FAIR RETURN FOR NEWFOUNDLAND POWER (NP)

EVIDENCE OF

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BEFORE THE

Board of Commissioners of Public Utilities
for Newfoundland and Labrador

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EXECUTIVE SUMMARY

The fair return standard requires that rates be fair and reasonable. Normally, Canadian boards set both the allowed Return on Equity (ROE) and common equity ratio, since together they determine the forecasted net income earned by the shareholders during the test period, which enters the revenue requirement. Newfoundland Power (NP) currently is allowed an ROE of 8.50%[1] on 45% common equity. The forecasted net income is therefore 3.83% (0.085*.45) of the future average rate base. In contrast, for other Fortis' Canadian regulated utilities the average is 3.51%, where none of these other utilities have an allowed common equity ratio greater than 40%. This applies to both smaller utilities and those with generating capacity and customers with a relatively dispersed franchise. My main recommendation is that if the Board continues to assess NP to be an average risk Canadian utility, then it regulates it as such, and allow only an average common equity ratio.

In terms of the allowed ROE, the Board set this at 8.5% in the 2016 hearing which was subsequently agreed to by settlement in 2018. I recommend a 7.5% allowed ROE as I did in both my 2016 and 2018 evidence. The following is key macro data at the time of these reports:

		Unemployment		Capacity		T Bill	LTC	"A"		Loan		
		Rate	CPI	Utilisation	BEIR	Yield	YIELD	Spread	KSFI	Officers	VIX	TSX
"January 2016		7.2	2.01	79.7	1.37	0.481	2.05	1.94	0.25	5.39	23.71	12822.1
"September 2018		5.8	2.22	84	1.76	1.51	2.42	135	-0.75	-10.94	12.91	16073.1
"August 2021		7.5	3.72	81.7	1.67	0.18	1.82	131	-0.72	-9.93	17.52	20287.8

My overall assessment is that in 2016 we were suffering from the effects of a short technical recession caused by low commodity prices and a slow down in China. This mainly affected Western Canada, but we were close to the low point of the business cycle. In contrast, in 2018 we were at the top of the business cycle. Currently we are rapidly emerging from a serious recession caused by Covid 19. So overall, we are a little ahead of 2016 and behind 2018 but my ROE recommendation is the same at 7.5% in a range 7.0-8.0%. I regard 8.50% as marginally generous, but if the Board allows 8.5% on 40% common equity it is treating NP like other average risk Canadian utilities owned by Fortis.

[1] This is up to 9.0% before the earnings sharing mechanism operates.

I INTRODUCTION

Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

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

On the professional side, in 1982-4 I entered testimony in a series of cases before the Ontario Securities Commission concerning the regulation of investment dealers and the role of the chartered banks. I first entered rate of return testimony before the CRTC in 1986, when the local telcos were still on cost-of-service regulation. With my late colleague Professor Michael Berkowitz, I then entered rate of return testimony until his untimely death in 2004. This included the land-mark cases before the BCUC and NEB that led to the adoption of automatic ROE adjustment mechanisms. I then entered testimony on my own in both rate of return, capital structure and business risk cases. The most interesting being the NEB's 2012 hearing into the TransCanada Mainline, which dealt with the possible stranding of its Northern Ontario Line assets. Recently I was before IRAC in 2019 and the New Brunswick Public Utilities Board this year. As well as being qualified as an expert witness before public utility tribunals, I have also been qualified as a financial expert before the Tax Court of Canada and in variety of civil cases concerning various financial matters ranging from bond ratings to investment banking. With a colleague, Professor Eric Kirzner, I have prepared expert evidence on behalf of the Government

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

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR TESTIMONY?

A. The Consumer Advocate of the Province of Newfoundland and Labrador has asked me to offer an opinion on the fair rate of return on common equity (ROE), and to recommend an appropriate common equity ratio for Newfoundland Power. This is the same brief as in 2016 when I last appeared before the Board and in 2018 when the issues were settled.

40% common equity is *not* my recommendation, it is simply what other Canadian regulators have recently allowed plus the addition of LUNB's requested 1.60% risk premium.[2]

I have provided this background information as context. In the next section I will discuss how the "money market" has evolved since 2010. I will then derive my estimates of a fair ROE for a benchmark utility before discussing EGNB's underlying business risk.

[2] At the requested 50% common equity ratio the ROE would be lower at 7.6 -8.34%, significantly lower than the requested 11.5%.

II FINANCIAL AND ECONOMIC OULOOK

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

A. Because the legal standard for a fair rate of return in Canada stemmed from changed conditions in the money market, where we would now understand the money market to mean the capital market. The Supreme Court of Canada determined a fair rate of return in *BC Electric Railway Co Ltd., vs. the Public Utilities Commission of BC et al* ([1960] S.C.R. 837), where the Supreme Court of Canada had to interpret a statute that provided,

> (a) The Commission shall consider all matters which it deems proper as affecting the rate:
>
> (b) The Commission shall have due regard, among other things, to the protection of the public interest from rates that are excessive as being more than a fair and reasonable charge for services of the nature and quality furnished by the public utility; and to giving to the public utility a fair and reasonable return upon the appraised value of the property of the public utility used, or prudently and reasonably acquired, to enable the public utility to furnish the service:

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

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

inevitably lead to rates that are unfair and unreasonable, otherwise the management of the regulated firm is not fulfilling its fiduciary duties to act in the best interests of its stockholders.[3]

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

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

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

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

Q. HOW HAVE MONEY MARKET CONDITIONS CHANGED?

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

[3] 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.

rates.[4] In practise, the Bank of Canada mainly operates consistent with what is termed the Taylor rule, after Professor John B. Taylor at Stanford University.

The Taylor rule is as follows:

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

where *r* is the Bank's actual policy rate, which in Canada is the *overnight rate* or (*CORRA*) and, in the US, the federal funds rate. The inflation rate is then *i* and *GDP* is the growth rate in real gross domestic product. The superscript stars indicate the Bank's target rates and *a* and *b* are coefficients, which Taylor originally set at 0.50. The Bank of Canada's target rate of inflation has been 2% in a band of 1.0-3.0% for two decades and was renewed with the Government of Canada in the Fall of 2016 as part of a new five-year pact.

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

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

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

[4] 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.

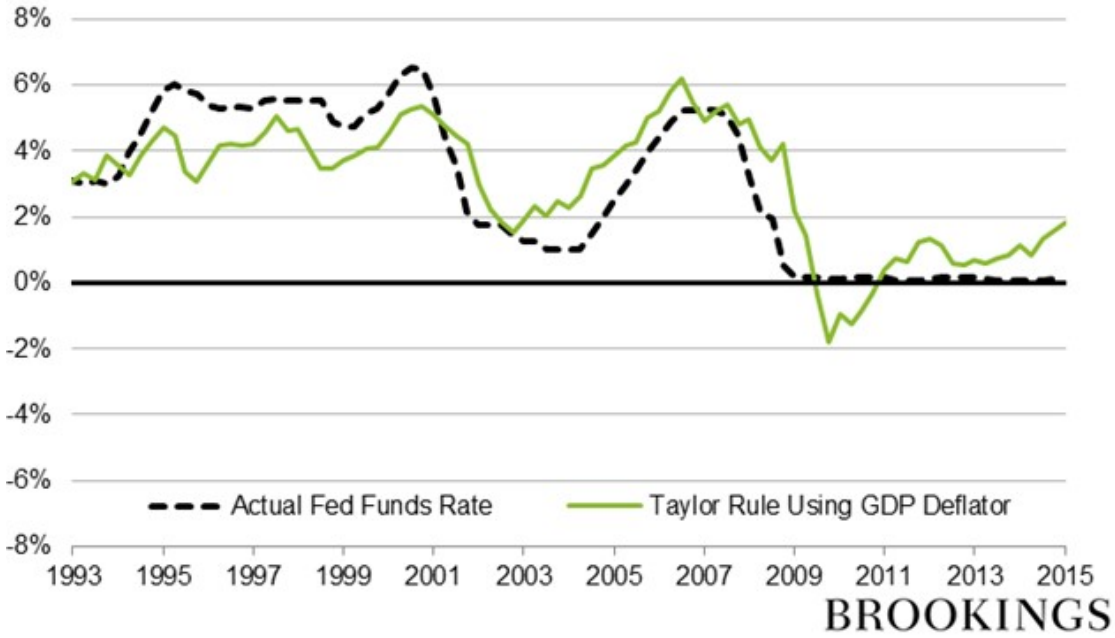
In contrast, suppose the economy was growing at above trend at 4% and inflation was at the top of the Bank's range at 3%. In this case substituting into the Taylor rule we get

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

In this case, with a strong economy and rising inflation, the Bank would set the overnight rate at 4.5%, where the higher interest rate slows down interest sensitive demand and through them the overall economy and inflation. As I will discuss later these values while illustrative are related to where the Bank has been and where it seems to be going.

These two examples show how the Taylor rule works in "mimicking" the decision process of a central bank trying to maintain an inflation target. In a presentation at the Brookings Institute in April 2015 Ben Bernanke, the former chair of the US Federal Reserve, produced the following graph that clearly shows how the actual US target rate (Federal Funds rate) matched the rate produced by the Taylor rule.

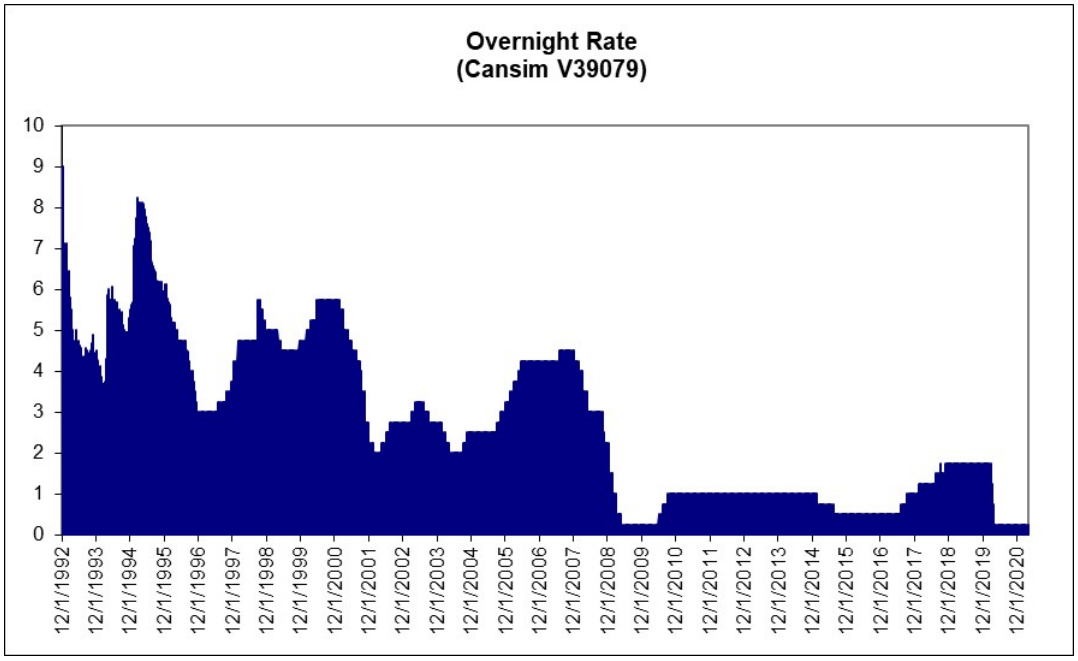
Figure 1: The Original Taylor Rule, 1993-Present



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

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

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



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

reversed due to the impact of the sub-prime mortgage crisis emanating in the United States. The Bank conservatively lowered the overnight rate to 3.0% in May 2008 and it kept it there throughout the summer before being forced to cut the rate dramatically and rapidly to 0.25% in response to the financial crisis triggered by the failure of Lehman Brothers.[5]

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

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

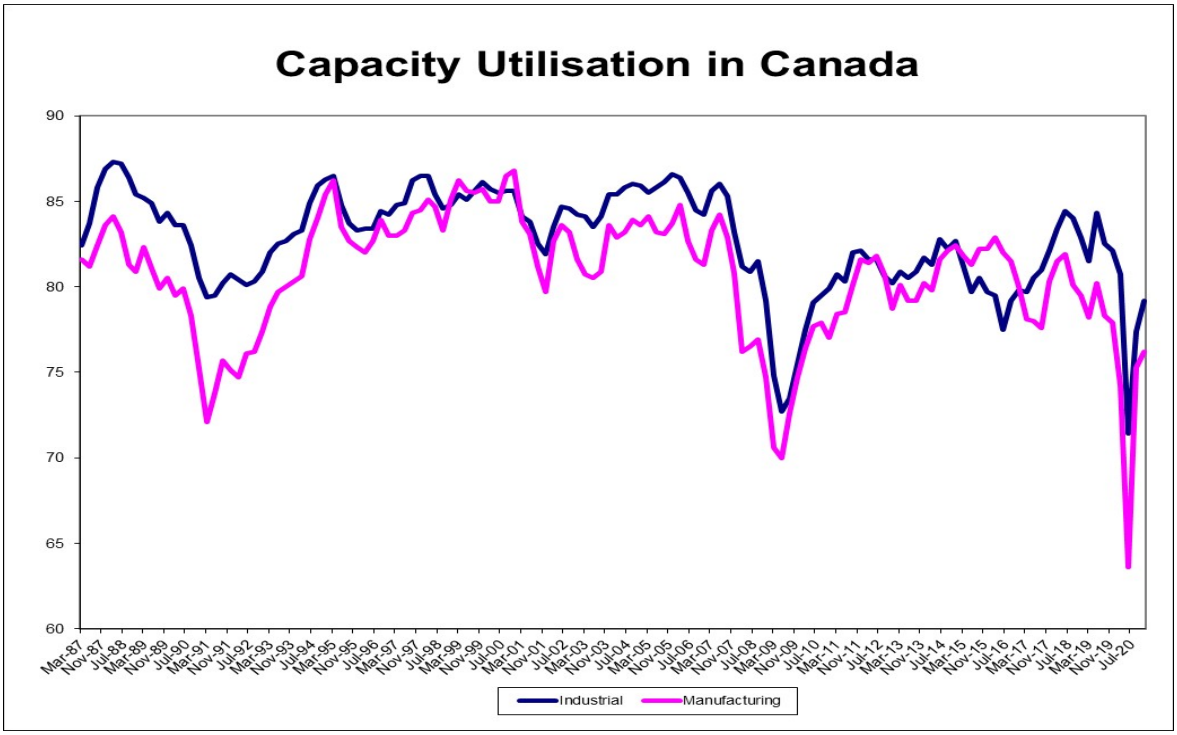
Further, the Bank and the Government of Canada started to worry that at 1.0% the overnight rate would encourage too much personal borrowing and lead to levels of indebtedness that would have negative implications as interest rates returned to normal levels. This fear has persisted and is still very much in the minds of government politicians and the Bank. The conundrum faced by the Bank was that while it wanted to stimulate the economy by maintaining low interest rates, it did not want a US style debt-fuelled housing bubble that might fuel future problems.

Additionally, the Canadian economy is not an island and increasingly the Bank was concerned about the transfer of events from the Eurozone, the UK, Japan, the U.S., and China into Canada as they all followed expansionary monetary policies to offset their obvious problems. We can see

[5] 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.

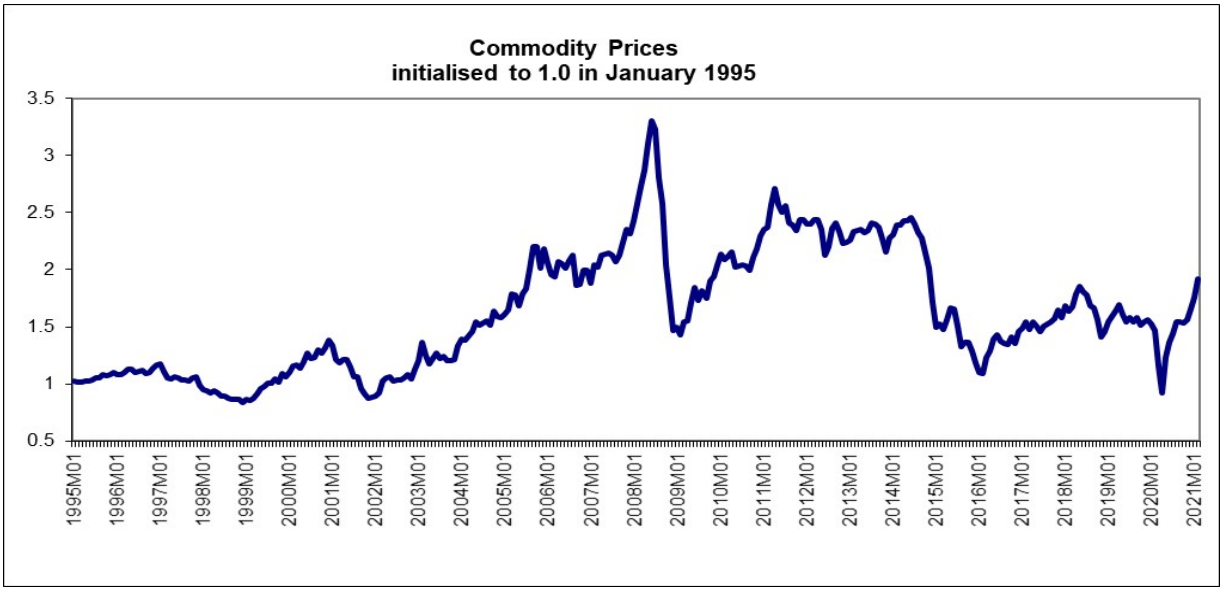
the impact of events outside Canada in the following graph of the capacity utilisation levels in both the Canadian manufacturing and non-farm sectors.

The sharp drop in capacity utilisation during the recession in the early 1990's is evident as well as the slowdown after the financial crisis in 2009-2010. In both cases, there followed a normal rapid recovery out of recession and a movement towards stabilisation. In my 2012 report before the Board, for example, I pointed out that Canada "has now recovered from the recession and is drawing down on the remaining spare capacity." However, unlike earlier periods, Canada stagnated in 2012-2016 at a relatively "low" level of capacity utilisation as the recovery did not continue apace. Instead, Canada was hit with the after-effects of the Euro crisis and particularly the slow recovery of our major trading partner, the United States. Then just as the US recovery started to gather speed, Canada was hit by the slowdown in China during 2015 which caused a dramatic drop in commodity prices.



