 In contrast, the dividends from an otherwise identical US utility would pay tax at 53.31%. The
3 result is that most investors would obviously prefer to pay the lower tax rate and thus buy the
4 Canadian utility, thereby segmenting the market for dividend paying shares. As a Canadian tax-
5 paying investor myself, I judge these tax differences to be relevant, and published a key paper in
6 this area in 1987 and nothing has changed since then.⁸¹ The fact is the Canadian tax system is
7 one where personal and corporate taxes are “integrated” whereas the US is referred to as a
8 classical system and is not integrated. Further the fact that personal and corporate taxes are
9 integrated means that Canada is unwilling to extend the dividend tax credit to foreign securities,
10 since the corporate tax that they pay is not to the Government of Canada. As a result, dividends
11 from foreign utilities are taxed at full personal tax rates and high dividend paying shares are
12 predominantly held by Canadian retail investors. It for this reason that George Lewis of RBC
13 pointed out that in general a typical Canadian utility will have a greater proportion of individual
14 investors.⁸²

15 Another way of saying this is that US estimates can only be used in Canada *without* any
16 adjustments if the markets are perfectly integrated so the shares trade in an identical manner and
17 are valued on the same basis. While Dr. Villadsen seems to think the markets are correlated, they
18 are certainly not fully integrated when it comes to high dividend yield stocks like utilities

19 **Q. HAVE CANADIAN REGULATORS CONFIRMED THIS?**

20 **A.** Yes. In a 2009 Decision the Board of Commissioners of Newfoundland and Labrador
21 commented on Ms. McShane use of US “comparables” and stated (Decision page 17)

⁸⁰ https://www.ey.com/en_ca/tax/tax-calculators

⁸¹ Laurence Booth, The Dividend Tax Credit and Canadian Ownership Requirements, *Canadian Journal of Economics*, (May 1987).

⁸² Joe Kan, *Handbook of Canadian Security Analysis*, Wiley Frontiers in Finance series, page 439

3 The Board believes that, in this type of analysis, it is not enough that the chosen
4 comparables are the best available. If this data is to be relied on it must be shown to be a
5 reasonable proxy or that reasonable adjustments can be made to account for differences. The
6 evidence showed significant differences in virtually all of the comparables including significant
7 levels of non-regulated and non-utility business as well as riskier generation projects, earnings
8 volatility, more competition and less regulatory support. While it was argued that, on balance,
9 the U.S. comparables are reasonable proxies the Board notes the overwhelming evidence of a
10 lack of balance as it was clear that on almost every measure Newfoundland Power would have to
11 be considered less risky than the U.S. comparables. The Board heard evidence that the rating
12 agencies consider U.S. companies to be peers for Newfoundland Power but the Board does not
13 conclude from this that they are the same. Moody's comments acknowledge the differences in
14 operations in the U.S. and Canada:

15
16 *"NPI's Baa1 issuer rating reflects the fact that the company's operations are exclusively based*
17 *in Canada, a jurisdiction where regulatory and business environments in general are relatively*
18 *more supportive than those of other international jurisdictions such as the United States, in*
19 *Moody's view."* (Application, 1st Revision, Exhibit 4 - Moody's Credit Opinion, August 3,
20 2009)

1 21

2 In cross examination selected extracts from the 10Ks of the U.S utilities were put to the expert
3 witness on behalf of the company, Ms. McShane. The Decision is clear: it is not enough that
4 U.S. utilities be used simply because there are not enough Canadian ones; comparables must be
5 the same to be used without any adjustment. And here the Board found "overwhelming"
6 evidence that Ms. McShane's sample of US utilities were riskier on almost every measure than
7 Newfoundland Power, which the Board regarded as an average risk Canadian utility.

8 Also, the BCUC (decision page 52) commented on Ms. McShane's use of US comparables and
9 while they felt they were useful, where no Canadian data was available, they also stated

The Commission Panel agrees with Dr Booth that "significant risk adjustments" to US utility data
are required in this instance to recognize the fact that TGI possesses a full array of deferral
mechanisms which give it more certainty that it will, in the short-term, earn its allowed return than
the *Value Line* US natural gas LDCs enjoy. The Commission Panel notes Dr. Booth's suggestion that
the risk premium required by US utilities is between 90 and 100 basis points more than utilities in
Canada require may set an upper limit on the necessary adjustment. Accordingly, the Commission
Panel will reduce its DCF estimate by between 50 and 100 basis points to a range of 9.0 percent to
10.0 percent, before any allowance for financing flexibility.

10

1 As the BCUC Decision clearly indicates evidence drawn from US utilities is useful but needs to
2 be adjusted. In subsequent decisions the BCUC has not needed to restate this, since by and large
3 the Decisions have been based on subsequent changes.

4 Finally the Regie itself in a 2009 Gaz Metro decision (D-2009-156, page 26) also concluded
5 (paragraph 295) that

6 ***“The evidence therefore does not make it possible to conclude that the regulatory,***
7 ***institutional, economic and financial contexts of the two countries and their impacts on***
8 ***the resulting opportunities for investors are comparable.”***

9 All of these decisions have had to grapple with the smaller sample of pure regulated Canadian
10 utilities traded in the capital market, as indeed all witnesses have had to do. However, I am not
11 aware of any decision that has simply taken estimates from US companies or the US capital
12 market and said that they are appropriate for use in Canada without making any adjustments.
13 Further, I am not aware that any Boards have subtracted the adjustments made ten years ago in
14 subsequent decisions.

15

1 **VII. UTILITY FINANCING**

2 **Q HOW DO THE FINANCIAL METRICS FOR THE QUEBEC UTILITIES**
 3 **COMPARE TO OTHER CANADIAN UTILITIES?**

4 **A.** What is important for any company is the amount of net income or equity earnings that
 5 supports prior charges such as debt. For a utility, the regulated common equity ratio times its
 6 allowed ROE provides the forecast net income as a percentage of rate base (NI%). The balance
 7 of the cost of capital is then a prior charge. In Canada, Fortis owns regulated utilities in a variety
 8 of jurisdictions so in many ways it is representative of Canadian regulatory decisions. From its
 9 Q3 2021 Investor Presentation, Fortis provided the following data, where NP is Newfoundland
 10 Power, MEC Maritime Electric from PEI, Algoma, and Niagara from Ontario, Fortis Alberta
 11 from Alberta and Fortis BC Gas and Electric from BC. The only provinces missing with
 12 important regulated utilities are Quebec, New Brunswick, and Nova Scotia.