We can see the strong increase in commodity prices that started in 2002 as China started to industrialise in the following graph of the Bank of Canada's commodity price index. The Great Recession in the United States in 2009 caused these commodity prices to collapse, but they quickly recovered until the sharp sell-off in 2015 on growing fears of a China slowdown. It was

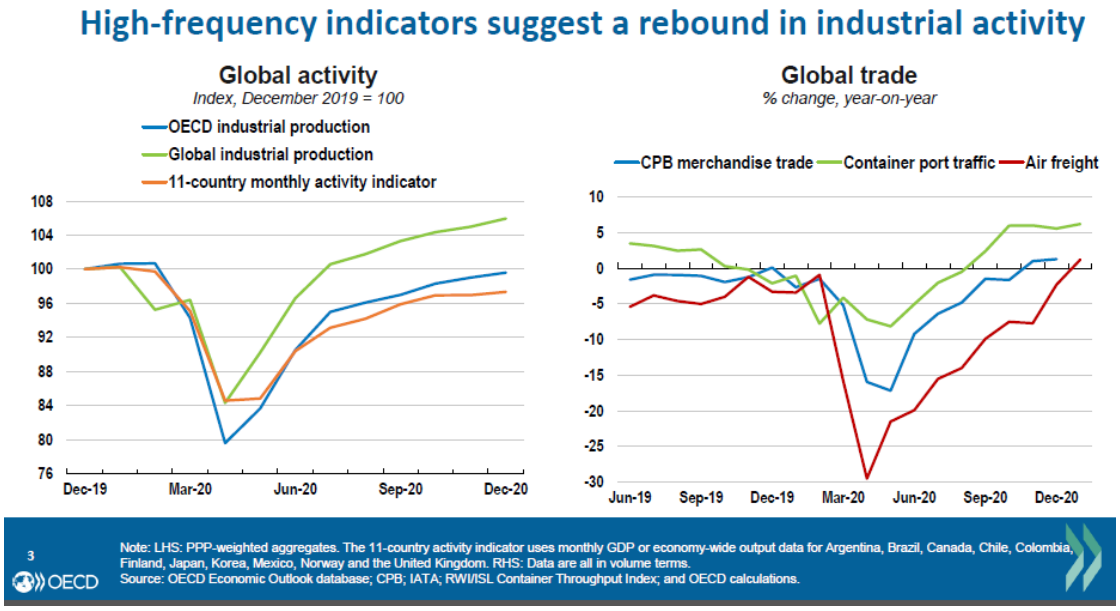
this drop in commodity prices that severely affected Canada's resource sector and triggered a "technical" recession in 2015Q2, which in turn weakened capacity utilization. In reaction, the Bank surprised markets by cutting the overnight rate twice in early 2015 from 1.0% to 0.50%. However, fears of a slowdown in China proved overblown and the election of President Trump in the US increased business confidence, particularly after a significant tax decrease. As the economy strengthened with a moderate recovery in commodity prices and capacity utilization, the Bank increased the overnight rate 5 times to reach 1.75% in October 2018. At the time of my September 2018 report, for example, I stated that "on most objective criteria Canada is reaching the peak of the business cycle." By the end of 2019, the overnight rate was still 1.75%, as capacity utilization was still below "median" levels and weak commodity prices were still hurting Western Canada.



Q. WHAT HAS HAPPENED SINCE 2019?

A. The Covid 19 virus has caused enormous disruption to the global economy and all countries, including Canada. The following is a graphic from the Organisation for Economic Co-operation and Development (OECD). After the severity of the transmission of the virus from China began to be appreciated in February 2020 industrial production collapsed 20% across OECD countries. In Canada industrial production dropped to 63.6% of capacity and manufacturing output to 71.4%. Both of these levels were worse than the depths of the response to the US financial crisis

in 2009 and much quicker. By early Summer the Royal Bank of Canada was forecasting that Q2 GDP would be 15-30% lower than at the end of 2019 as the unemployment rate jumped to 13.7% in May 2020 from the pre-pandemic low of 5.6% in January 2020.

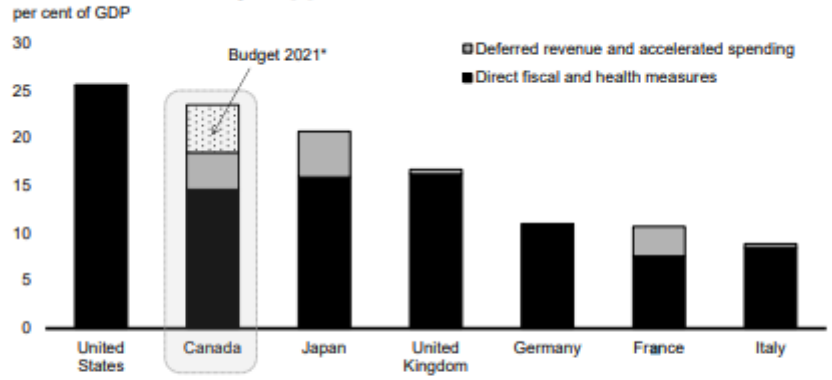


Things looked very gloomy in April/May 2020, but the seeds of recovery were already being sown. In March the Federal Government proposed the Covid-19 Emergency Response Bill with $82 billion in emergency spending and an expansion of the Canada Emergency Response Benefit (CERB) in April. In its 2021 budget the Government of Canada enacted an expansionary fiscal policy going well beyond temporary support to offset the longer-term impact of Covid 19.[6] The cost of this permanent program is expected to see the Government debt in Canada, both Federal and Provincial, rise from the 87% of GDP pre-pandemic to over 115%, a startling increase. The Government's budget book indicates that Canada's fiscal stimulus will rival that of the US and exceed all other major developed nations supporting a return to pre-pandemic levels at the cost of heavier indebtedness long term. In this the government has the support of both the International Monetary Fund and the OECD.

[6] Budget.gc.ca/2021/pdf/budget-2021-2n.pdf

Chart 7

Significant Fiscal Policy Support Announced across G7 Countries



Notes: The timeframe for the announced measures is country-specific. Excludes the proposed *American Jobs Plan* for the U.S. (unveiled March 31, 2021) and Germany's supplementary budget for 2021 and Budget 2022 planned net new borrowing (unveiled March 24, 2021).

* Includes commitments made in Chapter 3 of the 2020 *Fall Economic Statement* and policy actions since, including Budget 2021.

Source: International Monetary Fund, April 2021 *Fiscal Monitor*, includes announced measures as at March 17, 2021; Department of Finance Canada calculations.

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

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

As provinces enacted lockdowns the number of new cases dropped and in December the Pfizer and Moderna vaccines were both approved. However, provinces increasingly applied restrictions on inter provincial travel as well as the Government of Canada restrictions on air travel. Despite rising infection rates, by July 2021 the unemployment rate had dropped to 7.5%. This rate is only marginally higher than the average unemployment rate since January 1987, despite continuing job losses particularly in the tourism and hospitality sectors.[7] In reaction, the Bank at its April

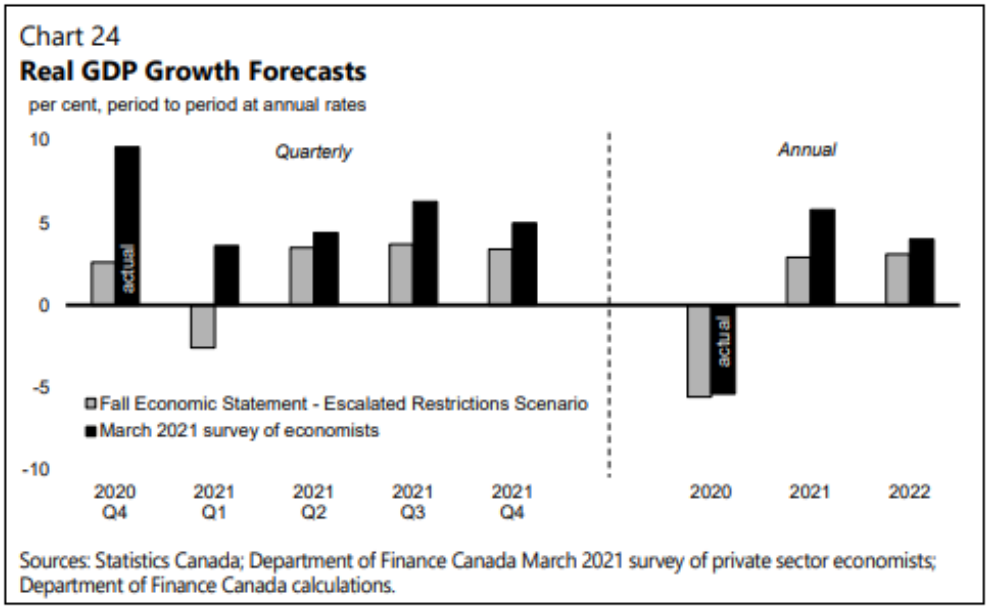
[7] Full time employment is almost back to normal, the brunt of the job losses are for part time workers.

meeting reduced its bond buying program to $3 billion a week and indicated it might increase the overnight rate sooner than previously expected.

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

Q. HOW DOES THIS RELATE TO GDP GROWTH?

A. The Government of Canada's fiscal deficit of 16.1% of GDP in 2020-2021 can only stimulate the economy in the short term.[8] According to the government's survey of private sector economists and its own data in its Budget Brief, GDP declined by 5.4% in 2020 and is forecast to increase by 5.8% in 2021 and a further 4% in 2020. This results in a compound growth rate of 1.35%.[9] After 2020 GDP growth is expected to revert to its trend estimate of 2.0% as effectively Canada will be back to full employment with minimal spare capacity. In this sense the Government's expansionary budget has simply brought forward the recovery at significant financial cost.



[8] It's forecast to "drop" to 6.4%, 2.3%, 1.9, 1.3% and 1.1% over the next five years but it is difficult to see how without significant tax increases.

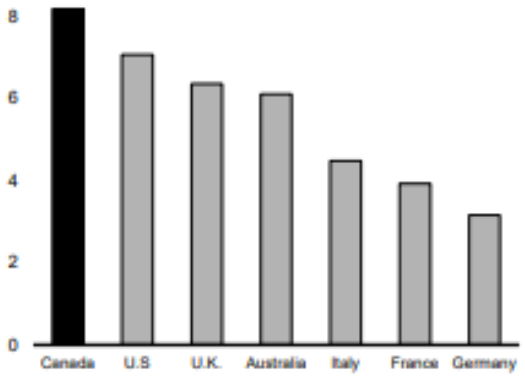
[9] Prior to the budget the forecast growth rates were 4.7% in 2021 and 4.0% in 2022.

Q. WHAT IS YOUR OUTLOOK FOR INFLATION?

A. The Bank of Canada's 2.0% target rate of inflation, within a 1.0%-3.0% band, was renewed with the Government of Canada in the Fall of 2016. During 2020 we now know that there has been significant accumulation of income as savings consistent with what John Maynard Keynes referred to in the Great Depression as the "paradox of thrift." Simply put what is good for the individual may not be good for the economy, which was exemplified during 2020. In the budget brief the Government of Canada indicated that "excess household" saving reached 8% of GDP, the highest of any of the major economies. As this money was taken out of direct spending it caused aggregate demand to drop, and with it, market prices and inflation. During 2020 the consumer price index increased by 0.72%, which is below the 1-3% range agreed to by the Bank and the Government reflecting this drop in aggregate demand.

Chart 22

Accumulation of Excess Household Savings by Country

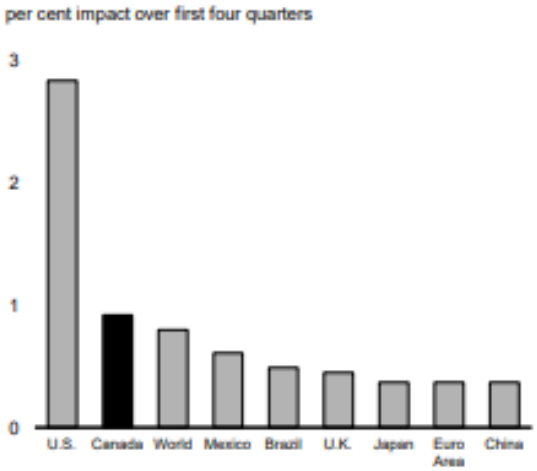


Note: Excess savings over the 2020Q1 to 2020Q4 period relative to a baseline where the 2019 savings rate is held constant.

Sources: Haver Analytics; Department of Finance Canada calculations.

Chart 23

Real GDP Impact of the American Rescue Plan



Note: Based on lower bound estimates from the OECD.

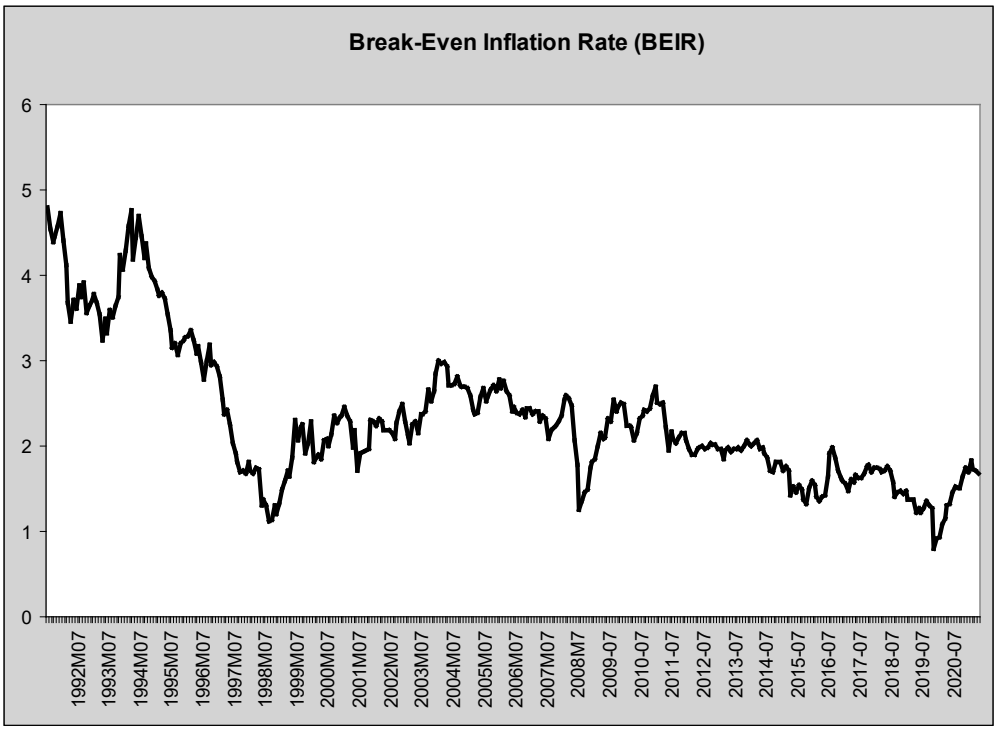
Source: OECD, March 2021 Economic Outlook, Interim Report.

As the economy rights itself in 2021/2022 in the face of government fiscal stimulus some of this excess spending is expected to compound short-term inflationary pressures which was reflected in the July year over year CPI rate of 3.72% However, the government expects this to moderate

to slightly above the mid-point of the Bank's inflation range at 2.2% before settling down to trend.

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

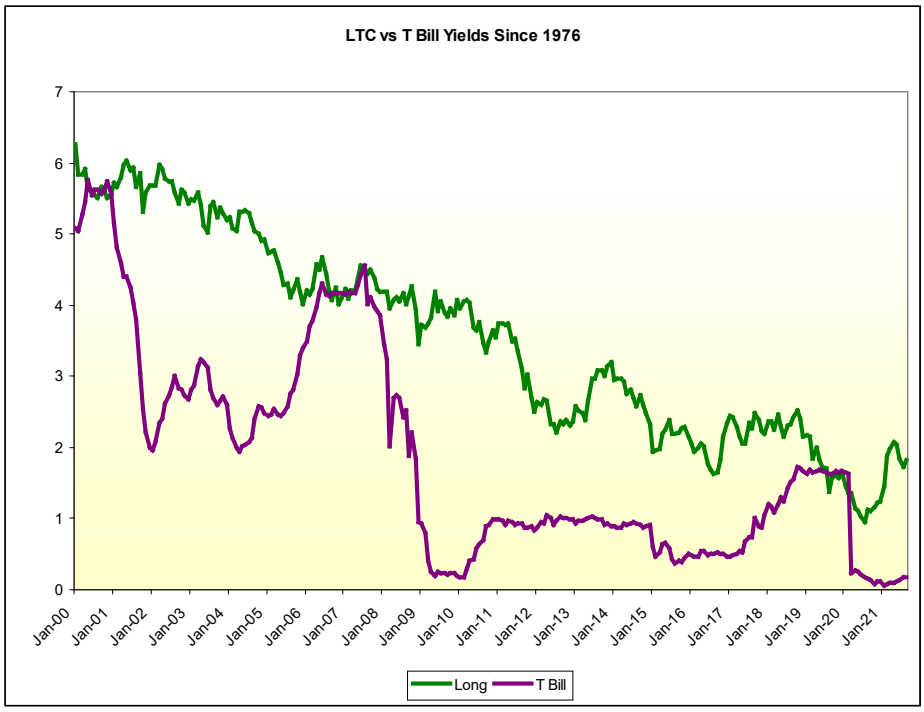
The following graphs the BEIR (as a %) since 1991, where we can clearly see the collapse in inflationary expectations in the late 1990's. Since then, the BEIR has generally been slightly above the Bank of Canada's 2.0% inflation target, but never above the 3.0% upper limit. In contrast, more recently the BEIR has been below 2.0% and dropped to a record low of 0.79% in March 2020. It has recovered since then and has recently been 1.69-1.75% indicating that the market is seeing through the currently high actual CPI inflation rate.



I view the BEIR as confirmatory evidence, consistent with the bank's commitment to keep inflation at an average level of 2.0% in its agreement with the Government. However, every five years there is talk of a change in policy, which may have more substance this year depending on the result of the September federal election.