		Common	ROE	Equity
NP		45	8.5	3.83%
MEC		40	9.35	3.74%
Ontario	Algoma Power	40	8.52	3.41%
	Niagrara distribution	40	8.78	3.51%
	Niagara transmisison	40	9.3	3.72%
Fortis Alberta		37	8.5	3.15%
Fortis BC Gas		38.5	8.75	3.37%
Fortis BC Electric		40	9.15	3.66%
				3.51%

13
 14 The NI% ranges from 3.15% for Fortis Alberta with an 8.5% allowed ROE and 37% common
 15 equity ratio⁺⁸³ up to 3.83% for Newfoundland Power. These ratios could be regarded as the
 16 minimum since incentive mechanisms and the careful use of deferral accounts seems to mean
 17 they invariably over-earn their allowed ROE similar to both Gazifere and Energir.

18 Other comparisons useful for the Quebec Utilities are:

⁸³ This was confirmed for 2023 by an AUC Decision (D27084-D01-2022) on March 31, 2022.

- 1 • ATCO Gas in Alberta which is effectively a province wide gas utility where the
2 AUC allows the same 8.5% ROE on 37.0% deemed common equity as for Fortis
3 Alberta.
- 4 • Enbridge Gas Distribution Inc., and Union Gas where before their merger they
5 were both allowed a 36% common equity and where the allowed ROE for 2022 is
6 8.66%.⁸⁴ This means an allowed net income of 3.11% of rate base. However, they
7 have traditionally both invariably over earned by 1-2% and have sharing
8 mechanisms that start at a high rate.
- 9 • LUNB (formerly Enbridge Gas Distribution) where the NBEUB recently allowed
10 an 8.5% ROE on 45% common equity for a NI% of 3.83% matching
11 Newfoundland Power and which I regarded as the riskiest gas utility in Canada,
12 since it is still largely a greenfield utility that has not met its customer targets.

13 So, my judgment is that the main regulated “province-wide” gas distribution utilities in Canada
14 have an NI% ranging from 3.11% for the Ontario utilities to 3.15% for ATCO Gas to 3.37% for
15 FortisBC Gas with LUNB significantly higher at the top with 3.83% as one of the riskiest gas
16 utilities in Canada.

17 With my *generic* ROE recommendation of 7.5% allowed ROE on Energir’s current 38.5%
18 deemed common equity Energir would be allowed an NI% of 2.89% which is the lowest of all
19 these utilities. However, Energir is also allowed a deemed preferred equity component of 7.5%
20 to adjust for its higher risk, which I have previously accepted as reasonable. At a 5.0% preferred
21 share cost this means a 3.26% NI%⁸⁵ higher than Enbridge and ACTO Gas, but slightly less than
22 FortisBC Gas, which faces many of the same potential problems as Energir. However, the fact
23 that its equity component is so high at 46% means its debt ratio is proportionately lower so the
24 NI% understates its financial strength.

25 At its currently allowed ROE of 8.90% Energir’s NI% is 3.80%, while Gazifere with a 9.1%
26 ROE and 40% common equity is at 3.64%, which apart from LUNB puts both companies at
27 approximately the rate for small electric companies like Maritime Electric, Newfoundland Power

⁸⁴ Consistent with these earlier allowed ROEs, they were allowed an ROE of 8.34% on 36% common equity or a net income % of 3.00% in 2021. This was due to their ROE adjustment formula’s results with the low LTC bond yields in late 2020.

⁸⁵ This is $.385 * 7.5 + .075 * 5 = 3.26\%$

1 and FortisBC Electric. I would regard both of these regulated equity metrics as being excessive
2 compared to other Canadian utilities.

3 **Q WHY HAVE YOU FOCUSED ON THE NI % OF RATE BASE?**

4 **A.** For three reasons first this gives the forecast net income ignoring the impact of over
5 earning and incentives. Second, it combines both the allowed ROE and the common equity ratio
6 consistent with the fact that both are determined by the regulator. Finally for utilities the debt
7 costs are a pass through as an embedded cost similar to the cost of gas. As I explain in Appendix
8 F using deferral accounts most Canadian utilities over earn their allowed ROE so there is
9 minimal if not zero magnification of risk for Canadian utilities using debt. The only requirement
10 is that the utility access the debt markets on reasonable terms, which means an investment grade
11 bond rating which I discuss later.⁸⁶

12 Further there is an immediate mapping of the regulated NI% into the EBIT interest coverage
13 ratio. With Energir's current regulated NI%, for example, and assuming a 26.5% corporate tax
14 rate and 4.0% embedded interest rate the EBIT Interest coverage ratio is 3.39. This is a key ratio
15 for most Canadian utilities issuing public market debt.⁸⁷

16 **Q WHAT DETERMINES THE NI%?**

17 **A.** In appendix F I discuss in detail how in Canada the primary driver of the regulated
18 common equity ratio is the business risk of the utility. Historically many jurisdictions starting
19 with the then National Energy Board (NEB) and the BC Utilities Commission established a
20 generic allowed ROE to be applied to all their regulated utilities through an automatic ROE
21 formula. Differences in business risk were then accounted for with different deemed common
22 equity ratios so that the resulting NI% was fair. The basic assumption was that a utility facing
23 higher business risk was allowed a higher common equity ratio. As a result, the total business

⁸⁶ DBRS on page 11 of its 2021 rating report on Energir cites the key regulatory parameters for Energir as the average rate base of \$2,287 million, deemed 46% equity ratio and the authorised ROE of 8.9%.

⁸⁷ Its also very close to what DBRS reports for unconsolidated Energir LP.

1 plus financial risk was similar across all utilities, and they could be allowed the same ROE.⁸⁸
2 Common equity ratios would then only be changed if there was a material change in a utilities
3 business risk.

4 **Q. HAS THE BUSINESS RISK FACED BY THE QUEBEC UTILITIES CHANGED?**

5 **A.** Business risk is always changing, for example with changes in natural gas prices and a
6 gas utility's customer class, but the question is whether it is material enough to warrant a change
7 in the common equity ratio. In Appendix F I show that the ability of both Gazifere and Energir to
8 earn their allowed ROE has not changed since I participated in their 2010/11 hearings.
9 Consequently, their short run risk has not changed. However, I have never seen a utility witness
10 discuss this persistent ability of a Canadian utility to over earn its allowed ROE. Instead, they
11 focus on qualitative longer-term factors, such as they currently do in this case, focusing on the
12 impact of climate change. However, I have never seen these long run factors materialise to harm
13 a distribution utility. Instead, if they do materialise, they are invariably allocated to rate payers
14 through deferral accounts or special charges. What is important is that these risks must affect the
15 *utility's* ability to earn its ROE at some future date and I have yet to see this happen.

16 A good example of this process was the special hearing the then NEB convened to discuss the
17 TransCanada Mainline in 2012. There was no question that in 2012 as a "bullet" pipeline
18 connecting the WCSB to gas markets in central Canada, the Mainline was potentially suffering a
19 serious increase in pipe-on-pipe competition and potentially the stranding of its Northern Ontario
20 Line (NOL). However, the result was the NEB allowed the Mainline to dip further into its latent
21 monopoly power and the NOL was not stranded. This is the Canadian dynamic and I would
22 expect the same to happen if climate change causes a change in Gazifere and Energir's ability to
23 earn their allowed ROE. However, currently this is premature since there is little on the record to
24 indicate how potential changes will directly affect their ability to earn their allowed ROE. In this
25 I accept and agree with the recommendations of Dr. Hopkins that this be reviewed in detail in
26 three years time in a formal hearing. At the current point in time I would regard these risks as

⁸⁸ In practise the BCUC also used minor ROE adjustments as well.

1 speculative, as the Ontario Energy Board similarly regarded long run qualitative risk assessments
2 faced by Enbridge Gas Distribution.

3 **Q. ARE YOU SAYING THAT CLIMATE CHANGE IS NOT A RISK FACTOR**
4 **THAT HAS INCREASED RISK FOR THE QUEBEC UTILITIES?**

5 **A.** No. I am simply pointing out that all provinces must try and reduce the use of fossil fuels
6 and their impact on climate change. However, the tools available to them to do that are different
7 given different energy endowments. According to the Premier⁸⁹ “of all the states and Canadian
8 provinces, Quebec emits the fewest greenhouse gases per capita.” In this respect, Quebec is
9 exceedingly lucky, similar in some respects to BC and Manitoba, in having significant access to
10 low-cost cheap hydroelectricity. As a result, reducing the use of natural gas is higher up the
11 priority list. In contrast, New Brunswick has limited natural endowments and as a result has
12 developed nuclear power as an alternative. Ontario has followed a similar path but has
13 maximised its use of hydro, and probably nuclear power, and rather than reducing the use of
14 natural gas, EGDI’s system is still expanding. For many, rather than reducing its use, natural gas
15 is seen as a “half-way house” between reliance on coal and oil and a genuinely green power
16 source.⁹⁰

17 The implication is that climate change and reducing the use of natural gas is mainly a political
18 decision at the provincial level. The Quebec government recognises this and on page 53 of its
19 plan states:

20 *The government aims to electrify a greater share of the heating that is currently provided by*
21 *natural gas. This will reduce greenhouse gas emissions while improving Québec’s trade*
22 *balance. The partial conversion from natural gas to electricity will be part of a comprehensive,*
23 *balanced approach that is based on the complementarity of the electrical and gas grids. Fully*
24 *electrifying heating would not be ideal for Québec. It would create a significant peak demand*
25 *issue at certain times during the winter, when electricity consumption is greatest. It would also*
26 *increase costs for all customers. Furthermore, it is worth noting that electricity cannot be the*
27 *only option for all commercial and institutional buildings because of certain constraints. For*
28 *example, in the event of a widespread or major power outage, hospitals must be able to rely on*
29 *an alternative energy source. In some areas, the electrical grid also struggles to handle*
30 *increased demand. As a result, the conversion effort will primarily aim to maximize the*

⁸⁹ 2030 Plan for a Green economy, Government of Quebec, opening header.

⁹⁰ Gazoduc aims to build a new pipeline across Northern Quebec to export Canadian natural gas.

1 *electrification potential of heating in Québec while minimizing costs for customers. To that*
2 *end, it will be important to determine how potential initiatives will financially affect the*
3 *customers concerned, as well as how they will affect Québec’s major energy networks.”*

4 I see this as a measured response recognising how switching to electricity will affect customers,
5 that is, the cost of the plan as well as the fact that it is not optimal for all users and there will
6 continue to be natural gas consumption in Quebec.

7 Of interest is that in the hearing into Liberty Utilities New Brunswick last year, LUNB presented
8 no evidence on the effects of climate change. As a reference point, I attach the opening page of
9 the company evidence on business risk at Schedule 6, where LUNB presents four standard topics
10 on business risk analysis: market, competitive, supply, and regulatory plus deferral account risk
11 which is special for LUNB. Further it explicitly focussed on market, competitive and supply risk
12 and then makes two brief references to the province’s 2016 Climate Change Action Plan where it
13 adds climate risk initiatives to a list of factors that “evidencing these trends Liberty has not added
14 as many customers as forecast.” The only reference to climate change in the report of LUNB’s
15 expert witness, Mr. Coyne, is a repeat on page 64 of the company’s statement with the same
16 impact of climate change included with other factors with the exact same words “evidencing
17 these trends Liberty has not added as many customers as forecast.” This is the critical factor;
18 climate change is part of market risk and must affect the number of customers and through rate
19 design the utility’s ability to recover its revenue requirement.

20 **Q. WHAT ARE YOUR RECOMMENDATIONS?**

21 **A.** With no material change in their business risk I would recommend the continuation of
22 their current allowed equity ratios of 46% for Energir (38.5% common and 7.5% referred) and
23 40% for Gazifere. With business risk adjusted for in their common equity ratios I regard Energir
24 as warranting a generic ROE of 7.5%. Capital markets are sensitive to size as there are minimum
25 sizes for sales of debt to institutional buyers. However, the issuer is not Energir LP but Energir
26 Inc., which includes electricity operations as well as regulated utilities in Vermont, which DBRS
27 points out have allowed 2021 ROEs of 8.2% for GMP and 8.65% for VGS.⁹¹ Of interest is that
28 even though Energir Inc., has subsidiaries and LPs in different jurisdictions, even countries, it

⁹¹ These have declined over the last three years from 9.06% for GMP and 9.20% for VGS in 2019.