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

Schedule 2 provides data on the full range of interest rates across the broad maturity spectrum as of May 25, 2021. The interest rate on the 30-year Government of Canada long term bond (LTC) at 2.15% is almost 2.0% higher than the 0.09% yield on 91-day Treasury Bills. This is referred to as a "normal" yield curve as typically LTC yields are higher than short-term T Bill yields. This yield spread of almost 2.0% reflects the actions of the Bank and whether monetary policy is stimulative or not. Normally yields on LTC bonds are not as affected by conventional monetary policy as short-term interest rates, since monetary policy usually works at the "short end" of the yield curve via the overnight rate. As a result, a smaller spread between long term minus treasury bill yields, the "yield spread", normally reflects the actions of the Bank trying to slow down the economy while a larger one is stimulative. The following graph shows the yields on 91-day Treasury Bills and LTC bonds since 2000, where the gap between them is this yield spread.



Note, for example, that T. Bill yields were essentially the same as LTC yields in 2007. This is known as a "flat" yield curve and indicates the fact that the central bank was pushing up short term interest rates to slow down the economy, since inflation was near the top of the Bank's range, particularly in Ontario. The Bank's tightening in 2007 did slow down the economy and we had a short recession in 2009. However, the cause of this was mainly the failure of Lehman Brothers in 2008 and the spill-over effects of the US financial crisis.

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

At the time I referred to this as "Operation Twist" since the objective was to twist the yield curve through "unconventional" monetary policy and flatten the yield spread. QE worked as LTC yields also fell in Canada despite the absence of similar programs by the Bank of Canada. The reason was that foreign purchasers were increasingly attracted to LTC bonds due to Canada's AAA bond rating and relatively high yields. As a result, the yield spread contracted not because of central bank tightening but because the US Federal Reserve operated to lower both short term and long-term interest rates.

In 2017 the U.S. Federal Reserve (June 14, 2017) announced it would reduce its holdings of bonds by allowing another $6 billion to mature each month, a process that came to be called "tapering." Canadian Treasury Bill yields started to increase causing the yield spread to get smaller as markets started to "normalise". At the time of my 2018 testimony 91-day Treasury Bills yields were at 1.50% and the long Canada bond yield 2.35% for a 0.85% yield spread. This was consistent with a strong Canadian economy and the Bank increasing interest rates. At the time RBC was forecasting an 18 month out LTC bond yield of 3.00% (Q4 2019). This continued until December 2019 when the

actions of the Fed caused investors to assume that it was deliberately driving up interest rates to slow down a US economy "firing on all cylinders" and the yield spread went negative.[10]

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

The graph also shows that the LTC yield has been on a long run decline since 2000 when it was over 6.0%. This is a global phenomenon and has generated research at the Bank of England.[11] Their research indicates that the collapse is due to a variety of factors such as: demographics and the baby boom generation moving into lower risk investments as they age (0.9%); increased inequality (0.45%); increased precautionary savings in emerging markets (0.25%); reduced demand for real investment purposes (0.7%); increased spread and lower real growth (1.6%). However, LTC bond yields were still at 4.0% until 2011 when the markets realised that although Canada was recovering, neither the US nor Europe were in good shape, particularly the weaker Euro area members (Portugal, Ireland. Greece and Spain, the PIGS). The result was that what started as conventional monetary policy in the US, UK, Japan, and Europe morphed into these large bond-buying programs known as "quantitative easing" or unconventional monetary policy.

In 2017 the Bank published research by its own internal economists and reduced their judgment on the neutral real interest rate to 1.0% from the 1.5% they last used in September 2014.[12].

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

[11] 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.

[12] J. Dorich et al, "An update on the neutral rate of interest," Bank of Canada Review, Autumn 2017.

The summary from their analysis is like the Bank of England factors; "overlapping generations" for example, is economist talk for demographic effects

Table 1: Summary of real neutral rate estimates for Canada (per cent)

Approach	April 2017	September 2014
Pure interest parity	0.50 to 1.50	1.00 to 2.00
Neoclassical growth model	1.25 to 1.50	1.75 to 2.00
Reduced-form model	0.50 to 1.00	1.00 to 1.50
Overlapping-generations model	1.00 to 1.50	1.50 to 2.00
All approaches	0.50 to 1.50	1.00 to 2.00
Midpoint	1.00	1.50

The importance of the Bank's research is that a "neutral" overnight rate that neither slows down nor stimulates the economy is this 1% plus the Bank's 2% inflation target or 3%. A policy rate above 3:00% indicates deliberate tightening of monetary policy to slow down the economy. The current overnight rate of 0.25% is clearly highly stimualtive.

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

A. The Royal Bank of Canada's latest forecast (August 12, 2021) is below. RBC is forecasting that the current overnight rate of 0.25% will increase to 0.75% by Q4 2022. RBC is forecasting the 30-year LTC bond yield will increase from the current 1.90% in Canada to 2.30% by Q4 2022 so the yield spread will marginally reduce from 1.65% to 1.55%. The US, in contrast, has a current Federal Funds rate of 0.13%, which is expected to increase to only 0.38% by Q4 2022 barely half that expected in Canada. Long term US Treasury yields are currently 2.15% ad are expected to increase to 2.55%. As a result, the US yield spread increases from the current 2.02% to 2.17%.

Interest rate outlook

%, end of period

	Actual						Forecast					
	20Q1	20Q2	20Q3	20Q4	21Q1	21Q2	21Q3	21Q4	22Q1	22Q2	22Q3	22Q4
Canada												
Overnight	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.50	0.75
Three-month	0.21	0.20	0.12	0.06	0.09	0.15	0.20	0.20	0.25	0.30	0.55	0.80
Two-year	0.42	0.29	0.25	0.20	0.23	0.45	0.50	0.60	0.70	0.85	1.05	1.20
Five-year	0.59	0.37	0.36	0.39	0.99	0.98	1.05	1.20	1.35	1.45	1.55	1.65
10-year	0.70	0.53	0.57	0.68	1.56	1.39	1.40	1.70	1.80	1.90	1.95	2.00
30-year	1.31	0.99	1.11	1.21	1.99	1.84	1.90	2.10	2.20	2.25	2.30	2.30
United States												
Fed funds*	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.38
Three-month	0.11	0.16	0.10	0.09	0.03	0.05	0.01	0.05	0.05	0.10	0.25	0.60
Two-year	0.23	0.16	0.13	0.13	0.16	0.25	0.30	0.45	0.60	0.80	1.00	1.20
Five-year	0.37	0.29	0.28	0.36	0.92	0.87	0.95	1.20	1.30	1.45	1.60	1.80
10-year	0.70	0.66	0.69	0.93	1.74	1.45	1.55	1.75	1.85	2.00	2.10	2.20
30-year	1.35	1.41	1.46	1.65	2.41	2.06	2.15	2.30	2.40	2.50	2.55	2.55

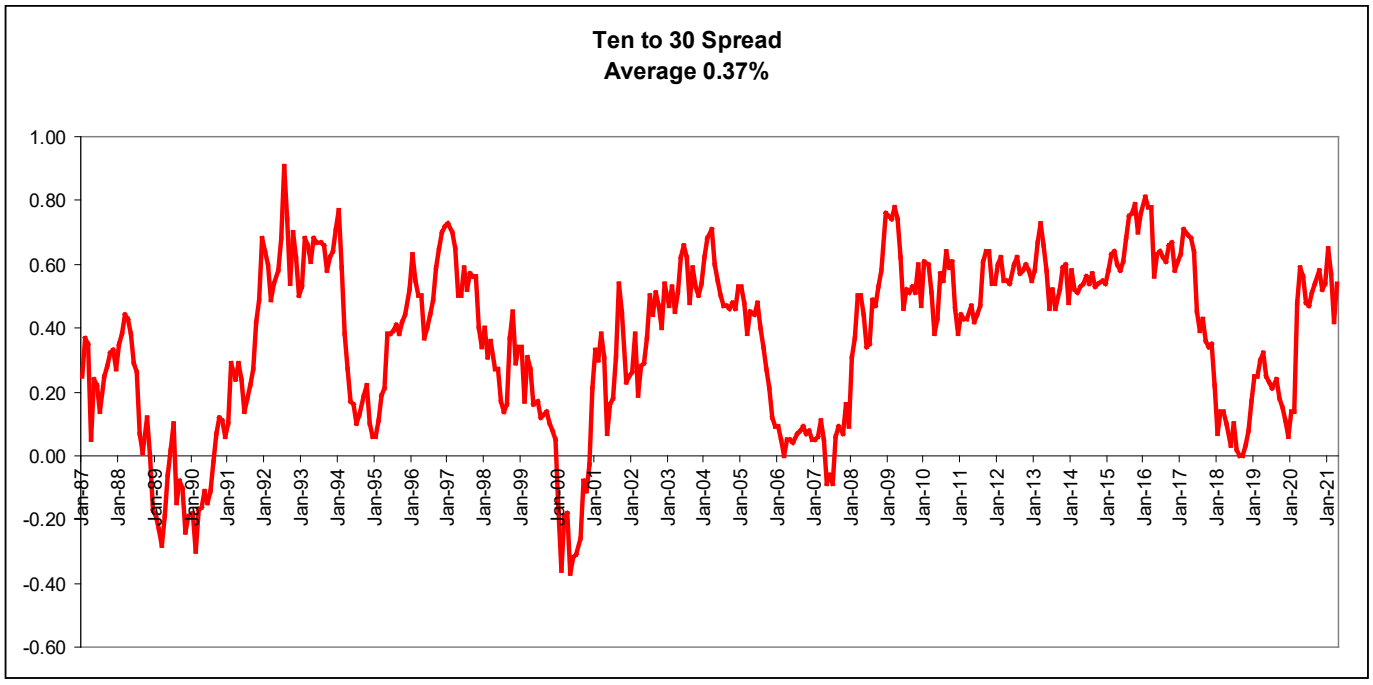
The forecast for both the U.S and Canada indicates some movement toward "normality" at the short end of the yield curve. However, the enormous amount of excess global liquidity is still affecting long term yields and Canada is still seen as a safe harbour. We are a long way from RBC's near-term forecast of 4.55% for the LTC yield in 2011.

For the forecast test years, I doubt that long term interest rates will increase much beyond the RBC forecast but in its 2021 budget briefing the Government of Canada has average private sector forecast data on which it partially bases its budget forecast. This forecast has the ten-year government yield averaging 1.8% in 2022, before increasing to 2.7% by 2025. Of interest is that they also have the 91-day Treasury bill yield averaging 0.20% in 2022 before increasing to 1.6% in 2025 so that the yield spread reverts to an almost normal level as the Bank withdraws its stimulus. What is important to note is that these interest rates are still anomalous. Even at a long Canada bond yield of 2.7% this means 1.26% for a taxable investor or less after tax considering the rate of inflation. That is, taxable investors if they hold the government bond in 2025 are locking in a negative after-tax real return which is inconsistent with most models of rational investment behaviour.[13] This puts the long Canada yields prior to 2025 in perspective.

[13] Only for non-taxable accounts or institutional investors such as pension funds is the real yield positive.

	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$)							
Fall Economic Statement 2020	74.2	76.1	76.6	77.9	78.9	79.2	77.2
Budget 2021	76.6	79.4	79.8	80.8	81.0	81.0	79.4
Unemployment rate[1]							
Fall Economic Statement 2020	9.8	8.2	7.1	6.4	6.1	6.1	7.3
Budget 2021	9.6	8.0	6.5	6.2	6.0	5.9	7.0
Consumer Price Index inflation							
Fall Economic Statement 2020	0.7	1.7	1.9	2.0	2.1	2.1	1.7
Budget 2021	0.7	2.2	2.0	2.1	2.1	2.1	1.9
U.S. real GDP growth							
Fall Economic Statement 2020	-4.3	3.7	3.3	2.6	2.2	2.0	1.6
Budget 2021	-3.5	6.0	4.3	2.2	1.9	1.8	2.1
West Texas Intermediate crude oil price ($US per barrel)							
Fall Economic Statement 2020	39	46	52	54	58	59	51
Budget 2021	39	60	61	60	60	60	57

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



I forecast that the near-term 30-year LTC bond yield is likely to increase moderately from the current level and then by slightly more until the 2025 level of 3.07%. This 3.07% is the private sector forecast of 2.7% at the time of the government's budget briefing plus the average spread to the 30-year bond of 0.37%. It is not appropriate to add the current spread between the 10 and 30-year bond yield since the forecast indicates that this spread will tighten as T. Bill yields increase.

Q. WHAT ARE THE RISKS ATTACHED TO THIS FORECAST?

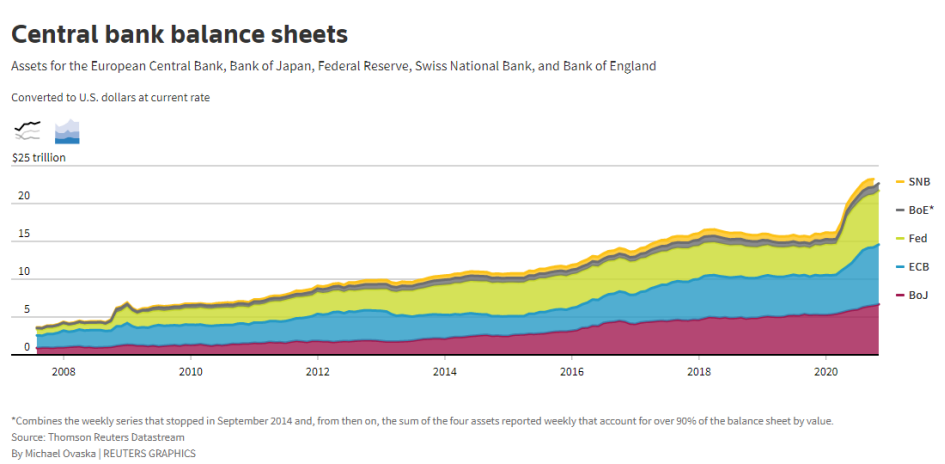
A. The main risk is political, since neither short nor long term interest rates are currently being determined by private sector investors. Instead, and since the financial crisis, they have been determined by the actions of central banks supporting their government's active fiscal policy. The following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

The Federal Reserve's balance sheet has expanded and contracted over time. During the 2007–08 financial crisis and subsequent recession, total assets increased significantly from $870 billion in August 2007 to $4.5 trillion in early 2015. Then, reflecting the FOMC's balance sheet normalization program that took place between October 2017 and August 2019, total assets declined to under $3.8 trillion. Beginning in September 2019, total assets started to increase.

Central bank balance sheets are simple, as they "mainly" issue bank notes to buy Treasury bills and determine their policy rate by buying and selling these bills. Before the U.S financial crisis the Fed's balance sheet was about US$800 billion. This increased 50% during the financial crisis and then again in 2013 with its more aggressive QE purchases of US government bonds. As the Fed started to taper it did not buy new bonds as they came due or paid interest. As a result, the Fed's balance sheet slowly started to shrink, when along came Covid and the need for the Fed to intervene again. Currently the cost of this intervention is about US$4 trillion.

In these actions the Fed, unfortunately, is not alone as the following Reuters graph indicates. From under US$4 trillion the balance sheets of the U.S Fed, the Bank of Japan, The European Central bank, the Bank of England, and the Swiss National Bank have ballooned first to US15 trillion because of the U.S financial crisis, and the knock-on Euro crisis, to their current level of about US$ 24 trillion. The big uncertainty is what happens when investors do not want to hold the current level of deposits at the central banks, and when the central banks start to sell these

bonds. Clearly if the "added" US$20 trillion is sold into the bond market prices will drop dramatically and yields increase.[14]



Q. DOES THS APPLY TO CANADA?

A. Yes. The following comes from the Government's debt management strategy accompanying the budget briefings. In the three years prior to the Covid 19 pandemic, the Federal government's debt was increasing due to expansionary fiscal policy, but not seriously as a percentage of GDP. However, that changed in 2020 where the forecast for the end of fiscal 2020-21 is 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 bonds[1]	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.

[14] 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 of new bond issues.

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

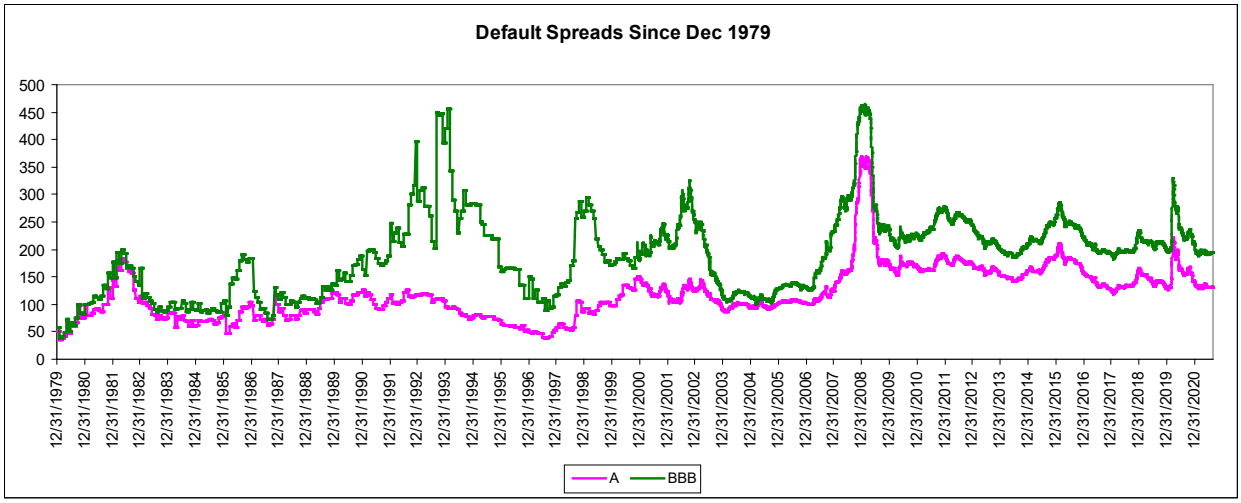
Q. WHAT HAS HAPPENED IN THE CORPORATE FIXED INCOME MARKET?