1 mirrors the cost of Energir Inc., financing to its subsidiaries, that is, they do not all raise
 2 financing under their own names.⁹²

Financial Information

Energir, L.P.	12 mos. to Dec. 31		For the year ended September 30			
	2020	2020	2019	2018	2017	2016
Cash flow/total debt (%) ¹	14.5	13.4	15.1	17.8	16.0	16.8
Total debt in capital structure (%) ^{1, 2}	67.2	68.6	66.4	65.3	64.7	66.5
EBIT gross interest coverage (times) ^{1, 3}	2.41	2.34	2.16	2.53	2.32	2.44

1 Adjusted for operating leases.

2 Adjusted for accumulated other comprehensive income.

3 Includes distributions received from companies subject to significant influence.

3
 4 Often, gas distribution companies have restrictions on their ability to issue funded debt, for
 5 example that they satisfy a 2.0 times new issue EBIT interest coverage ratio. Energir LP
 6 primarily issues first mortgage and secured debt, where it has a minimum equity restriction of
 7 35% which if it drops to 25% prohibits distributions to partners, and an EBIT interest coverage
 8 of 1.5. In 2020 Energir LP's non-consolidated values were 54.4% debt ratio and an EBIT interest
 9 coverage of 3.36. These significantly exceed the minimums for issuing debt as well as the values
 10 above for Energir LP consolidated. At a 7.50% Allowed ROE the drop in ROE lowers the EBIT
 11 interest coverage to 3.06 still well above both issuing levels and the consolidated data for Energir
 12 LP.

13 For Gazifere in 2010 I recommended a 0.25% premium over a generic utility. I do not regard this
 14 as being warranted on business risk grounds, but mainly due to the extra cost of raising debt as a
 15 "legally" small utility. However, since it gets its debt from EGI and consistently earns its
 16 allowed ROE I see no reason why EGI can't mirror down the cost of financing in the same way
 17 that Energir Inc. according to DBRS has a "mirror-like" arrangement with Energir LP. In
 18 particular, Gazifere is effectively integrated into Enbridge Gas Inc., (EGI), which is the new
 19 amalgamation of EGDI and Union Gas. In its 2021 Annual Report Enbridge states (page 39):

⁹² Energir LP alone has over \$4 billion of debt outstanding.

1 *Cynthia L. Hansen was appointed Executive Vice President and President, Gas Distribution*
2 *and Storage, on June 1, 2019. Ms. Hansen is responsible for the overall leadership and*
3 *operations of Enbridge Gas, following the amalgamation of Enbridge Gas Distribution Inc.*
4 *(EGD) and Union Gas Limited (Union Gas), as well as Gazifère*

5 Apart from a one sentence description of Gazifere this is the only mention of Gazifere in the
6 annual report and even then, it is almost an add-on “as well as Gazifere”. This indicates to me the
7 integration of Gazifere with EGI and if it was not for the provincial boundary those assets would
8 legally be a part of EGI earning the Ontario Energy Board allowed ROE of 8.66% on 36%
9 common equity. However, as in 2010 I am willing to accept Gazifere’s 40% common equity
10 ratio as reasonable even though in economic terms it makes little sense, while I see no
11 justification for its requested common equity ratio. Unlike 2010 I regard a 0.25% ROE premium
12 as excessive since Gazifere has no longer experienced an actual ROE less than that allowed since
13 that time, while EGI is consolidating gas distribution assets. I would recommend a 0.15%
14 premium.

15 **Q. DOESN’T THE “ISOLATION” PRINCIPLE JUSTIFY GAZIFERE’S HIGHER**
16 **COMMON EQUITY RATIO BASED ON ITS SMALL SIZE?**

17 **A.** No. The isolation or standalone principle is justified based on a holding company or sister
18 company charging uneconomic costs to the operating subsidiary. For example, prior to the
19 PUHCA in the US electricity companies owned unregulated electric tram (streetcar) companies
20 and apparently were charged uneconomic prices by the regulated electric companies⁹³. After the
21 passage of the PUHCA these streetcar operations were divested and many of them went out of
22 business. The point is that “stand alone” was meant to mean that the charges to the utility were
23 fair and reasonable, not that a small uneconomic subsidiary should remain in business protected
24 by regulation. In this respect Gazifere is an artificially small business and seems to be integrated
25 with EGI. Note Gazifere pays Enbridge interest based on a BBB (low) bond rating when EGI is
26 the strongest gas distribution utility in Canada covering almost all of Ontario. I regard this as
27 charging uneconomic costs to Gazifere’s ratepayers.

⁹³https://en.wikipedia.org/wiki/Public_Utility_Holding_Company_Act_of_1935?msclkid=1635ec9eaf7811ecb059bb0c1ee336a1

1 Q. CAN THE QUEBEC UTILITIES FINANCE ON REASONABLE TERMS WITH
2 YOUR RECOMMENDATIONS?

3 A. Yes. At Schedule 7 is a table taken from the Alberta Utilities Commission 2018 Decision
4 (AUC 22570-D01 August 2018). The AUC normally has a summary table making sure that the
5 utilities that it regulates meet the requirements of some form of an A bond rating.⁹⁴ I do not
6 normally recommend that regulators follow other regulators since the process is circular.
7 However, the objective of the table is simply to see what credit metrics drop out of certain
8 parameters set by the regulator to assess the potential impact on the credit rating. The table is
9 based on an allowed ROE of 8.5%, a 27% tax rate, an embedded debt cost of 4.7% and an
10 average depreciation rate of 5.73%. As the table shows, a distributor could meet the standard 2X
11 interest coverage ratio with a 31% common equity ratio. The AUC's actual allowance of 37%
12 common equity for a generic distributor on an ROE of 8.5% results in a 2.4X EBIT coverage
13 ratio.

14 At Energir's current 8.90% allowed ROE and a 46% total equity the implied interest coverage
15 ratio is literally off the AUC chart. Even at my recommended ROE of 7.5% on the total equity of
16 46% Energir's interest coverage ratio is still off the chart as it should be given its higher business
17 risk. For Gazifere at a 7.6% allowed ROE on 40% common equity the EBIT interest coverage
18 ratio is 2.72. In both cases, these numbers are slightly higher than the AUC numbers due to an
19 assumed lower embedded interest cost of 4.0% as they should be if they have refinanced at lower
20 rates since 2016.

21 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

22 A. Yes

23

24

⁹⁴ These bond rating metrics are honoured in the breach and do not consider the lower risk of Canadian regulated utilities. Plus, there is no legal basis for targeting a particular bond rating it is simply a "for information" exercise.