A. The following graph has the generic credit or default spreads between corporate and government long-term bonds using the AA, A, and BBB indexes maintained originally by Scotia Capital Markets.[15] I refer to these rates, and the spreads derived from them, as "generic" since they are an average of representative bonds in each rating category and are not specific to utilities. Corporate bonds have default risk, since companies can run into financial difficulty, whereas governments borrowing in their own currency like Canada cannot. These yield spreads usually behave in a predictable manner. In a recession as the risk of bankruptcy increases, investors sell off default-risky corporate debt and their liquidity drops. As a result, their bond prices fall and their yields increase, relative to the long Canada bond yield, causing a wider spread. Conversely as the economy recovers and this risk recedes the spread narrows.

We can see the high spreads during the long recession of the early 1990s, the panic of the Asian crisis, the bursting of the Internet Bubble and in particular the financial crisis of 2008-9. We can also see the most recent Covid 19 pandemic crisis, where interest rates peaked March 24, 2020. Usually, the spread increases the most for BBB bonds, which are the riskiest of investment grade bonds.[16]

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

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



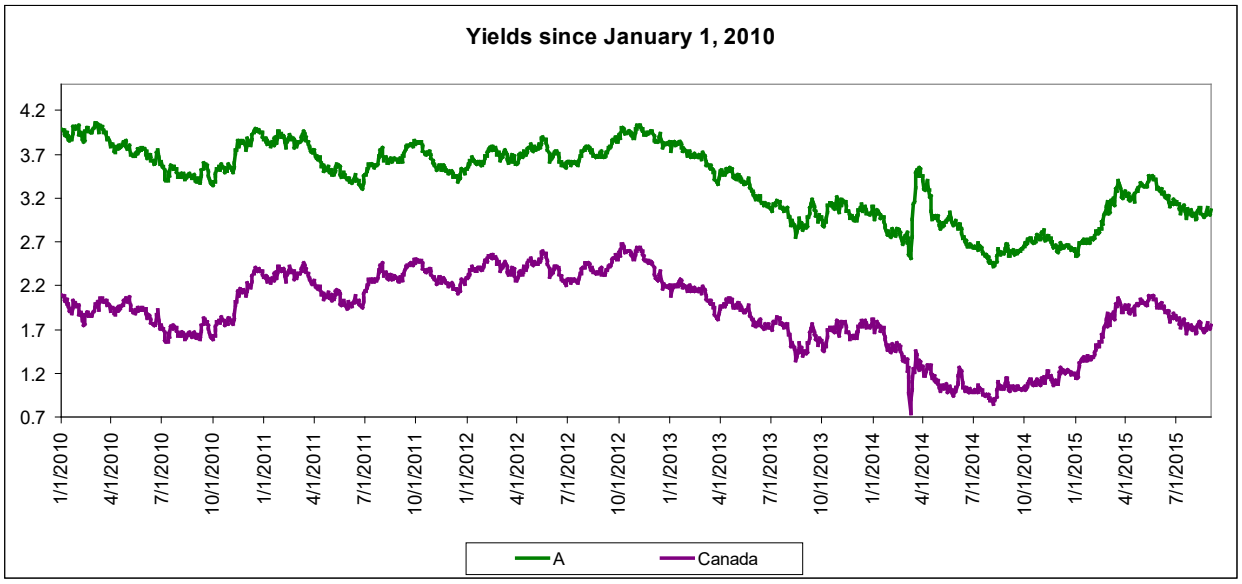
The critical spread for most utilities is the A spread since most Canadian utilities have A ratings. At the time of my September 2018 report these spreads were at 1.35% premium over similar maturity long Canada. Subsequently spreads gradually normalized such that in December 2019 they ended the year at 1.28%.[17] As information about the impact of the Covid 19 virus seeped into the market investors started moving cash from riskier investments into long Canada bonds causing their prices to increase and their yields to fall. The worst of the panic was March 24, 2020 when the A spread reached 2.22%. Since then, spreads have returned to normal as the Bank of Canada has been purchasing both corporate as well as government bonds. As of August 31, 2021 A spreads were at 1.31%, essentially the same as at the time of my 2018 testimony.

However, investors do not borrow spreads; they borrow at an interest rate. The graph below shows the trend in actual borrowing costs since 2010. At the time of my 2018 testimony interest rates on generic A credits averaged 3.78% whereas in August 2021 they have averaged 3.03% a decline of 0.75%.[18] There is no reason why interest rates should all increase or decrease in unison. Many investors, for example sovereign investors, will only invest in AAA rated bonds,

[17] 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.

[18] During September 2018 A bonds had an average yield of 3.79% and LTC's 2.44% for a spread of 1.35%

which partly explains why LTC yields are so low. It is notable, for example, that LTC yields seem to have been more volatile since January 2020 than have A bond yields.



Q. DO THESE GENERAL COMMENTS APPLY TO UTILITIES?

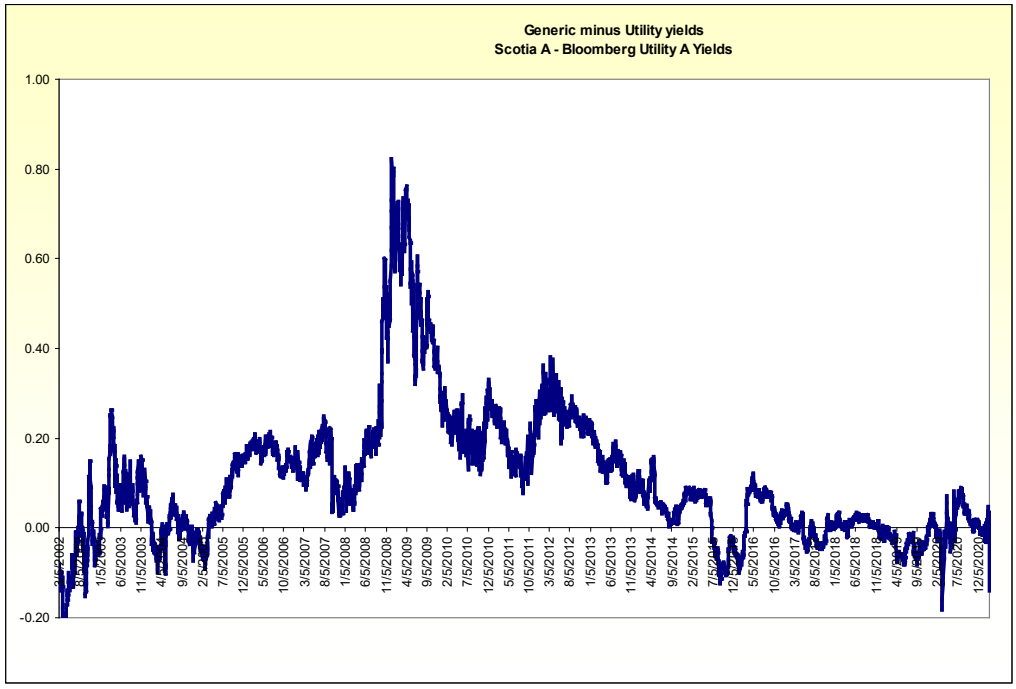
A. Yes. After the financial crisis, I started looking at the yield difference between utility "A" rated bond yields and the generic "A" bond yields provided by Scotia. I had looked at this at least a decade earlier when the Canadian Bond Rating Service (CBRS) provided the data, but with their takeover by S&P, this data was no longer available. However, Bloomberg started to provide synthetic[19] data that served the same purpose. The reason for looking at the difference between these two types of A bonds is that during a recession when firms are more likely to default, the value of regulatory protection serves to emphasise the low-risk nature of Canadian utility debt. As a result, the spread between generic "A" bond yields and utility "A" bond yields widens, which is an indicator of stress in the financial system as well as being relevant to utility financing.

The graph below shows this spread since 2002 when the Bloomberg series (C29530) begins. This series has been used by regulators in setting the allowed ROE, such as the OEB in their

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

ROE adjustment formula. Note that during the financial crisis the spread dramatically increased to 0.80% indicating that utility "A" rated bonds were selling on yields much lower than generic "A" rated bonds. Given that a "notch" or modifier such as a + or a – generally means a yield difference of 0.15%-0.25% this difference indicates that utility bonds were being valued as if they were a rating category better than generic "A" rated bonds. This is essentially the value of regulatory protection, that is, when a crisis occurs and investors rush for safety that safety is not just government bonds, but often also utility bonds.

Typically, generic bonds have a slightly higher yield than utility bonds, but this depends on the actual bonds in the index. I would not read too much into relatively small differences, particularly as the nature of Canadian utilities has changed due to merger and acquisition (M&A) activity. At the time of my last report in September 2018 the spread was an insignificant 0.016% indicating that utility A bonds were regarded as equivalent to generic A bonds. This assessment has continued into the latest data even during the worst of the Covid 19 pandemic.

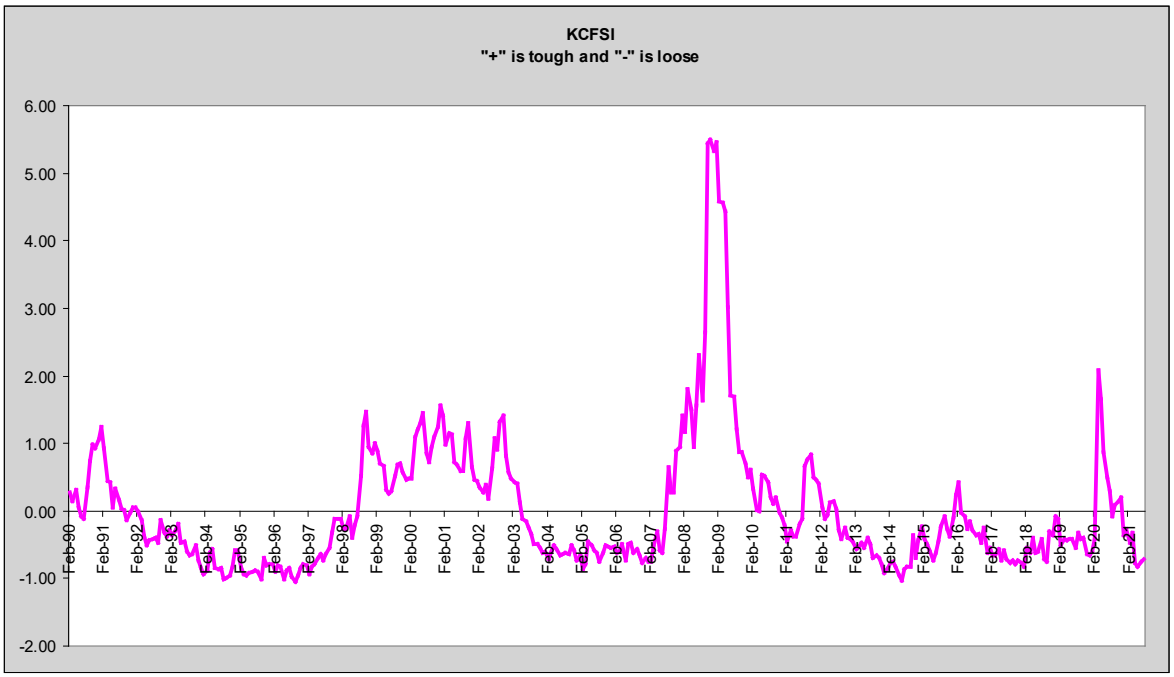


Q. WHAT HAS BEEN THE GENERAL STATE OF CAPITAL MARKETS?

A. As indicated above the bond market has been heavily influenced by the actions of central banks and the rush to safety due to the pandemic, stock market correction and volatility in 2020.

It is useful therefore to look at broader measures of the state of the financial system. In the US, the Federal Reserve Bank of Kansas City has developed the Kansas City "Financial Stress" Index (KCFSI) which is graphed below. This index is designed to capture a variety of financial indicators in addition to the spreads in the money and bond markets. The additional indicators include the stock market volatility index, the state of bank share prices, and the behaviour of stock and bond returns.

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



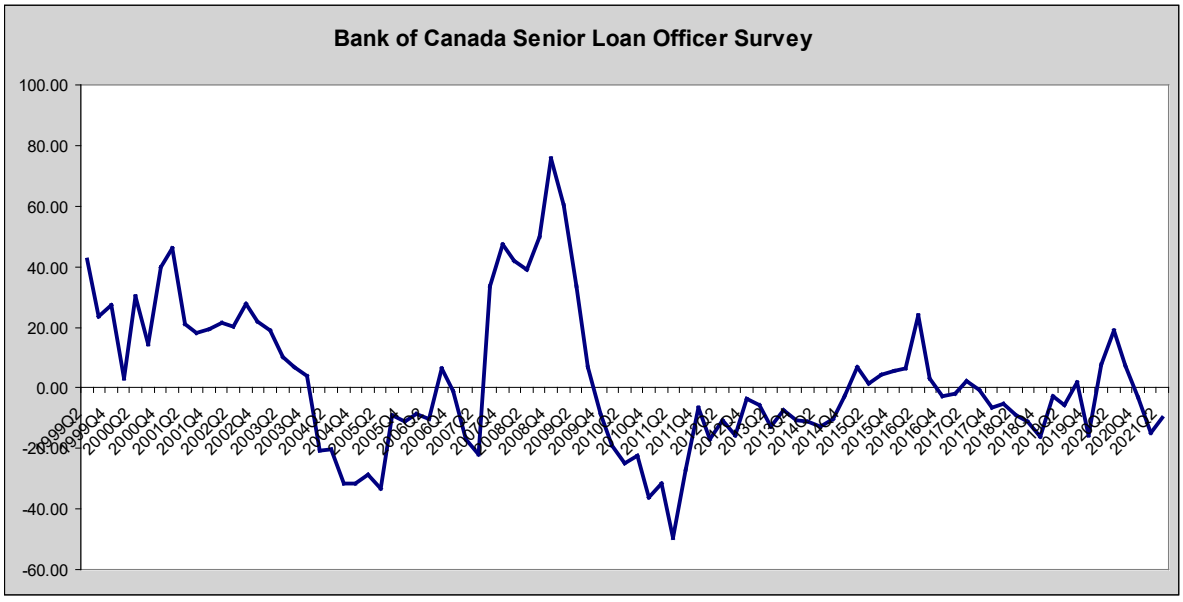
The value of the KCFSI is simply that it captures in one number the impact of a variety of capital market indicators.[20] The major insight of the KCFSI is that it emphasises the enormous pressure in the US financial system during the financial crisis in 2008/9. Unlike the internet bubble and crash in 2001 which also increased "stress", the 2008/9 crisis struck at the very core of the US financial system, which is the banking system. Here liquidity or the ability to trade securities at

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

close to their true market value, dried up in many parts of the capital market and the US government had to intervene on a massive scale.[21] Since the financial crisis, financial market conditions have been relatively easy, except for the impact of the pandemic in 2020. However, the tough market conditions of March and April 2020 quickly subsided due to the intervention by both fiscal and monetary policy to calm markets.

Currently, financial market conditions are again loose as central banks have committed to keep their policy rates low to support the recovery. In many ways the situation is like that of September 2018 as the value of the KCFSI is almost the same.

The work by the Kansas City Fed follows pioneering work done by researchers at the Bank of Canada. However, the Bank now prefers to rely on alternative measures, where I regard one of the most important is the Bank's survey of senior lending officers. The following graph shows the results from the Bank's latest survey (2021Q2) that reflects both the pricing and the availability of credit where the lower the value the easier the credit market.

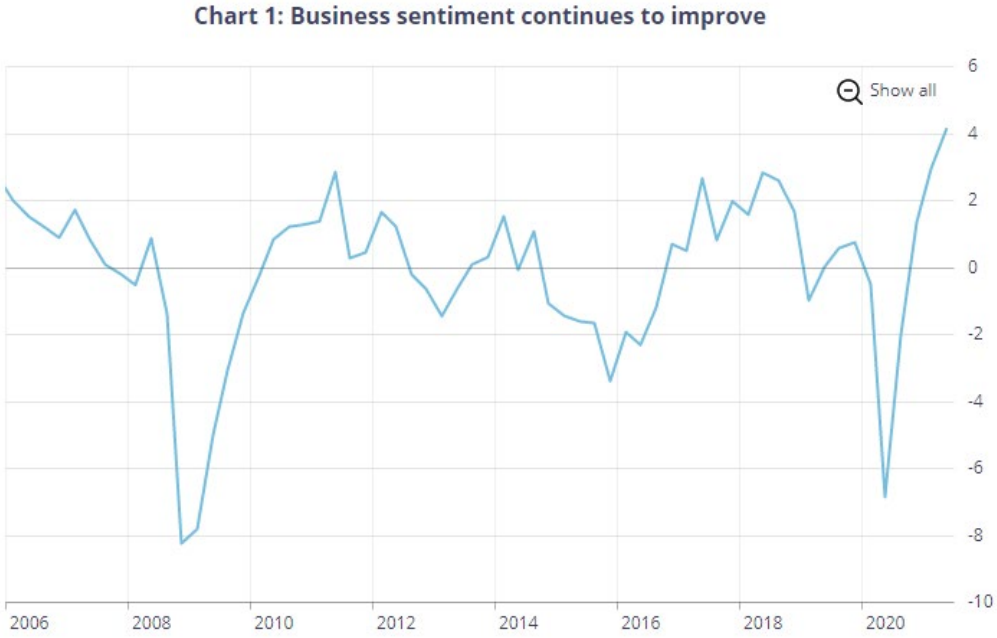


We can clearly see the tightening of credit market conditions during the financial crisis, followed by loosening thereafter and a gradual return to normality before the pandemic hit. Further, and

[21] Including bailing out the biggest bank in the US at the time, Citibank, and the biggest insurer AIG.

like the KCFSI, it also shows a minor deterioration in credit market conditions in 2020, where the survey respondents reported the tightest credit market conditions since the financial crisis and conditions like 2016. However, this soon passed and currently we continue to be in easier credit markets and marginally better than in 2018 at the time of my last report.

The Senior loan officer's survey results mirror that of non-financial executives. In their 2021Q2 business outlook survey senior executives continued to reflect positive business sentiment. The following indicator from the Bank survey shows elevated business sentiment where the higher the number the more optimistic is sentiment. Currently sentiment is more optimistic than at any time since the Bank started reporting the survey results in 2006. It is more optimistic than in 2018Q3 at the time of my past report.



Q. WHAT ARE YOUR CONCLUSIONS ABOUT CONDITIONS IN THE "MONEY MARKET"?

A. The results of the Bank's surveys, credit spreads and the KCSFI show that overall business sentiment is very strong and credit cheaply available. However, these are slightly backward looking indicators, whereas the stock market is a forward looking indicator. The following graph shows the performance of the TSX and the volatility index (VIX) since 1956 from the Bank's Financial System Review (May 17, 2021). The Covid 19 shock is again clearly visible, where the volatility index reached

80 and the stock market swooned, where the S&P500 was at one point was down 35%. However, like the other aggregate indicators, the VIX has retreated to more typical levels and the stock market is now trading at record levels.

Chart 1: Equity prices are close to record highs, while volatility has decreased considerably since the start of the pandemic

Note: The VIX is a volatility index derived from options on the S&P 500 index.
Sources: Cboe Options Exchange, S&P Global, Bloomberg Finance L.P. and Bank of Canada calculations
Last observation: May 12, 2021

Since the last observation in the Financial System Review on May 12, 2021, the S&P500 has increased to reach 4,522 on August 31, 2021, while the VIX has decreased further to 16.19.

Overall, stock markets tend to be forward looking and what we are seeing is optimism in all sectors. The equity market is booming, credit spreads are narrowing, lending officers eager to lend, and businessmen optimistic. This is clearly the result of prompt action by governments and central banks in the wake of the pandemic that have effectively placed a floor under potential losses. The only qualification is the extremely low level of government interest rates that this action has perpetuated. For several years commentators have been expecting interest rates to rise to normal levels, but when the Fed revealed their normal levels back in December 2019 it triggered a stock market correction. Since then, central banks have been wary about removing

the stimulus offered by exceptionally low interest rates, particularly due to their impact on highly indebted borrowers both private and public.[22] Essentially, central banks have backed themselves into a corner of perpetuating exceptionally low interest rates knowing full well that this is unstainable in the long run.

Q. HOW WOULD YOU COMPARE CONDITIONS NOW VERSUS YOUR 2016 AND 2018 REPORTS?

A. I would say that in many respects they are very similar. The following table highlights the main statistical comparisons.[23] For the real economy the unemployment rate is higher than in either 2016 or 2018 but capacity utilisation was slightly lower in 2016 reflecting the technical recession from lower commodity prices at that time and the slowdown in China. Inflation is currently higher due to the temporary factors in recovering from Covid 19 but the BEIR for all years was lower than the Bank of Canada's 2% target, particularly in 2016. In the financial markets both T-Bill and long Canada bond yields are significantly lower in 2021 than in 2018 but less so for 2016. However, for credit market conditions the A spread, KSFI and loan officers survey all show much better credit conditions than in 2016 but are very similar to 2018. For the equity markets, volatility in 2021 is in between the elevated levels in 2016 and the very low levels in 2018, while the TSX marches on from 12,822 in January 2016 to 16,073.1 in September 2018 and 20,287.8 at the end of July in 2021.

		Unemployment		Capacity		T Bill	LTC	"A"		Loan		
		Rate	CPI	Utilisation	BEIR	Yield	YIELD	Spread	KSFI	Officers	VIX	TSX
"January 2016		7.2	2.01	79.7	1.37	0.481	2.05	1.94	0.25	5.39	23.71	12822.1
"September 2018		5.8	2.22	84	1.76	1.51	2.42	135	-0.75	-10.94	12.91	16073.1
"August 2021		7.5	3.72	81.7	1.67	0.18	1.82	131	-0.72	-9.93	17.52	20287.8

My overall assessment is that in 2016 we were suffering from the effects of the short technical recession caused by low commodity prices and the China slow down. This mainly affected Western Canada, but we were close to the low point of the business cycle. In contrast, in 2018

[22] 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.

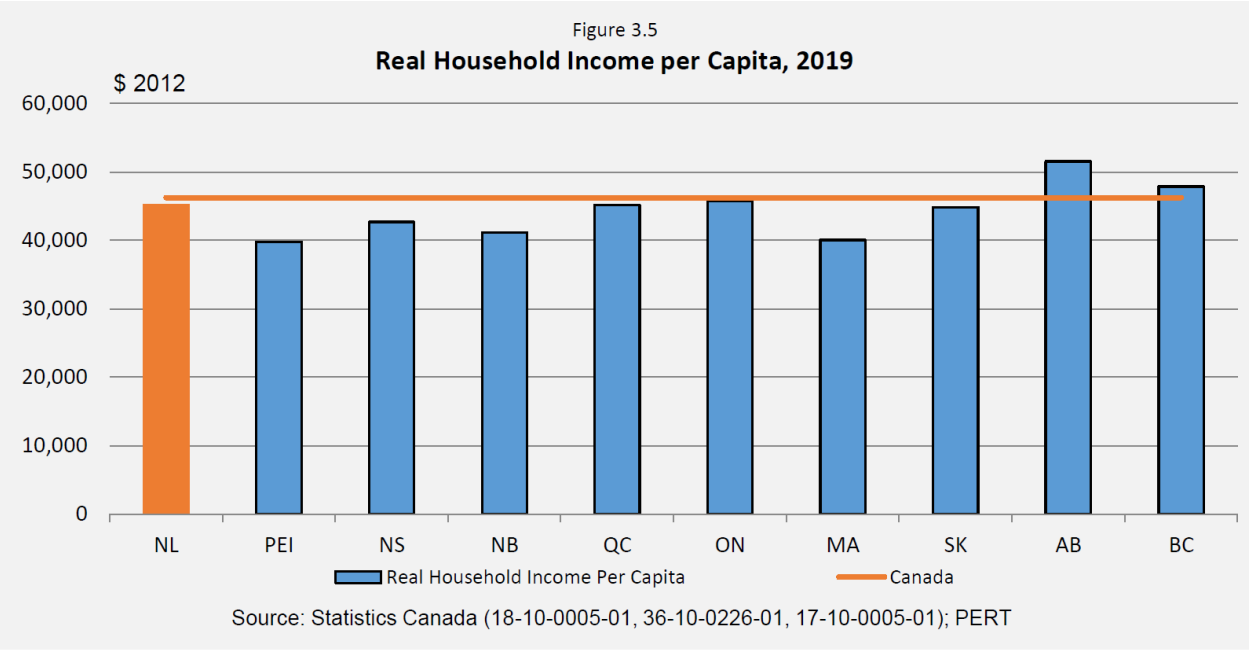
[23] The data is for the immediate periods prior to the dates on my reports.

we were at the top of the business cycle. Currently we are rapidly emerging from a serious recession caused by Covid 19. So overall, we are a little ahead of 2016 and behind 2018.

Q. THESE COMMENTS ARE FOR CANADA IS THERE ANYTHING DIFFERENT ABOUT NEWFOUNDLAND AND LABRADOR?

A. Almost all capital market data is relevant for Canada as a whole, but there are often important differences in regional economic performance. This is as true of Newfoundland and Labrador as it is for any province. In this respect the best source for an assessment of current conditions in the province is the exhaustive analysis in The Big Reset, the Report of the Premier's Recovery Team released in May 2021. Three graphs from the report are particularly important. The first is the income per capita below

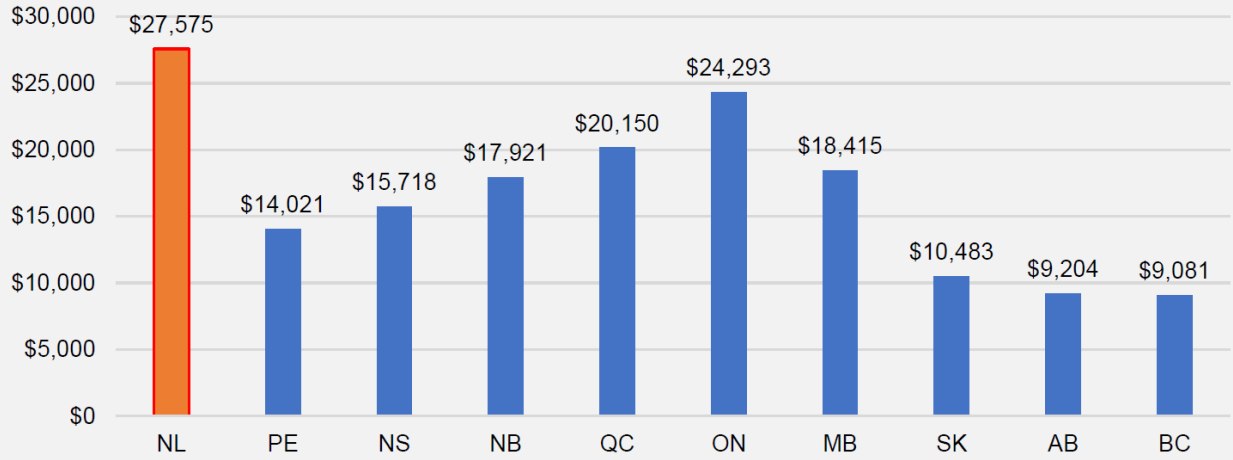
Figure 3.5



This indicates that Newfoundland and Labrador is not a poor province. In fact, it has the third highest income per capita in Canada, marginally ahead of Ontario. The problem is the provincial debt (graph below), where the province has the highest debt per capita in Canada and exceeds even Ontario and Quebec, which traditionally have had the highest debt.

Figure 4.2

Net Debt per capita by Province 2019-20

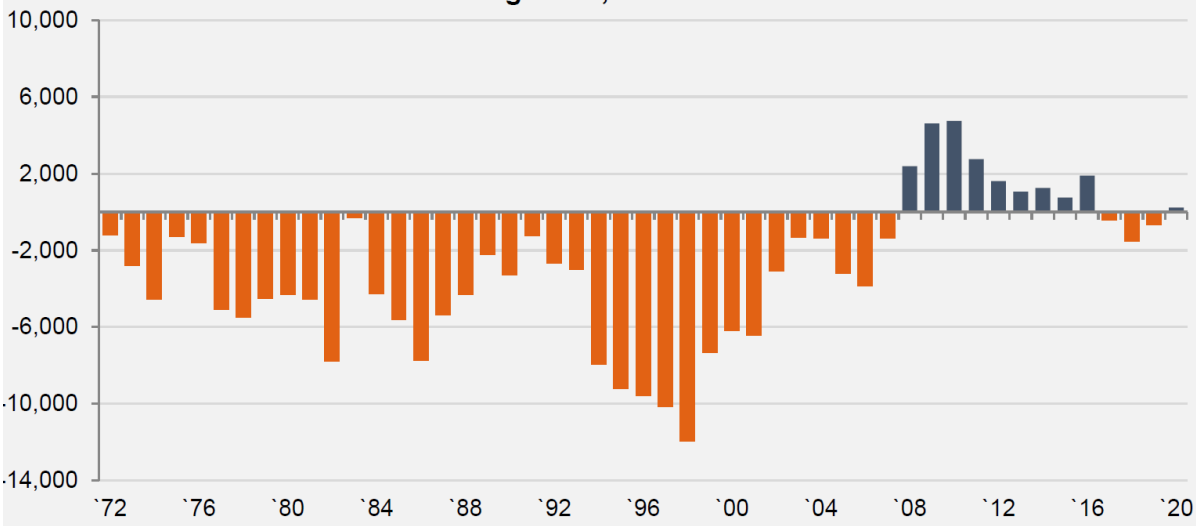


Source: Deparment of Finance

Whether debt is important or not for a government depends on what it was incurred to pay for and whether the entity is growing or declining. In the case of Ontario it is the largest net recipient of immigration such that the debt will be repaid from a growing number of tax payers. The problem with Newfoundland is the outmigration below where apart from the period from 2008 to 2016 there has been a net outward migration.

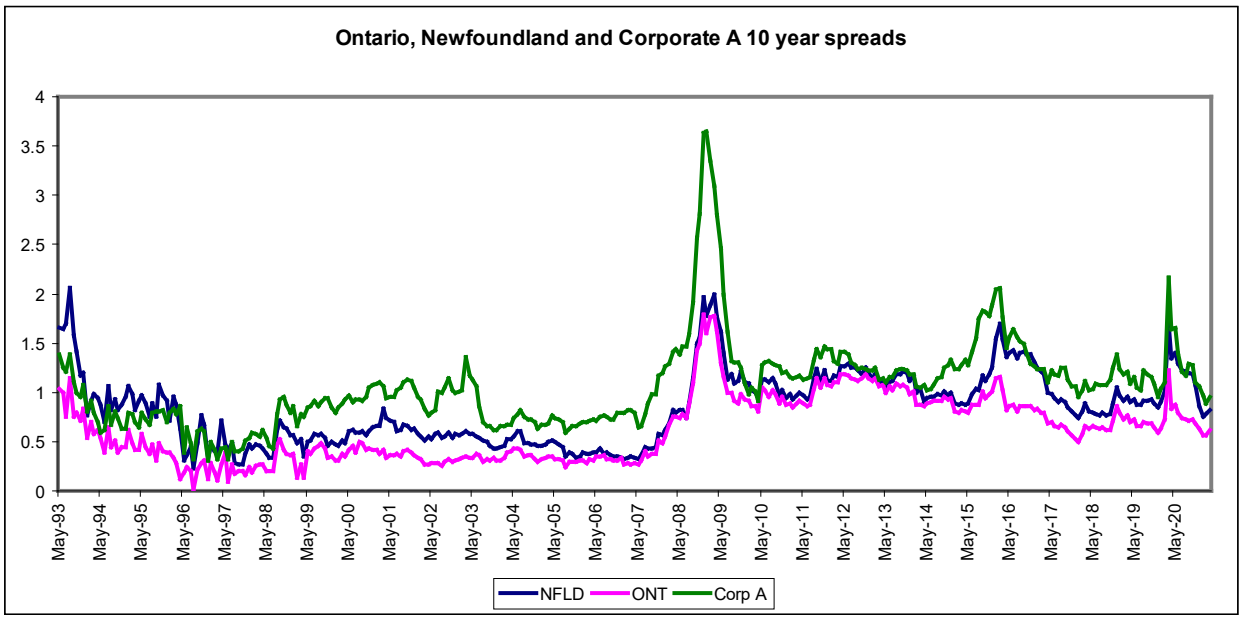
Figure 3.9

Net Migration, 1972 to 2020



Source: Statistics Canada (17-10-0008-01)

A declining tax base for a highly indebted province is a concern that the markets have noticed. I was asked to talk at a September 15, 2021 conference at Memorial University on the econonomic and fiscal trajectory of the Province. The most important slide I produced is the following



The slide has the A spread over long Canadas that I produced earlier plus two provincial spreads: that for Ontario and Newfoundland. Newfoundland may have more debt per capita than Ontario but Ontario has 25X more people so it has the largest stock of provincial debt in the capital market and is easy to trade since it is liquid. Newfoundland's debt traded on a higher spread than Ontario's until 2007 when oil prices and production peaked. At that time and for the next 7 years Ontario and Newfoundland debt traded on the same spread over long Canada bonds. This was also the period when net migraiton into the province was positive. As economic growth slowed in the province in 2015 spreads widened again and the province's debt sold on higher spreads than Ontario's. For the last two years the province's debt has sold as a generic A similar to the mid 1990's.[24]

[24] On page 34 of the Report, Premier Ball is reported to have written to the Prime Minister on March 20, 2021 that the Province's borrowing program was unsuccessful. However, this was when A spreads were almost at their peak at 2.18% and the bond market was shut for many issuers.

There is no question that the province's fiscal positon is not as strong as in 2016 or even 2018, as it seems to have reverted to pre 2007. Whether this affects the risk of Newfoundland Power, however, is questionable.

III BUSINESS RISK

Q. HOW DO YOU ASSESS BUSINESS RISK?

A. Business risk is important since it is the primary driver of any company's overall risk, that is, *financial risk*, and how much debt a firm uses, is layered on top of its *business risk*. So, setting a firm's common equity ratio and determining its fair ROE starts with an analysis of its business risk. The National Energy Board (now Canada's Energy Regulator) recognised this when it stated in RH-2-94 (Decision page 24)

> *"The Board is of the view that the determination of a pipeline's capital structure starts with an analysis of its business risk. This approach takes root in financial theory and has been supported by the expert witnesses in this hearing. Other factors such as financing requirements, the pipeline's size and its ability to access various financial markets are also given some weight in order to portray, as accurately as possible, a complete picture of the risks facing a pipeline"*

I agree with this assessment, since it follows from the impact of financial leverage, that is, the effect of the firm adding debt to its capital structure. As the firm reduces the amount of equity financing and replaces it with debt or preferred shares, two effects are at work: first the earnings to the common shareholder are reduced as interest and preferred dividends are deducted and, second the reduced earnings are spread over a smaller investment. The result of these two effects is called financial leverage. The basic equation is as follows:

$$ROE = ROI + [ROI - R_d(1-T)]\frac{D}{S}$$

where D, and S are the book values of debt and equity respectively, T is the corporate tax rate, R_d is the embedded debt cost. ROE is then the return on equity and determined by the return on investment (ROI) and how the firm is financed.

The ROI measures the underlying business risk of the firm and the leverage equation shows how that risk directly affects the ROE depending on the amount of debt financing. If risk is measured by the standard deviation of the return, we can see directly that

$$STDEV(ROE) = STDEV(ROI) * (1 + \frac{D}{S})$$

So that the risk to the equity holder is the operating or business risk (*ROI*) multiplied by one plus the debt -equity ratio. In other words, financial risk is layered on top of business risk.

For utilities the underlying business risk is extremely low to start with, since they are natural monopolies which, by definition, means they have market power. Without regulation they would abuse this market power and as the BC Electric statute stated, "The Commission shall have due regard, among other things, to the protection of the public interest from rates that are excessive." That is, the basic assumption is that without regulation the utility will abuse its market power to the detriment of the public interest. However, this does not mean that they do not face risk as that depends on how particular statutes are interpreted. In Canada regulation goes further to shield regulated utilities from most risks using deferral accounts (variance or balancing accounts) even though economic theory or even most statutes do not require it. As a result, the third component of risk for utilities is regulatory protection, sometimes erroneously called regulatory risk, since this affects how much of the underlying risk flows through to the utilities shareholders.[25]

All businesses face short run and long run risks. The major short run risks are due to cost and revenue uncertainty. For utilities:

- On the cost side since they are capital intensive most of their costs are fixed as a result there is very little uncertainty attached to them. The major risks are in *operations and maintenance* expenditures. However, forward test year regulation means that the utility can manage this risk by over-estimating expenses or deferring other expenses should they occur. If the expenses are unexpectedly large, then it can approach the Board and ask for a deferral account to ensure these costs are passed on to customers.