	Macro data (3rd quarter 2021 italicised)							
	Unemployment Rate	Real Growth	CPI Inflation	T Bill Yield	Canada Yield	FX Rate US\$	Average ROE	
1987	8.81	4.17	4.42	8.17	9.93	0.75	11.19	
1988	7.77	4.70	3.94	9.42	10.23	0.81	12.97	
1989	7.58	2.47	5.06	12.02	9.92	0.84	11.79	
1990	8.16	0.17	4.81	12.81	10.81	0.86	7.48	
1991	10.32	-2.11	5.61	8.83	9.81	0.87	3.53	
1992	11.24	0.88	1.45	6.51	8.77	0.83	1.56	
1993	11.42	2.50	1.90	4.93	7.88	0.78	3.69	
1994	10.43	4.65	0.12	5.42	8.58	0.73	6.57	
1995	9.54	2.74	2.22	6.98	8.35	0.73	9.55	
1996	9.73	1.61	1.48	4.31	7.54	0.73	10.29	
1997	9.16	4.25	1.69	3.21	6.47	0.72	10.86	
1998	8.35	3.99	1.00	4.74	5.45	0.67	8.83	
1999	7.58	5.35	1.75	4.70	5.68	0.67	9.82	
2000	6.85	5.21	2.69	5.48	5.92	0.67	10.92	
2001	7.23	1.78	2.52	3.85	5.79	0.67	7.41	
2002	7.66	2.97	2.25	2.57	5.67	0.65	5.69	
2003	7.61	1.84	2.80	2.87	5.29	0.72	9.65	
2004	7.18	3.10	1.85	2.27	5.08	0.77	11.62	
2005	6.77	3.11	2.21	2.71	4.41	0.83	12.70	
2006	6.32	2.72	2.00	4.02	4.29	0.88	13.95	
2007	6.03	2.13	2.14	4.17	4.32	0.94	12.87	
2008	6.15	0.84	2.37	2.62	4.06	0.94	9.44	
2009	8.23	-2.86	0.30	0.40	3.85	0.88	8.06	
2010	7.99	3.15	1.78	0.50	3.71	0.97	9.97	
2011	7.46	2.77	2.39	0.94	3.22	1.01	9.92	
2012	7.29	1.75	2.03	0.96	2.35	1.00	10.68	
2013	7.07	2.48	0.94	0.98	2.71	0.97	9.33	
2014	6.90	2.86	1.91	0.91	2.65	0.91	10.57	
2015	6.90	0.66	1.13	0.50	2.06	0.78	7.52	
2016	7.00	1.00	1.43	0.50	1.80	0.75	9.51	
2017	6.36	0.00	1.60	0.71	2.18	0.77	10.72	
2018	5.86	0.00	2.27	1.40	2.34	0.77	10.68	
2018	5.75	1.88	1.95	1.66	1.73	0.75	9.70	
2020	9.58	-5.23	0.72	0.42	1.07	0.75	5.53	
2021	7.43	2.96	3.40	0.13	1.80	0.80	8.51	
2	Cansim	V13682111	v62305752	v41690973	V122484	V122501	V37426	V634672/V634628

CANADA BOND YIELDS

Overnight money market rate	0.20
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Benchmark bonds

Canada	91-day Treasury Bill yield	0.34
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Canada	Six-month Treasury Bills	0.80
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Canada	One-year Treasury Bills	1.23
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Canada	Two-year	1.51
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Canada	Three-year	1.59
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Canada	Five-year	1.75
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Canada	Seven-year	1.77
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Canada	Ten-year	1.91
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Canada	Long-term (30 year)	2.17
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Canada	Real-return bonds	0.53
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Marketable Bond Average yields

Canada	1-3 year	1.43
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Canada	3-5 year	1.69
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Canada	5-10	1.86
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Canada	Over tens	2.17
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Source: Retrieved from the Bank of Canada's web site at <http://bankofcanada.ca> February 21, 2022.

Fama-French Application

Company	β_1	β_1^*	β_1^*	3FM	β_1	CAPM	Diff
3M	0.66	0.05	0.18	8.5%	0.76	8.4%	0.2%
Alcoa	2.11	0.69	-0.38	17.1%	2.10	16.3%	0.8%
American Express	1.15	0.38	1.79	17.7%	2.08	16.2%	1.5%
AT&T	0.82	-0.23	-0.23	7.3%	0.66	7.8%	-0.5%
Bank of America	1.55	-1.15	2.20	17.1%	2.30	17.5%	-0.4%
Boeing	1.21	-0.64	0.44	10.7%	1.26	11.3%	-0.7%
Caterpillar	1.67	0.00	0.25	14.6%	1.78	14.4%	0.1%
Chevron	0.96	-0.58	-0.44	6.5%	0.62	7.5%	-1.1%
Cisco Systems	1.20	0.67	-0.31	11.8%	1.22	11.1%	0.8%
Coca-Cola	0.75	-0.72	-0.01	6.2%	0.56	7.2%	-1.0%
DuPont	1.10	-0.18	0.67	12.1%	1.37	12.0%	0.1%
Exxon Mobil	0.72	-0.70	-0.30	5.2%	0.41	6.3%	-1.2%
General Electric	1.21	-0.36	0.79	12.6%	1.49	12.7%	-0.1%
Hewlett-Packard	1.03	0.48	-0.26	10.5%	1.02	9.9%	0.5%
Home Depot	0.38	0.55	0.41	9.1%	0.71	8.1%	1.0%
Intel	1.45	-0.09	-0.58	10.3%	1.16	10.7%	-0.5%
IBM	0.81	0.36	-0.18	9.1%	0.81	8.7%	0.4%
Johnson & Johnson	0.60	-0.51	0.09	6.3%	0.52	7.0%	-0.7%
JPMorgan Chase	0.45	-0.50	1.51	10.2%	1.04	10.0%	0.1%
Kraft Foods	0.46	-0.17	0.29	7.1%	0.56	7.2%	-0.1%
McDonald's	0.86	-0.58	-0.25	6.5%	0.60	7.4%	-1.0%
Merck	1.36	-0.89	-0.55	7.5%	0.88	9.1%	-1.6%
Microsoft	1.09	-0.04	-0.30	9.2%	0.94	9.4%	-0.2%
Pfizer	0.71	-0.68	0.38	7.4%	0.72	8.2%	-0.8%
Procter & Gamble	0.61	-0.27	0.04	6.9%	0.56	7.2%	-0.4%
Travelers	0.71	-0.51	0.12	7.0%	0.64	7.7%	-0.7%
United Technologies	0.87	-0.32	0.32	9.2%	0.95	9.5%	-0.3%
Verizon Communications	0.87	-0.30	-0.43	6.8%	0.60	7.4%	-0.7%
Wal-Mart	0.30	-0.41	0.09	4.8%	0.24	5.3%	-0.5%
Walt Disney	0.89	0.12	0.35	10.7%	1.08	10.3%	0.4%
Min	0.30	-1.15	-0.58	4.8%	0.24	5.3%	-1.6%
Max	2.11	0.69	2.20	17.7%	2.30	17.5%	1.5%
Avg	0.95	-0.22	0.19	9.5%	0.99	9.7%	-0.2%

ment of Lloyd's itself on a hypothetical hacker-caused blackout of the entire power grid of the American north-east. It estimated this would cause direct losses to business revenues of \$222bn, and a total dent in GDP of over \$1trn over five years.