- On the revenue side the risks largely stem from rate design, critical features are:

    - Who is the customer and whether there is any material *credit risk,* as sometimes exists for pipelines facing a limited set of shippers. In contrast, electricity transmission operators in Canada often recover their revenue requirement in fixed monthly payments from the system's operator and local distribution companies. As a result, they usually have less exposure than local gas and electricity distributors who might recover part of their revenue

[25] In Canada, since I first filed testimony in 1986, I have not seen an example where a Canadian regulator increased risk to the utility, whereas this has been the case in the United states where several utilities have gone bankrupt.

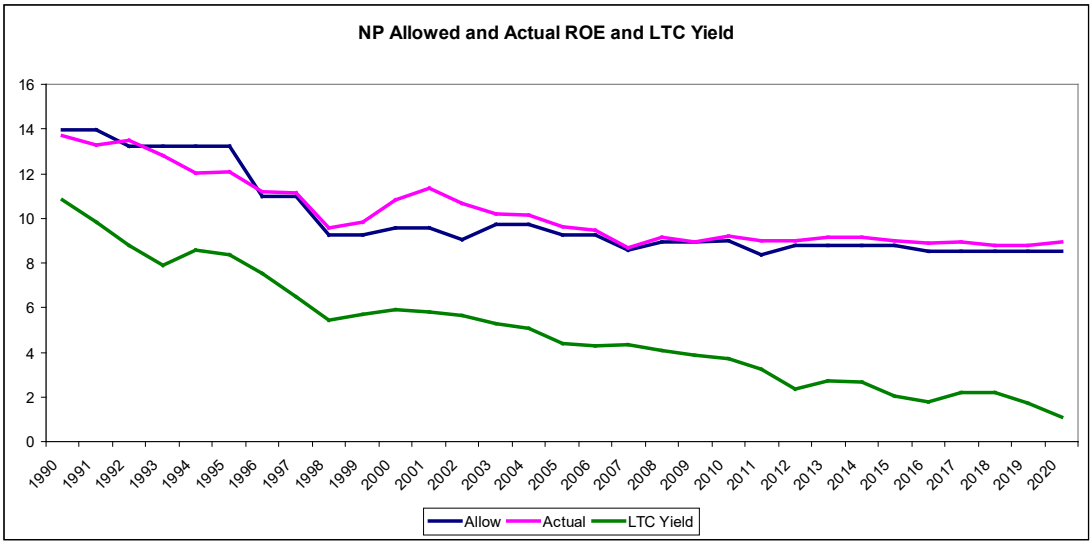
requirement from a more varied customer mix involving industrial, commercial, and retail customers.

- Is there a *commodity charge* involved in rates? The basic distribution function is very similar to transmission, except when the distributor buys the gas or electricity wholesale and then retails the commodity. The distributor is then exposed to weather and price fluctuations depending on rate design.

- Even if there is no commodity charge, how much of the revenue is recovered in a *fixed versus a variable usage* charge? Utilities that recover their fixed costs in a fixed demand charge face less risk than those where the revenues have a large variable component based on usage.

Of importance is that the utility can be shielded from almost all these risks by rate design and the use of deferral accounts. The essence of which is that revenues and cost variances from one time-period can be captured and allocated to the subsequent period, since the customer base is relatively stable. In this case the utility will exactly earn its allowed ROE and face no material short run risk regardless of its use of debt financing.

For Newfoundland Power there is limited need to assess the value of its individual deferral accounts in minimising short run risk since the effect can be observed simply by comparing its actual earned ROE with that allowed. The following graph is the allowed and actual earned ROEs for NP since 1990 (CA-NP092).



As is clear, except for the effect of one serious storm in 1994 and NP's interaction with the CRA, there has been no discernible risk borne by the common shareholders. As NP points out, it can

earn up to 0.50% before the earnings sharing mechanism operates and for the last five years it has earned 0.46% above its allowed ROE. To all intents and purposes, the Board's "true" allowed ROE is what it allows NP plus 0.50%. This raises the important question if the Board considers the current allowed ROE of 8.50% to be fair and reasonable what does it regard 8.93%, what NP earned in 2020 to be?

I have also included the average yield on the Long Canada bond (LTC yield) as a comparator. Until the onset of the U.S. financial crisis, NP was allowed an average premium over the LTC yield of 4.26% and it earned 4.47% more. Since the U.S financial crisis that premium of the allowed ROE over the average LTC yield has increased to 6.21% and the actual ROE to 6.52% with 2020 amounting to a huge 7.81% premium of the actual ROE over the average LTC bind yield. Risk is the probability of incurring a loss. In practical terms NP has never incurred any risk over the period since 1990. Even the 1.22% "loss" due to a severe storm in 1994 was a still considerable premium over the LTC yield of 3.45%. In financial terms NP's actual ROE stochastically dominated the LTC bond in the sense that no investor would have held the LTC bond if they could have earned NP's actual ROE.[26]

Q IS NP'S PERFORMANCE UNUSUAL?

A. For Canadian utilities no, but it is for Mr. Coyne's U.S. "comparators". In Schedule 3 is a table of actual earned ROEs for electric utility holding companies (UHCs) that have previously been used as "comparables" for NP. Holding companies are the vehicles that are traded in the stock market and the owner of the actual operating companies, much like Fortis is the owner of NP and traded on the TSX and in the U.S. I have often referred to the problem of assessing utility risk as the dirty window problem where we try to assess the risk of the operating company by looking at the UHC which is undeniably riskier.

This is clear from these U.S. companies where the average earned ROE for the ten-year period 2011 to 2020 was 8.55% ranging from a low of 6.25% for PNM to a high of 10.88% for Alliant. In contrast, NP's average earned ROE exceeded the average for these U.S companies at 8.96%.

[26] In fact, the LTC bond is heavily taxed at full marginal tax rates whereas NP's return is after corporate taxes and benefits from the dividend tax credit.

However, what is striking is the standard deviation of the annual earned ROEs (variability), which is a broad measure of risk. This ranges from a low of 0.37% to a high of 6.93% for Entergy. In contrast, NP's variability is only 0.13% or just 1/3 of the lowest risk U.S utility.

Much of the variability in the earned ROEs is probably stemming from holding company M&A activity rather than the operating results. However, what is important is that in assessing risk investors have seen this risk materialise for many of these companies, so it is expected even if a company is dropped from a sample for a few years because it just materialised again. Also in Schedule 4 are the market (price) to book ratios (MBR) for these utilities.

Only in two cases is the MBR less than 1.0. For regulated operating companies we expect a fairly regulated utility to have a market to book ratio of about 1.15. Otherwise, the shareholder has earned more than a fair rate of return. The average MBR for these companies over ten years is 1.93 ranging from a low of 1.49 to a high of 2.62. This indicates that the shareholders are happy with the overall performance of these U.S electric UHCs.

Q DOESN'T THIS SHORT RUN PERFORMANCE IGNORE LONG RUN RISKS?

A. To some extent yes. Corporate bonds that do not default earn a higher rate of return than long Canada bonds that cannot default, but that does not mean that they have no risk simply because they did not default. Risk itself is forward looking not backward looking. Since I have been submitting fair ROE and capital structure evidence I have never seen a witness on behalf of a utility look at the earned versus the allowed ROE. Instead, they tend to focus on a qualitative discussion of future risks. However, sooner or later these risks must materialise for them to be valid and that has yet to happen.

NP's witnesses usually indicate that risk is increasing. For example:[27]

- In 1992 Dr. Roger Morin stated "competition in the energy industry in Newfoundland is increasing."
- In 1996 Mr Ryan stated "Significant changes are developing in the north American electric utility market. Driven by global competition, new technologies

[27] Source CA-NP-044

and cheap natural gas, utilities are starting to compete with independent power producers and with each other to retain existing customers and attract new ones."

- In 1996 Dr. Roger Morin stated "the business risks faced by the Company are higher and they have intensified since the Board's last rate decision in 1991."

- In 1998 Ms. McShane stated "It (NP) competes with oil for space and water heating. In contrast to many electric utilities a significant proportion (54%) of the company's sales are for space heating. Recent declines in fuel oil prices make oil a more competitive option."

- In 1998 Dr. Morin stated "the company continues to be vulnerable to competition in the space and water heating markets from other energy sources, particularly from oil companies."

However, as shown from NP's demonstrated ability to earn its allowed ROE, these risks have so far never materialised. This is common for most Canadian utilities for two reasons:

First, operating on a forward test year basis means that there is only a loss if a utility suffers a significant ***unexpected*** drop in demand or increase in costs. Risk in this sense is deviation from the company's forecast. To the extent the company is on top of its forecasting and risk assessment the impact of some customer losses or a reduction in average use is not material as NP's ROE history demonstrates.

Second, should a risk materialise the regulatory dynamic sets in and normally there is a hearing to assess how to mange this risk and invariably a new deferral account or other arrangement is agreed that reallocates the cost of this "risk" back to shareholders. The result is that in Canada these long run risk that witnesses frequently advance as a justification for a higher allowed ROE are almost always transferred to ratepayers.

A good example of this regulatory dynamic was a decision of the Ontario Energy Board on Enbridge Gas Distribution's business risk (EGDI Decision 2013-0207, page 7) where the OEB stated

> *"Regarding the risk of future events, the Board agrees with CCC that the relevant future risks are those that are likely to affect Enbridge in the near term. Any risks that may materialize over the longer term can be taken into account in subsequent proceedings. In considering the risk of future events, the Board will take into account the fact that, generally, the more distant the potential event, the more speculative is any conclusion on the likelihood that the risk will materialize."*

In essence the OEB decision is to 'not pay too much attention to long run risks as we'll deal with them as they arise.' NP was specifically asked whether its risk assessment applied to the immediate test years 2022 and 2023 (CA-NP-018) and specifically stated it did not confirm that assumption and that its risk assessment reflects both near-term and long-term analyses. In my judgment this goes against the regulatory compact in Canada, the explicit policy of the OEB and past practise of most Canadian boards.

Q. WHAT ARE LONG RUN RISKS?

A. The longer-term risks are mainly:

- *Bypass risk*. The economics of regulated industries are as natural "monopolists" involved in "transportation" of one kind or another. However, one utility may not control all the transportation possibilities, so it may be economically feasible to bypass part of its system. This happens, for local gas distributors, for example, when a customer can access the main gas transmission pipeline directly, rather than through the LDC. This is often a rate design issue: a postage stamp toll clearly leads to uneconomic tolls and potential bypass problems, whereas distance or usage sensitive tolls will discourage it. Similarly, rolled in tolling will encourage predatory pricing by potential regulated competitors.

- *Capital recovery* risk. Since most utilities are transportation utilities, the critical question is the underlying supply and demand of the commodity. If supply or demand does not materialise, then tolls may have to increase so that the utility may not be able to recover its cost of capital. Depreciation rates are set to mitigate this risk to ensure that the future revenues are matched with the future costs of the system, but if current users cannot bear the higher depreciation charges and a death spiral might set in where customers leave the system creating even higher rates as the costs are spread over fewer users causing ever higher rates.

- *Technological risks* are a specific form of capital recovery risk that may induce competition and threaten the viability of the distribution function and the value of the assets. The development of alternative delivery mechanisms for communication services for example, dramatically reduced the market power of the incumbent Telcos.

The regulator has tools to manage these risks. Faced with capital recovery risk a regulator can shorten the economically useful life of the utility and allow it to pass on higher depreciation charges before the risk materialises as the National Energy Board did for the TransCanada Mainline. This reduces the amount of assets at risk should the capital recovery or technological risk materialise. Similarly faced with by-pass risk the regulator can change the rate structure and

allow special by-pass rates so that the customer stays on the system and contributes to common costs. Such selective use of market pricing is in the best interests of all ratepayers and reflects the attitude of the OEB that they'll deal with it should it arise.

Ultimately the most important long run risk is that the commodity being distributed becomes uneconomic causing significant numbers of customers to drop off its system. As the utility tries to reallocate costs to other customers, rates must increase causing more customers to drop off until rates reach a level that many would regard as unjust or unfair and unreasonable. This is the "death spiral" and is real.

TransCanada had a hearing before the National Energy Board in 2012 to consider changing its rate design due to a reduction in load on its Mainline. This was due to the emergence of different supply basins closer to its Central Canadian markets. As a bullet pipeline the Mainline argued that it could generate the revenues required for it to earn its allowed ROE. In this case there was a concern that ***bypass*** of the Mainline would strand some of its assets, particularly the Northern Ontario Line.

Another example is local Telco service and the final loop. In the early 1990s the development of telecommunications technology allowed the local cable companies to compete with the incumbent copper wire providers. Further as the technology developed even the long-distance market became threatened with competition which limited the cross subsidisation of local service with "excess" long distance revenues. Now we take it for granted that competition allows a variety of services to provide both short and long-distance telco service, but this was not the case 30 years ago. The CRTC decided to refrain from direct rate of return regulation of the cable and telephone companies as their markets became competitive.

I provide these two examples to indicate that the death spiral is a real long run risk to some distribution utilities either because of ***technological change*** or the development of ***alternative supplies*** closer to market. The question is whether either of these have any relevance to NP with the potential for significant increases in the price of electricity because of cost over runs at Muskrat Falls. If NP can simply reallocate costs and continue to earn its allowed ROE regardless of the cost of power, then there is no increase in risk.

So, the first question is one of relevance. Higher hydro costs have been a topic before the Board since 2016 and particularly 2018 when NP stated (2018 Evidence, pages 1-6&7),

> *"In Newfoundland Power's view, the continuation of a struggling provincial economy and the commissioning of Nalcor Energy's Muskrat Falls project contribute to an above average business risk for the company."*

However, it did not affect NP's ability to exceed its allowed ROE in 2019 and 2020. Further in answer to CA-NP-005 NP stated

> *"The Muskrat Falls Project has not materially impacted the Company's Customer, Energy and Demand Forecast (the "CED Forecast") or other planning reflected in its 2022/2023 General Rate Application. For example, electricity rates included in the CED Forecast are limited to annual increases of 2.25%, reflecting the Provincial Government's rate mitigation indications at the time of filing the application".*

In other words, the possibility of higher electricity costs due to Muskrat Falls is not a factor during the upcoming test years. Further in answer to CA-NP-101 NP further stated,

> *"It is currently uncertain how commissioning of the Muskrat Falls Project will impact Newfoundland Power's embedded costs".*

In 2018 NP talked about the doubling of electricity prices, those words now seem to be absent. I checked the 2021 management discussion and analysis (MDA, June 23, 2021) where the company states

> *"On July 28, 2021, the Government of Newfoundland and Labrador and the Government of Canada announced an agreement in principle for the financial restructuring of the Muskrat Falls project. The announcement further indicated that both governments are working towards having the detailed agreement implemented before the project is commissioned. The impact the agreement will have on future customer electricity rates is uncertain"*

Until the magnitude of any price increases is clarified it is difficult to assess their impact, but the risk is not as great now as it was three years ago since mitigation in under way. Currently any assessment would in the words of the OEB be "speculative."

Q. WHAT IS NEEDED TO ASSESS THE IMPACT OF HIGHER ELECTRICITY PRICES ON NP'S RISK

A. The obvious need is for a demand study to assess how sensitive demand is to higher electricity prices. However, in CA-NP-162 Mr. Coyne admitted to not relying on any demand

studies and yet that is precisely what is needed to assess the risk. Similarly, when NP was asked about whether its risks would be manifested in volume sales (CA-NP-023) there was no mention of a demand study to illustrate what various price changes would mean to sales volumes, which leaves everyone in the dark. NP's revenues from its Annual Information were as below.

The following chart compares 2020 and 2019 revenue and electricity sales.

	Revenue [1]				Electricity Sales [1]			
	2020		2019		2020		2019	
	$millions	%	$millions	%	GWh	%	GWh	%
Residential	460.5	64.1	434.5	63.5	3,547	61.9	3,558	60.8
Commercial	238.1	33.1	233.0	34.1	2,150	37.5	2,256	38.6
Street Lighting	17.0	2.4	16.6	2.4	32	0.6	33	0.6
Other [2]	3.0	0.4	(0.2)	-	-	-	-	-
Total	718.6	100.0	683.9	100.0	5,729	100.0	5,847	100.0

(1) Electricity sales and resulting revenue reflect weather adjusted values pursuant to the Corporation's weather normalization reserve.
(2) Includes revenue from sources other than the sale of electricity. In 2020, other included a ($8.8) million revenue deferrals and amortizations recognized pursuant to PUB orders (2019 – ($13.3) million).

What is striking is the complete absence of industrial demand, which is usually regarded as the riskiest. Almost all NP's revenues come for residential, commercial, and street lighting which are generally regarded as the least mobile customers.

In terms of residential customers in CA-NP-003 NP provided the cost of an average residential customer bill from 2015 to 2022. Over that period the overall cost increased from $166.22 to $194.33 or a compound rate of 2.3% per year basically the same as the Bank of Canada's inflation target. ((194.33/166.22)^(1/7)). To assess whether this is excessive it can be compared to Hydro Quebec's (HQ) annual comparison of residential electricity bills.