Many insurers are turning to outside expertise. Matt Webb of Hiscox, a specialist insurer, describes an "arms race" between analytics firms such as RMS and Symantec, offering their long-standing modelling process (RMS is already well-trusted on hurricane modelling, for example) to help insurers understand their cyber-liabilities.

But even if exposures are better understood, limiting them may prove tricky. Kevin Kalinich of Aon, an insurance-broker, points to the near-impossibility of drawing a line, for example, between cyber-war or

cyberterrorism and "normal" hacking. Cyber-crime knows no geographical bounds, unlike, say, a Florida hurricane. Mr Webb reckons that insurance policies will at a minimum need explicitly to recognise that cyber-risks are covered or to exclude them—just as many policies already include exemptions for terrorism or war.

Although insurers are already helping companies with more humdrum data breaches, the industry still lacks a clearly formulated response to a larger-scale cyber-calamity. Inga Beale, CEO of Lloyd's, is optimistic that the market, thanks to its exacting modelling exercises and its unique risk-sharing structure, is better equipped than most. But only a devastating, real-life cyber-attack would test how effective its preparations have been. ■

centive to issue ever-so-slightly pessimistic forecasts, so companies can "beat" expectations. Since the financial crisis, company profits have exceeded short-term analyst forecasts around 70% of the time.

So are forecasts are useless? Simply taking the market's earnings figures from the previous year and multiplying by 1.07 (corresponding with the stockmarket's long-run growth rate) can be expected to yield a more accurate forecast of profits more than a year in the future.

Yet the very predictability of the errors in analysts' forecasts suggests they could be informative, if they are properly interpreted. Taking forecasts of S&P 500 earnings from 1985-2015, *The Economist* has built a simple statistical model to try to take out the bias that taints Wall Street's prognostications. After controlling for the forecasts' lead time and whether or not they were made during a recession, we find that even our relatively crude model can improve upon the Wall Street consensus for forecasts made more than a quarter in advance (see chart 2).

Adjusting for bias in short-term forecasts is harder. It is tempting simply to accept the errors—after all, they tend to be off by just a little. Data from Bloomberg show that the 320 S&P 500 companies that beat earnings expectations in 2015 did so only by a median of 1.4%. An alternative is to look at crowdsourcing websites such as Estimize. There punters—some amateur, and some professional—are shown Wall Street consensus estimates and asked to make their own forecasts. Estimize users beat Wall Street estimates two-thirds of time.

To some extent, judging Wall Street by its ability to make accurate predictions is silly. Harrison Hong, an economist at Columbia University, reckons that stock analysts should be viewed "more like media". The latest forecasts aggregated by Thomson Reuters suggest that the S&P 500 will yield earnings per share of \$130.83 in 2017 and \$146.33 in 2018. According to our model, that would imply that they believe the actual numbers will be closer to \$127.85 and \$134.30. Share analysts want to tell the truth. They just like making it difficult. ■

Analyst forecasts

Discounting the bull

Stock analysts' forecasts tend to be wrong in reassuringly predictable ways

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".

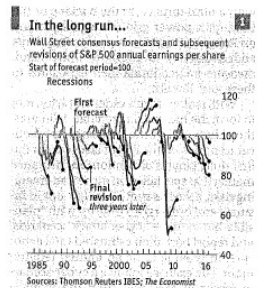
Economic research shows that there is some truth to the ribbing. The latest figures from FactSet, a financial-data provider, show that 49% of firms in the S&P 500 index of leading companies are currently rated as "buy", 45% are rated as "hold", and just 6% are rated as "sell". In the past year, 30% of S&P 500 companies yielded negative returns.

Profits forecasts made more than a few months ahead have a dismal record of inaccuracy. According to Morgan Stanley, a bank, forecasts for American firms' total annual earnings per share made in the first half of the year had to be revised down in 34 of the past 40 years. Studying their forecasts over time reveals a predictable pattern (see chart 1).

In theory, a diligent share analyst should do his own analysis—that is, by projecting a firm's future revenue and expenses, and discounting them to the present. Such models, however, are extremely sensitive to different assumptions of growth rates. Since no one can know the future, analysts cheat.

Three statistical sins are common. Analysts can look at comparable companies to glean reasonable profits estimates, and then work backwards from their conclusions. Or they can simply echo what their peers are saying, and follow the herd. Or, most important, they can simply ask the companies they are following what their actual earnings numbers are.

Surveys conducted by Lawrence Brown of Temple University found that two-thirds of sell-side analysts found private calls with company managements to be "very useful" in making their estimates. Analysts' need to maintain relationships with the companies they cover must colour their projections. They are judged primarily on the accuracy of their short-term forecasts, so there is little risk in issuing flattering, if unrealistic, long-term projections. In the short run, however, they have an in-