AVERAGE PRICES FOR RESIDENTIAL CUSTOMERS (IN ¢/kWh)[1,2,3,4]

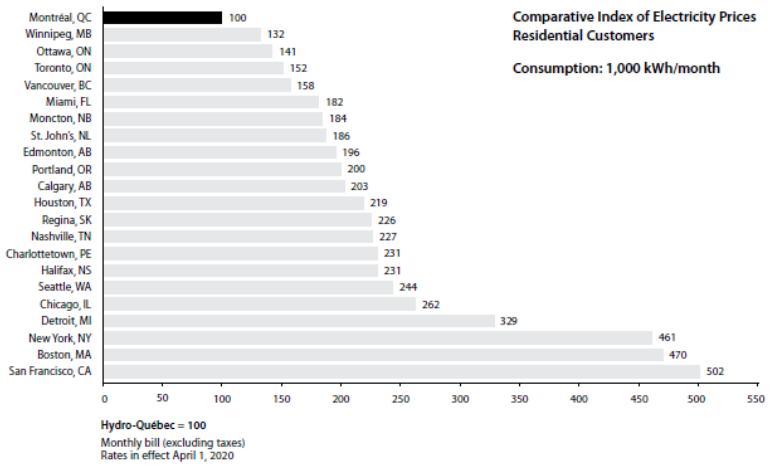
	2016	2017	2018	2019	2020
Canadian Cities					
Montréal, QC	7.23	7.07	7.13	7.30	7.30
Calgary, AB	10.40	10.45	15.79	15.74	14.83
Charlottetown, PE	16.02	16.42	16.83	16.83	16.83
Edmonton, AB	10.37	10.34	14.35	14.68	14.29
Halifax, NS	15.88	16.15	16.41	16.69	16.89
Moncton, NB	12.50	12.97	12.97	13.10	13.42
Ottawa, ON	16.15	15.21	12.16	12.04	10.29
Regina, SK	14.65	15.94	16.51	16.51	16.51
St. John's, NL	11.96	11.15	12.03	12.80	13.60
Toronto, ON	17.81	16.32	13.24	13.89	11.10
Vancouver, BC	10.70	11.08	11.42	11.62	11.51
Winnipeg, MB	8.43	8.71	9.00	9.37	9.60

1) For a monthly consumption of 1,000 kWh.
2) In Canadian currency.
3) Data from *Comparison of Electricity Prices in Major North American Cities* publications, Hydro-Québec, 2016-2020.
4) Average prices excluding taxes.

1

2 Using HQ's analysis current NP costs for someone in St John's is average: there are six cities
3 with lower costs and five higher costs. Moreover, costs in St John's would have to increase over
4 25% to exceed the higher price per kwh in Halifax Nova Scotia and Charlottetown, PEI. HQ
5 produces another chart below including U.S cities of a typical bill with HQ's Montreal bill set at
6 100.

FIGURE 1



7

8 In this comparison St Johns at 186 is significantly below most U.S cities and much less than half
9 the cost of NYC, San Francisco, and Boston.

In 2019 I provided evidence before the Island Regulatory and Appeals Commission of PEI (IRAC) on Maritime Electric. Of relevance is that Charlottetown has almost the highest customer rates in Canada which are significantly higher than NP's current rates yet there was no discussion of Maritime Electric's customers cutting the power cord and switching to alternative fuels. In fact, quite the opposite. At Schedule 5 is an extract from Concentric Energy's report on Maritime Electric's business risk from alternative fuels. They note that customers are switching from fuel oil to electricity using heat pumps. At 16.83 cKwh Charlottetown customers are only paying a tad less that Mr. Ball's red line of 17 c kWh and at the mitigated rate of 14.7 ckWh (CA-NP-02) there seems to be no material impact at all.[28]

Finally, the litmus test for the competitiveness of electricity versus alternative fuels is new build, where the installation cost is not a factor the way that it is to get people to swich from one fuel to another. In answer to CA-NP-024 NP estimates that 88% of the housing starts in Newfoundland are within its territory and 84% will use electricity as the primary heat source. If this drops significantly due to the flow through of Muskrat Falls costs in the next hearing, then there might be a case for considering the risk implications of higher electricity costs. As it is, I agree with the company's assessment (CA-NP-022) that the business risks have not materially changed since 2018 and Newfoundland Power's business risks also continue to be defined by long standing factors.

[28] This is from the July 28, 2021 Newfoundland-Federal Government agreement.

IV RISK PREMIUM ESTIMATES OF THE FAIR ROE

Q. WHAT IS THE MOST COMMON WAY OF ESTIMATING THE FAIR ROE?

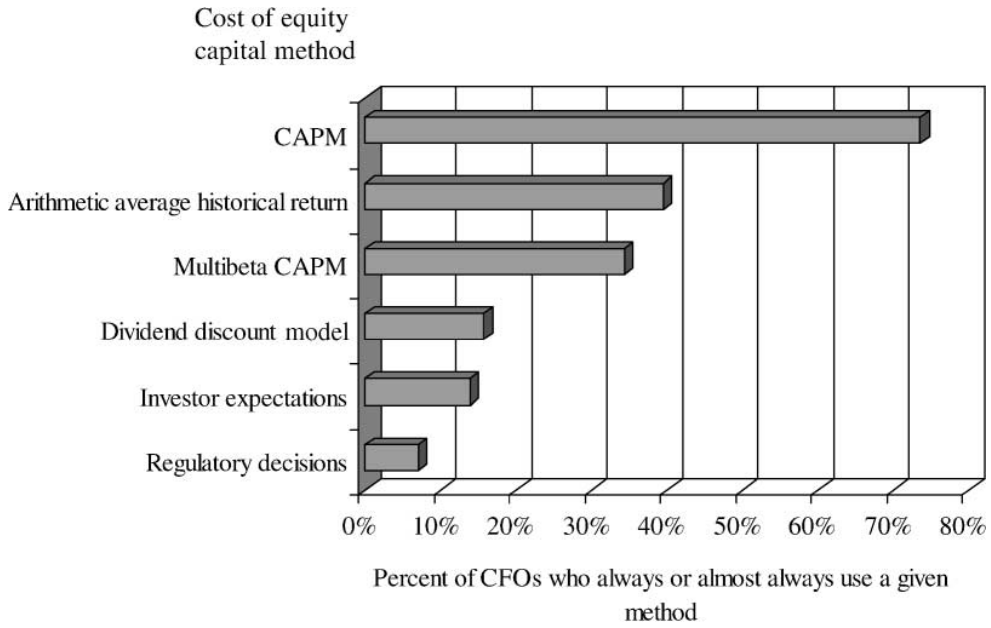
A. Estimating equity rates of return requires an understanding of general financial market conditions since what investors require for investing in equities is affected by what they can earn in the money and bond markets. This is most obvious when we consider that the interest rate on LTC bonds can be regarded as default free whereas investing in equities involves both this risk-free return and a risk premium. The premier model that incorporates this basic fact is the Capital Asset Pricing Model or CAPM and simply states,

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

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

For all securities the average beta coefficient is equal to 1.0. As a result, high risk securities have beta greater than 1.0 and low risk securities have beta less than 1.0. Conceptually, what this means is that low risk securities are regarded as defensive securities, since if the market drops by say 10% their share price is expected to drop by 5% if their beta is 0.50. In contrast, for high-risk securities if their beta is 2 their stock price might be expected to go up by 20%. Building a low-risk equity portfolio thus involves holding a portfolio of low beta or defensive securities.

The CAPM is the most important model used by a company in estimating their cost of equity capital. The following is from a survey of 392 US Chief Financial officers by Graham and Harvey in 2001:



70% of US CFOs explicitly use the CAPM, while 35% use average historic returns, which as I discuss in Appendix B is a key input to estimating the market risk premium and a further 30% use a multi-beta approach like that of the two-factor model I use. The dividend discount model is known as the DCF model in regulatory hearings and comes in a poor 4th like investor expectations, which are largely from survey results I discuss later.

The US survey results are for large US companies, Baker et al[29] performed a similar survey of large and small firms in Canada with the results in the following table. The most important "factor" was judgment, which is obviously required in any analysis. After judgment. the main two objective models were the cost of debt plus an equity risk premium and the CAPM, which is simply a specific way of setting the risk premium. As might be expected the CAPM is most popular among larger firms, where the Chief Executive officer has an MBA. Unlike the US survey results, the DCF and multi-beta models rank behind investor expectations, average risk adjusted returns and accounting ROE. Even for large firms and those managed by a CEO with an MBA, the DCF model and multi-beta models are simply not as important as the CAPM.

[29] K. Baker, S. Dutta and S. Saadi, Corporate finance practises in Canada, where do we stand?" Multinational Finance Journal, December 2011.

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.

			Response Mean				
				Firm Size		CEO with an MBA	
S#	Statement	% of Often or Always	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

In response to persistent criticism of the CAPM by some witnesses, I have started to look at alternatives to the CAPM. The most common are known as multi-factor models. Although not widely used by professionals, they are popular amongst academics. The CAPM is regarded as a one-factor model since market risk through beta is the only source of risk. Instead, multi-factor models extend the CAPM to include additional risk factors. The current "standard" is to include a size premium (the return difference between ***S***mall firms ***M***inus ***B***ig ones or SMB) and a value premium (the return difference between ***H***igh ***M***inus ***L***ow value or growth stocks). This is the Fama-French three-factor model (FF3), which states

$$K = R_F + \beta_1 MRP + \beta_{2,} SMB + \beta_{3,} HML$$

In this case as well as the market risk premium (MRP), an investor requires a premium for investing in smaller firms as well as high value stocks. Why the FF3 factor model is controversial is that while some believe that smaller value stocks are riskier and thus deserve a larger risk premium, others believe that the market consistently miss-prices the opposite type of stocks, that is, larger growth stocks. The reason for this is that they tend to be faddish and sexier for financial advisors to sell. As a result, they tend to be over-valued and earn lower rates of return given their risk. During the Internet bubble, for example, it was internet stocks, like Nortel

and Pets.com that had very high valuations with few hard assets to support them and yet crashed when the bubble burst.

I tend to believe the faddish argument, but regardless for individual stocks using the FF3 factor model versus the CAPM rarely makes much difference. For example, Estrada (2011)[30] estimated the equity cost for the Dow 30 firms using both the CAPM and FF3 models where the average equity cost using the CAPM was 9.70% versus 9.50% from using the FF3 factor model. The complete estimates are in Schedule 3, but the general point is that we are just allocating the stock's return to different risk factors. However, the sum of those factors should always (approximately) add up to the same number. Using one model versus another does not somehow increase the overall equity cost to a dramatic extent. The Dow 30 stocks have a beta close to 1.0, since they are a portfolio of large value stocks, where the average ***has*** to add up to 1.0 for all stocks. As we would expect these stocks tend to have negative exposure to the size premium, since they are all large firms and positive exposure to the value premium since they are generally value stocks. In this respect, they are like utilities that tend to be relatively large value stocks so that the two additional Fama-French factors tend to offset each other.

In terms of the "error" in using one model versus another, the difference ranges from +1.5% to -1.6% or a range of 3.0%. This is not an insignificant difference, but it stems from the confluence of the size and value premiums.[31] The +1.5% difference is for American Express, which has a 17.7% FF3 Factor equity cost estimate versus the 16.2% for the CAPM. This difference stems from the observation that AmEx is a relatively small value stock and generates a premium for both these factors, which offsets the lower beta estimate in the FF3 model. In contrast, Merck is a large growth stock and its much higher FF3 factor beta coefficient is not enough to offset the negative size and growth premiums. As a result, its CAPM equity cost at 9.1% is higher than its FF3 factor cost at 7.5%. The closest to a regulated utility would be AT&T, where the CAPM

[30] 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.

[31] 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.

equity cost is 7.80% versus a FF3 factor estimate of 7.30%; again, its higher beta is more than offset by the impact of the size and value premiums.[32]

Despite the popularity of these multi-factor models amongst academics, and increasingly in the investment field, they have doubtful value in regulatory hearings. There are two reasons for this, first they do not make much difference in the overall estimates and second, they need more inputs each of which is likely to be extremely contentious leading to cross examination. While the size of the market risk premium can be estimated with some degree of accuracy, that can-not be said for the size and value premiums. In fact, many believe the size premium has disappeared as coverage of small stocks has increased while for many the value premium causes theoretical problems.[33] I discuss the multi-factor model mainly because it is the main "competitor" to the CAPM and while other witnesses frequently criticise the CAPM they never discuss multi-factor models and instead rely on ad hoc models and estimation techniques that have no academic credibility.

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

A. As indicated above usually the critical element of a fair return is the overall return on the equity market, since utilities are simply a sub-set of the equity market. So, for example, if equity investors want 9% for investing in the equity market as whole, then their required return for investing in a local distribution utility should be less than that. Since the expected return on the long-term Canada (LTC) bond is the observable yield, one way of estimating this equity return is by adding the market risk premium on top of that expected return or yield.[34]

In Appendix B I estimate the market risk premium of common equities over long-term Canada bonds at 5.0-6.0%. This estimate is based on Canadian capital market history going back to 1924

[32] 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.

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

[34] Note only the LTC yield is default free and an estimate of the expected rate of return. The yield on risky corporate debt is a promised return but with the possibility of default, as well as liquidity problems, this is *always* higher than the expected rate of return on that bond.

so encompasses various economic periods such as the bleak 1930s of slow growth and falling prices, as well as booms and serious inflation such as the 1970's. While the Canadian data points to a market risk premium of under 5.0%, I give weight to the US evidence for three main reasons. First, most of the restrictions keeping Canadian capital within Canada have been removed, resulting in significant capital outflows and higher expected returns on Canadian investments. Second, the fiscal position of the Government of Canada improved dramatically after 1997 removing an inflation premium built into LTC yields. Third, the Canadian bond market has received significant foreign capital inflows depressing yields below where they would have been with a segmented or closed capital market. The result has been lower interest rates in Canada than the United States for most of recent history. This has removed the historic bias of a smaller Canadian market risk premium over a higher government bond yield when compared to the US.

My Appendix B is a free-standing analysis of the market risk premium, but I consider the survey results of Professor Fernandes[35] particularly relevant as confirmatory evidence. In particular, the extract below from his 2020 survey has the following estimates.[36]

Table 2. Market Risk Premium (MRP) used for 81 countries in 2020

MRP	Number of Answers	Average	St. Dev.	Median	MAX	min
USA	2156	5,6%	1,4%	5,4%	13,4%	2,0%
Spain 2020	521	6,3%	1,6%	6,4%	13,3%	2,8%
Argentina	31	17,3%	7,9%	15,0%	30,4%	4,8%
Australia	37	7,9%	4,8%	6,2%	20,4%	2,8%
Austria	117	6,2%	1,3%	5,9%	10,4%	3,8%
Belgium	119	6,2%	1,3%	6,0%	10,4%	3,8%
Bolivia	17	8,9%	1,3%	8,9%	11,4%	6,3%
Bosnia	9	11,2%	1,4%	11,5%	13,4%	8,8%
Brazil	51	7,9%	1,4%	7,9%	10,8%	5,7%
Bulgaria	16	7,6%	0,8%	7,7%	9,2%	5,8%
Canada	49	5,7%	0,9%	5,5%	8,4%	4,2%
Chile	30	6,6%	1,5%	6,3%	12,9%	5,3%
China	57	6,7%	1,5%	6,8%	11,1%	3,3%
Colombia	31	8,2%	3,2%	7,3%	20,4%	5,5%

[35] "Market risk Premium and Risk-Free Rate Used for 81 countries in 2020: a survey," IESE Business School, Pablo Fernandes et al IESE, March 25, 2020

[36] The yellow highlighting is in the original.

With 2,156 responses, the average (median) estimate of the market risk premium in the US was 5.6% (5.4%) whereas with 49 responses it was 5.7% (5.5%) in Canada. In other words, the average and median estimates were both within my 5.0-6.0% range. With so many responses in the US, there is bound to be a wide range, but in Canada the range for the market risk premium was relatively narrow at 4.2%-8.40%, that is, the extreme high value for the market risk premium from 49 responses from finance professionals in Canada was 8.40%. I would regard any estimate of the market risk premium above 8.4% as being an extreme outlier and note that Mr. Coyne (page 45) uses a forward-looking market risk premium for Canada and the US of 9.16% and 10.52% respectively. These seem to be values that are not accepted by Canadian finance professionals and serve to bring up his historical market risk premium estimates of 5.54% and 7.25% to 8.12% which again is near the very top of the range for Canadian professionals.

It is also interesting that many witnesses argue that there is an inverse relationship between the level of interest rates and the market risk premium. This was probably true when high expected inflation forced up the level of Canadian long-term interest rates into the higher teens,[37] but in my 2010 testimony I reproduced the following from the 2010 Fernandes survey.

At that time the median market risk premium in the US was 6.0% down from 6.4% in 2009. However, I used a 4.25% risk free rate which meant an overall expected return on the market of 11.25% for 2020. In contrast, in his recent surveys Fernandes now asks directly for the risk-free rate to match with the market risk premium estimate to get the required return on the overall equity market. In 2020 for the US, this was an average (median) risk free rate of 1.9% (1.8%) and for Canada both 1.8% (1.8%). As a result, the average and median expectation for the market return in both the US and Canada was 7.4%. The 2020 survey results are also significantly different from the 2019 survey results where although the market risk premium was essentially the same both in the US and Canada, the risk-free rate in 2019 was much higher at 2.5% for Canada and 2.7% for the US, so that the expected market return was also higher at 8.3%.

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[37] 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

What is important is that both the market risk premium *and* the associated risk-free rate have declined from both 2010 and 2019 to 2020, that is, there is no evidence of an inverse relationship between the market risk premium and the level of interest rates over the last ten years either in Canada or the US. Further, I am not aware of any recent research documenting an inverse relationship since inflation collapsed to the 2.0% target level in both the US and Canada. In my judgment the inverse relationship existed for a short period of time when we had record high interest rates designed to cut inflation in both the US and Canada.

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

A. My Appendix C discusses relative risk adjustments or betas. The history of Canadian utilities in general is of beta coefficients in an approximate range of 0.30-0.50. However, in my judgment recent Canadian utility betas are partly "contaminated" by the fact they are yield substitutes for long Canada bonds. As Schedules 1 and 2 in my Appendix C shows, the returns on Canadian utility shares are interest sensitive and have about 60% of the interest exposure of the long Canada bond. This is the reason why they are low risk defensive stocks. However, the temporal decline in interest rates from over 6.0% in 2000 to the current level of 2.15%, while supporting their stock prices, has weakened their relationship with the general equity market.

Consequently, their stock market risk (betas) has declined. However, as interest rates increase this process should go into reverse as utilities become less attractive.