SCHEDULE 5

	COMPOUND RETURN 2020 (%)				ANNUALIZED VOLATILITY (%)				ARITHMETIC RETURN 2021 (%)				COMPOUND RETURN 2021 (%)																	
	2.00	2.01	1.40	2.00	1.00	1.00	1.00	1.00	U.S. Inflation	U.S. Cash	U.S. Intermediate Treasuries	U.S. Long Treasuries	TIPS	U.S. Aggregate Bonds	U.S. Securitized	U.S. Short Duration Government/Credit	U.S. Long Duration Government/Credit	U.S. Inv Grade Corporate Bonds	U.S. Long Corporate Bonds	U.S. High Yield Bonds	U.S. Leveraged Loans	World Government Bonds hedged	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield
U.S. Inflation	2.00	2.01	1.40	2.00	1.00	1.00	1.00	1.00	U.S. Inflation	U.S. Cash	U.S. Intermediate Treasuries	U.S. Long Treasuries	TIPS	U.S. Aggregate Bonds	U.S. Securitized	U.S. Short Duration Government/Credit	U.S. Long Duration Government/Credit	U.S. Inv Grade Corporate Bonds	U.S. Long Corporate Bonds	U.S. High Yield Bonds	U.S. Leveraged Loans	World Government Bonds hedged	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield
U.S. Cash	1.10	1.10	0.44	1.90	0.09	1.00	1.00	1.00	U.S. Cash	U.S. Intermediate Treasuries	U.S. Long Treasuries	TIPS	U.S. Aggregate Bonds	U.S. Securitized	U.S. Short Duration Government/Credit	U.S. Long Duration Government/Credit	U.S. Inv Grade Corporate Bonds	U.S. Long Corporate Bonds	U.S. High Yield Bonds	U.S. Leveraged Loans	World Government Bonds hedged	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield	
U.S. Intermediate Treasuries	1.50	1.54	2.83	2.70	-0.19	0.22	1.00	1.00	U.S. Intermediate Treasuries	U.S. Long Treasuries	TIPS	U.S. Aggregate Bonds	U.S. Securitized	U.S. Short Duration Government/Credit	U.S. Long Duration Government/Credit	U.S. Inv Grade Corporate Bonds	U.S. Long Corporate Bonds	U.S. High Yield Bonds	U.S. Leveraged Loans	World Government Bonds hedged	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield		
U.S. Long Treasuries	0.40	1.03	11.38	1.60	-0.16	0.07	0.81	1.00	U.S. Long Treasuries	TIPS	U.S. Aggregate Bonds	U.S. Securitized	U.S. Short Duration Government/Credit	U.S. Long Duration Government/Credit	U.S. Inv Grade Corporate Bonds	U.S. Long Corporate Bonds	U.S. High Yield Bonds	U.S. Leveraged Loans	World Government Bonds hedged	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield			
TIPS	1.50	1.64	5.29	2.70	0.09	0.08	0.58	0.55	TIPS	U.S. Aggregate Bonds	U.S. Securitized	U.S. Short Duration Government/Credit	U.S. Long Duration Government/Credit	U.S. Inv Grade Corporate Bonds	U.S. Long Corporate Bonds	U.S. High Yield Bonds	U.S. Leveraged Loans	World Government Bonds hedged	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield				
U.S. Aggregate Bonds	2.10	2.16	3.43	3.10	-0.16	0.10	0.79	0.80	U.S. Aggregate Bonds	U.S. Securitized	U.S. Short Duration Government/Credit	U.S. Long Duration Government/Credit	U.S. Inv Grade Corporate Bonds	U.S. Long Corporate Bonds	U.S. High Yield Bonds	U.S. Leveraged Loans	World Government Bonds hedged	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield					
U.S. Securitized	2.40	2.43	2.37	3.30	-0.11	0.15	0.74	0.68	U.S. Securitized	U.S. Short Duration Government/Credit	U.S. Long Duration Government/Credit	U.S. Inv Grade Corporate Bonds	U.S. Long Corporate Bonds	U.S. High Yield Bonds	U.S. Leveraged Loans	World Government Bonds hedged	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield						
U.S. Short Duration Government/Credit	1.70	1.71	1.50	2.80	-0.18	0.36	0.77	0.48	U.S. Short Duration Government/Credit	U.S. Long Duration Government/Credit	U.S. Inv Grade Corporate Bonds	U.S. Long Corporate Bonds	U.S. High Yield Bonds	U.S. Leveraged Loans	World Government Bonds hedged	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield							
U.S. Long Duration Government/Credit	1.60	2.02	9.24	2.50	-0.17	0.01	0.66	0.87	U.S. Long Duration Government/Credit	U.S. Inv Grade Corporate Bonds	U.S. Long Corporate Bonds	U.S. High Yield Bonds	U.S. Leveraged Loans	World Government Bonds hedged	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield								
U.S. Inv Grade Corporate Bonds	2.50	2.69	6.22	3.40	-0.09	-0.02	0.36	0.46	U.S. Inv Grade Corporate Bonds	U.S. Long Corporate Bonds	U.S. High Yield Bonds	U.S. Leveraged Loans	World Government Bonds hedged	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield									
U.S. Long Corporate Bonds	2.10	2.60	10.21	3.00	-0.15	-0.04	0.35	0.55	U.S. Long Corporate Bonds	U.S. High Yield Bonds	U.S. Leveraged Loans	World Government Bonds hedged	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield										
U.S. High Yield Bonds	4.80	5.13	8.33	5.20	0.11	-0.11	-0.29	-0.25	U.S. High Yield Bonds	U.S. Leveraged Loans	World Government Bonds hedged	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield											
U.S. Leveraged Loans	5.10	5.40	7.91	5.00	0.28	-0.14	-0.52	-0.42	U.S. Leveraged Loans	World Government Bonds hedged	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield												
World Government Bonds hedged	1.40	1.45	3.03	2.10	-0.24	0.11	0.82	0.85	World Government Bonds hedged	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield													
World Government Bonds	1.80	1.99	6.16	2.50	-0.09	0.10	0.64	0.49	World Government Bonds	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield														
World ex-U.S. Government Bonds hedged	1.30	1.35	3.05	1.80	-0.26	0.06	0.65	0.69	World ex-U.S. Government Bonds hedged	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield															
World ex-U.S. Government Bonds	1.80	2.09	7.77	2.40	-0.08	0.07	0.50	0.35	World ex-U.S. Government Bonds	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield																
Emerging Markets Sovereign Debt	5.20	5.57	8.82	5.10	0.05	-0.03	0.12	0.14	Emerging Markets Sovereign Debt	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield																	
Emerging Markets Local Currency Debt	5.20	5.90	12.27	5.90	0.04	0.08	0.06	-0.03	Emerging Markets Local Currency Debt	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield																		
Emerging Markets Corporate Bonds	4.70	5.04	8.52	4.90	0.13	-0.05	0.01	0.03	Emerging Markets Corporate Bonds	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield																			
U.S. Muni 1-15 Yr Blend	1.90	1.95	3.28	2.50	-0.08	0.01	0.40	0.40	U.S. Muni 1-15 Yr Blend	U.S. Muni High Yield																				
U.S. Muni High Yield	4.60	4.88	7.68	4.00	0.34	-0.06	-0.04	0.10	U.S. Muni High Yield																					
U.S. Large Cap	4.10	5.13	14.80	5.60	0.02	-0.07	-0.35	-0.33	U.S. Large Cap																					
U.S. Mid Cap	4.40	5.73	16.93	5.90	0.05	-0.08	-0.37	-0.33	U.S. Mid Cap																					
U.S. Small Cap	4.60	6.33	19.44	6.50	0.02	-0.09	-0.39	-0.37	U.S. Small Cap																					
Euro Area Large Cap	6.60	8.65	21.42	7.70	0.03	0.00	-0.27	-0.30	Euro Area Large Cap																					
Japanese Equity	6.50	7.50	14.76	7.20	-0.01	-0.10	-0.30	-0.24	Japanese Equity																					
Hong Kong Equity	7.60	9.44	20.30	6.30	0.00	0.01	-0.22	-0.22	Hong Kong Equity																					
UK Large Cap	7.50	8.83	17.20	7.60	0.08	-0.03	-0.36	-0.36	UK Large Cap																					
EAFE Equity	6.50	7.80	16.92	7.20	0.04	-0.03	-0.30	-0.31	EAFE Equity																					
Chinese Domestic Equity	7.50	11.43	30.39	10.10	-0.03	0.17	-0.20	-0.19	Chinese Domestic Equity																					
Emerging Markets Equity	7.20	9.19	21.14	9.20	0.06	0.04	-0.25	-0.25	Emerging Markets Equity																					
AC Asia ex-Japan Equity	7.10	9.00	20.62	9.20	0.01	0.03	-0.22	-0.21	AC Asia ex-Japan Equity																					
AC World Equity	5.10	6.25	15.76	6.50	0.03	-0.03	-0.33	-0.33	AC World Equity																					
U.S. Equity Value Factor	6.20	7.42	16.36	7.20	0.00	-0.09	-0.37	-0.36	U.S. Equity Value Factor																					
U.S. Equity Momentum Factor	4.10	5.16	15.03	5.40	0.06	-0.07	-0.35	-0.31	U.S. Equity Momentum Factor																					
U.S. Equity Quality Factor	4.30	5.15	13.48	5.60	0.02	-0.07	-0.33	-0.31	U.S. Equity Quality Factor																					
U.S. Equity Minimum Volatility Factor	4.80	5.47	11.95	5.80	0.00	-0.07	-0.26	-0.20	U.S. Equity Minimum Volatility Factor																					
U.S. Equity Dividend Yield Factor	5.50	6.53	14.90	6.90	0.01	-0.08	-0.30	-0.26	U.S. Equity Dividend Yield Factor																					
U.S. Equity Diversified Factor	5.60	6.48	13.76	6.30	0.04	-0.08	-0.34	-0.30	U.S. Equity Diversified Factor																					
U.S. Convertible Bond	5.00	5.60	11.28	4.60	0.06	-0.09	-0.32	-0.29	U.S. Convertible Bond																					
Global Convertible Bond hedged	4.60	5.06	9.91	4.80	0.02	-0.06	-0.34	-0.30	Global Convertible Bond hedged																					
Global Credit Sensitive Convertible hedged	4.20	4.47	7.52	4.40	0.13	-0.04	-0.17	-0.21	Global Credit Sensitive Convertible hedged																					

Liberty Utilities (Gas New Brunswick) LP Cost of Capital

1 Background

2 This is the evidence of Dave Lavigne, Director Finance and Regulatory of Liberty Utilities (Gas New
3 Brunswick) LP, as represented by its general partner Liberty Utilities (Gas New Brunswick) Corp. (Liberty)
4 and Paul Volpé, Manager, Regulatory Affairs for Liberty.

5 The New Brunswick Energy and Utilities Board (Board) has regulated Liberty (formerly Enbridge Gas
6 New Brunswick (EGNB)) since it commenced operations in New Brunswick in 2000. In its June 23, 2000
7 Decision, the Board approved a cost of debt equal to the borrowing rate of the parent company plus 1%, a
8 return on equity (ROE) of 13% and an equity ratio of 50% which remained in place until 2010, for EGNB.
9 In its November 30, 2010 Decision, the Board confirmed EGNB's cost of debt and approved an ROE of
10 10.9% and adjusted its equity ratio to 45%, which has been in place since that time.

11 In its January 13, 2021 Decision, the Board directed Liberty to file a cost of capital application by March
12 31, 2021 noting that "In Matter 453, the Board ordered Liberty to file an application in 2021 with all
13 necessary documents for the Board to properly evaluate the appropriate capital structure, cost of debt, and
14 ROE applicable to Liberty on an ongoing basis."

15 Along with this evidence from Liberty, Concentric Energy Advisors has also submitted its expert testimony
16 in which it has made recommendations in relation to the cost of debt, ROE and debt equity ratio for Liberty,
17 relying on analytical tools and market data sources commonly used for such purposes by regulators in
18 Canada and the U.S.

19 Liberty's evidence focuses on business risks related to Liberty which were also considered in the 2010
20 Decision and how certain of these risks have changed or evolved since that time. In 2010, the Board
21 considered five risk factors:

- 22 1. Market Risk
- 23 2. Competitive Risk
- 24 3. Supply Risk
- 25 4. Regulatory Risk
- 26 5. Deferral Account Risk

27 Liberty's evidence will focus on Market Risk, Competitive Risk and Supply Risk.

Table 11. Credit metrics compared to equity ratios – Commission calculations – distribution utilities – income tax rate of 27 per cent

Equity ratio (%)	EBIT coverage		FFO coverage		FFO/debt %	
	2016 GCOC decision	2018	2016 GCOC decision	2018	2016 GCOC decision	2018
30	1.9	2.0	3.3	3.4	11.3	11.6
31	2.0	2.0	3.4	3.5	11.6	11.9
32	2.0	2.1	3.4	3.6	11.9	12.2
33	2.1	2.2	3.5	3.6	12.2	12.5
34	2.1	2.2	3.6	3.7	12.5	12.8
35	2.2	2.3	3.6	3.8	12.6	13.2
36	2.2	2.3	3.7	3.8	13.2	13.5
37	2.3	2.4	3.8	3.9	13.5	13.8
38	2.4	2.4	3.8	4.0	13.8	14.2
39	2.4	2.5	3.9	4.1	14.2	14.6
40	2.5	2.6	4.0	4.1	14.6	14.9
41	2.5	2.6	4.1	4.2	14.9	15.3
42	2.6	2.7	4.2	4.3	15.3	15.7
43	2.7	2.8	4.2	4.4	15.8	16.2
44	2.8	2.9	4.3	4.5	16.2	16.6
45	2.8	2.9	4.4	4.6	16.6	17.0