The extent of mergers and acquisition (M&A) activity has also reduced the size of my Canadian sample and forced me to break my old sample into a pipeline sample (Enbridge, TransCanada, and Pembina) and a utility sample (Canadian Utilities, Emera, Fortis). This has posed additional problems since smaller samples can make the estimates less reliable, while both Emera and Fortis have both made extensive acquisitions. My actual recent beta estimates are in Schedule 4, but for this and other reasons discussed in Appendix C, I continue to use a beta range of 0.45-0.55. I am not aware of any evidence to indicate that utility risk has increased over the last 20+ years.

As a check on my Canadian beta estimates, I also provide estimates from both U.S. gas and electric UHCs. Although generally I regard these companies as riskier than their Canadian counterparts my most recent estimates for them also average 0.30-0.4. As a final check I also provide beta estimates from respected sources; these are Yahoo finance that uses S&P data, the Royal Bank of Canada, and two new investment advisory services. I take comfort in the fact that the average sample betas are like my own estimates and there is no evidence of any mechanical adjustments towards 1.0.

Q. DO YOU ADJUST YOUR BETAS?

A. To the extent that I do not mechanically use my beta estimates, I adjust them. If I mechanically used the most recent estimates, for example, I would use a value of 0.30. However, as indicated above in the survey of Canadian professionals by Baker et al the most important factor in estimating the required and fair rate of return is judgment. However, I do not use the Blume adjustment, which Mr. Coyne relies on. This was a general adjustment for a sample of *all* stocks developed by Professor Marshall Blume and published over four decades ago. As far as I am aware this study has not been replicated and no-one has ever applied it with any success to utility stocks. As I discuss in Appendix C, the only studies I am aware of on utility stocks show that any adjustment of utility stocks is toward their own average value *not* the average value of the market as a whole, which is 1.0. Gombola and Kahl clearly showed this in their seminal article in 1990. The point is that if there is measurement error in utility betas, they will revert to

their own low risk average value and not somehow become as risky as the market. That is, low-beta estimates for utilities reflect their low-risk status not solely measurement error.

Most recently Michelfielder and Theodossiou in 2013 concluded,

> "The diagnostic statistics strongly refute the validity of the Blume equation for public utility stocks. Most of the R^2s are equal or very close to 0.00 and the largest is 0.09. Only one F statistic is significant and all but two slopes are insignificant….None of the 51 beta distributions display any tendency for the betas to drift toward one"

In my Appendix C I report work that I did with my late colleague Michael Berkowitz as part of a TransCanada Mainline hearing before the National Energy Board in 2001. At that time, we had enough utilities to estimate a Blume adjustment model but could find no such relationship. In our estimates betas for Canadian utilities adjusted toward their grand mean of 0.52. With the disappearance of most of these utilities I could not replicate the 2011 work. Instead, I used the betas for the 9 U.S electric utilities with data from 1975. The Blume estimation model provided similar results to those of Michelfielder and Theodossiou with no significant adjustment coefficient. The best beta estimate from that model was 0.565.

My conclusion is that there is simply no justification for mechanically adjusting utility betas toward the market mean of 1.0. Other utility regulators have rejected this adjustment since there is no evidence of utility betas trending toward 1.0. My Schedule 1 in my Appendix C clearly shows the absence of any such tendency since they have never been above 1.0 in the 34 years for which we have data.

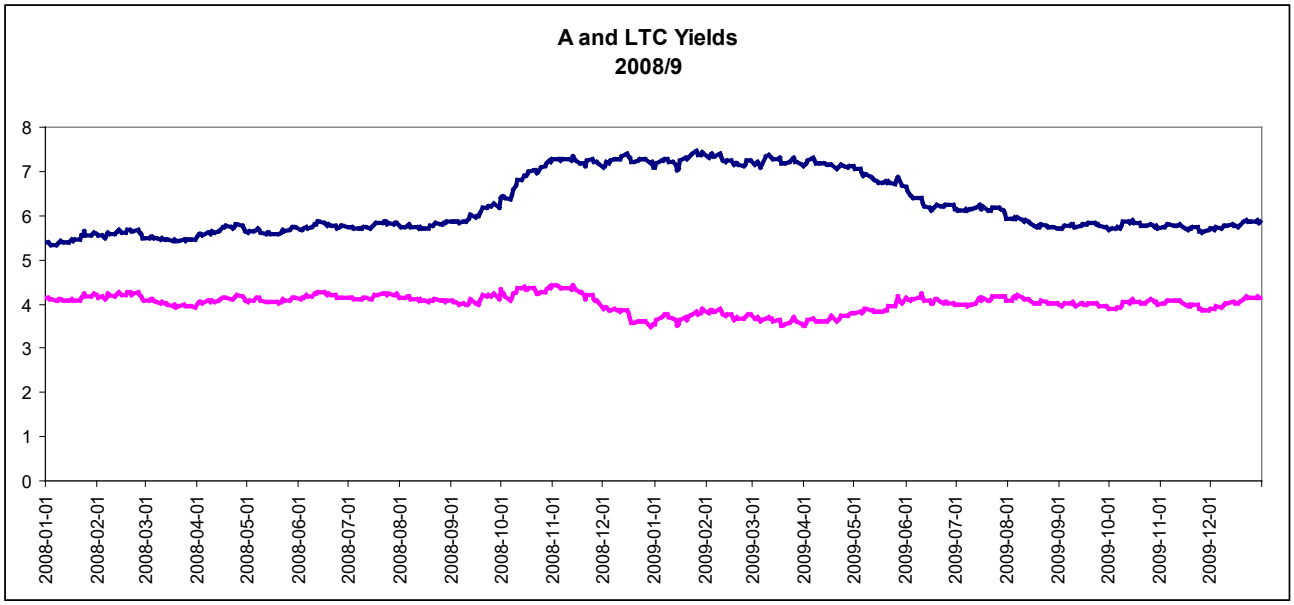
Q. WHAT IS YOUR CAPM ESTIMATE FOR A BENCHMARK UTILITY?

A. With a market risk premium estimate of 5.0-6.0% and a beta range of 0.45-0.55 the range for the utility risk premium is 2.25%-3.30%. This is the same range I used in 2016 and 2018, since there is no evidence that utility shares have become riskier, while survey evidence indicates that the market risk premium has declined, not increased. The near-term forecast for the LTC is 2.3%, but the Government of Canada in its Budget Brief estimates a 2.7% longer term rate. Adding the average spread from the 10 to the 30-year yield to the forecast ten-year Canada yield consistent with a long-term average gives an LTC yield of 3.07%.

If 0.50% is added as a floatation cost adjustment to convert to an allowed ROE on the book value of utility equity a CAPM estimate for a benchmark utility prior to 2008 would have been in a range 5.82%-6.87%. This is slightly lower than what the automatic ROE adjustment formula would have allowed given current financial market conditions.

Q. WHY WERE ROE ADJUSTMENT FORMULAE SUSPENDED?

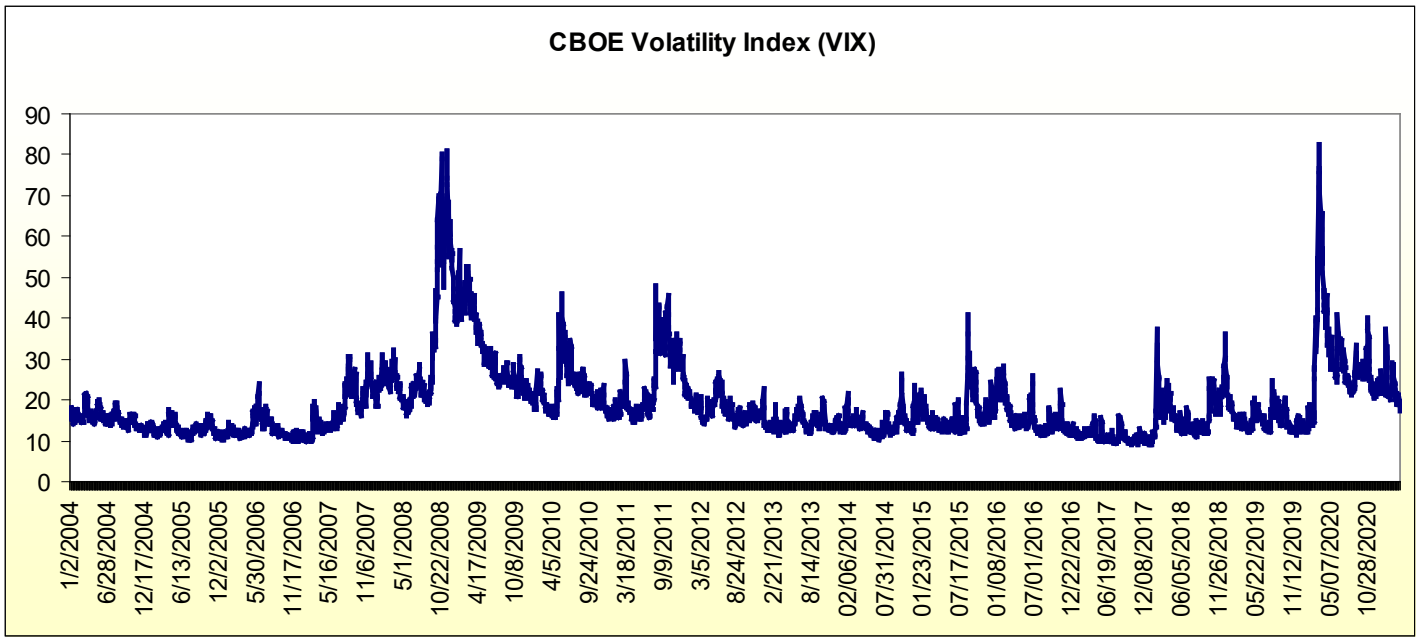
A. The main reason was the flight to quality that occurred during the U.S financial crisis as investors sold risky securities and parked their cash in government securities. As indicated earlier what then happens is that A spreads widen and LTC yields fall. Although this is totally normal and happens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



We can clearly see the shock of Lehman Brothers failure in October 2008 as the market realised there was a serious problem. "A" bonds were sold off and their yields jumped causing utility borrowing costs to increase, while LTC yields fell and with them allowed utility ROEs tied to the LTC yield. Although, the ROE formulae tied the ROE to *forecast* and not current LTC yields there was consensus that the formulae needed to be adjusted. This was particularly true in

Ontario due, in part, to the fact that their ROE formulae for many utilities operates on October data, that is, data generated right in the middle of Lehman.

To make the CAPM more sensitive to economic conditions other than just the yield on the long Canada bond there are a variety of financial variables to use to *condition* on the state of the markets. For example, I have previously discussed the Kansas City financial stress index which attempts to do this by looking at a composite stress index, which should be correlated with investor risk aversion. Another popular index is the Chicago Board of Exchange's (CBOE) volatility index (VIX). This calculates the expected standard deviation of the overall stock market return from at the money call options.[38] The standard deviation is a measure of the overall risk, or volatility of the stock market and has averaged 18-20% since 1926. Below is a graph of the VIX since 2004.



[38] Call options pay off only if a certain event (usually the stock price) reaches a specific value and the only "unknown" to price them is the variability or standard deviation of the price. As a result, we can work back from the market price to estimate the implied standard deviation or volatility.

The median value for the VIX over the period 2004-2021 has been 16.14%, slightly below the average from stock market data going back to 1926.[39] However, consistent with the KCFSI we can see the huge increase in uncertainty during the financial crisis as the VIX hit a peak value of 81% or 4X its average value in November 2008. This happened again during the pandemic crisis when the VIX hit a peak of 82.7% on March 16, 2020. However, as always, the panic subsided, and volatility trended back to normal. As of August 30, 2021, the VIX was at 16.19% essentially the same as is typical for the stock market.

The problem with both the VIX and the KCSFI is they are not direct estimates of a rate of return and cannot be used to reliably alter a CAPM expected return estimate. An alternative is to use the default or credit spread between risky corporate debt and default free Government of Canada bonds. This is the corporate spread discussed earlier and, like the VIX and KCSFI, shows the impact of the pandemic Covid 19 crisis when corporate A rated spreads peaked at 2.22% versus an average since 2000 of 1.47%.

It is very difficult to disentangle liquidity spreads in bonds from the pure credit spread. However, since 2011 as Canadian capital market conditions were returning to normal, in 2010, I pointed out to the AUC that corporate spreads were 0.50% higher than normal, which they accepted in setting their final allowed ROE. In contrast the OEB based its revised ROE adjustment formula on a 0.50 adjustment to changes in the A spread over its average level prior to the U.S financial crisis. I subsequently used a 50% adjustment to changes in credit spreads since at the time I judged that over a normal business cycle it would average out to zero as capital market conditions fluctuate around average levels. This adjustment to the ROE adjustment formula was then adopted by the Regie and the BCUC and was also my recommendation before this Board.

Prior to the U.S financial crisis the average A spread from 1979 to 2008 was 0.94% which in earlier testimony I rounded to 1.0% as base A credit spread. In 2016 that spread had increased to 1.90% whereas in 2018 it was 1.35% so currently at 1.31% the credit spread adjustment implies

[39] It may surprise some but there is no evidence of any structural increase in uncertainty in the stock market: it has always been highly volatile! VIX data starts in 2004.

a reduction in the addition to the simple ROE formula.[40] This implies a 0.15%-0.30% upward adjustment in the CAPM estimate of a fair rate of return.

Q. DO YOU MAKE ANY OTHER ADJUSTMENTS?

A. Yes. As noted above the A spread was 0.94% in the 30-year period before the U.S financial crisis. In fact, between 1979 and 2000 the average spread was 0.87%. This was the period prior to the long decline in the LTC yield from the 6% level in 2000 as Canada started to run surpluses and the supply of long Canada bonds in relative terms declined. Since the A spread has been 1.47% since the U.S. financial crisis this implies a 0.60% decline in LTC yields independent of the decline in corporate bond yields, since their credit worthiness has not changed. This points to the serious problem in the level of current LTC bond yields.

Since 2014 I have been making an adjustment for the very low level of long Canada bond yields in part caused by bond buying programs outside Canada that have crossed over into Canada. In Appendix B Schedule 6, I develop a model to explain the behaviour of the real yield on long Canada bonds, defined as the nominal yield minus the average of past, current, and future CPI inflation. Ignoring the indicator or dummy variables for WW2, the 1970s when there was huge liquidity during the Petro-dollar recycling period and the period since the financial crisis, the model essentially says that the real LTC bond yield is 1.35% plus a premium based on bond market uncertainty and the size of the government deficit. The model does well in explaining the very high yields when there was huge volatility in the bond market and Canada was running deficits approaching 10% of GDP.

However, since the financial crisis while we have seen bond market uncertainty go down, real yields have gone down even more, mainly due to demographic changes, reduced real growth and other factors discussed in my Appendix B. Consequently, I have been using a financial crisis dummy variable to adjust for these changes. The problem is that 2020 is an enormous "outlier" in Canadian financial history. Even when the Canadian economy was forced to make significant

[40] The OEB still uses its ROE formula and in its November 9, 2020 order it set the allowed ROE at 8.34% based on changes in the forecast LTC yield and A credit spread. The OEB ROE formula has not been litigated since it was imposed by the Board again without a litigated hearing in 2009.

adjustments to free trade with the US in the 1990's and the government sector was running massive deficits, the government stuck to its word and did not use the Bank of Canada to buy government bonds. However, in response to the Covid 19 pandemic the Bank has been engaged in massive bond buying with the explicit objective of driving down long-term interest rates to stimulate the economy. As a result, the current level of LTC yields is not a market level determined by private investors.

In this sense the actions of the Government of Canada and the Bank of Canada in 2020 were closer to the period of wartime controls than any other post-war period.[41] For NP however, I am not using a current long Canada bond yield but a forecast rate of 3.0% so there is already a 0.70% upward adjustment. In its Budget Brief at Table A1.4 the Government of Canada forecasts that the deficit will decline from the 2020/2021 forecast of 16.1% of GDP to 6.4% of GDP in 2021/2022 and then successively to 2.3%, 1.9%, 1.3% and finally 1.1% in 2025/2026. During this period the Government of Canada debt outstanding will increase from $721 billion and 31.2% of GDP to $1.411 billion and 49.2% pf GDP. If the 2020 values are inserted into the estimation equation without a Covid 19 dummy, since hopefully this will have passed, but a budget deficit of 1.1% consistent with the government forecast, and average bond market volatility, the estimated real yield is 0.72%. This is an increase of 1.26% over 2020 reflecting the absence of the Covid 19 indicator and a reduced impact from government deficits. With 2.0% as the expected inflation rate, this indicates a nominal yield for the over ten long Canada bond of 2.72% consistent with the private sector forecasts of 2.7% for the ten-year bond.

The forecast of a 2.7% ten-year Canada bond yield or 3.07% for the 30-year bond still reflects the longer run factors that have depressed bond yields since 2010. If these factors are removed as the baby boomers die off and economic growth picks up, then we should add back the financial crisis premium. This would then give an LTC yield of 5.74%.[42] Further, the Bank's estimate of the neutral overnight rate of 1.0% in real terms or 3.00% nominal implies a normal 30-year long

[41] There is a similar predictive value if 2020 is included as a "war period" like 1940-1951.

[42] J. P Morgan, "How demographic change will affect savings growth and interest rates," set the real interest rate without government bond buying at 3.0-3.5%, which would translate into a nominal bond yield of 5.0-5.5%.

Canada yield of 4.25%, which is still higher than the current forecast for 2025. I therefore judge current forecast LTC yields as still being anomalous. The problem is that I do not see them increasing substantially due to both government financing problems with a $1.4 trillion debt and the impact on house prices and financially indebted Canadians.

In the past, I have added 0.80% to adjust for the impact of bond buying on A rated bonds as well as LTC bonds relative to equities. This estimate was partly based on the level of preferred share yields relative to A yields, which are quintessentially made in Canada due to the operation of the dividend tax credit. I cannot do this anymore since the TSX data I used is no longer available. However, I continue to judge a 0.80% addition to my CAPM estimates as necessary to reflect current capital market conditions. This essentially means I judge a reasonable average long Canada yield over the next ten years to be 3.87%. This is consistent with my recommendation since 2012 to not adjust any automatic ROE formula unless the forecast LTC yield is above approximately 3.80%.

My overall CAPM fair return estimates are therefore as follows:

	Low	High
Forecast long Canada bond yield	3.07	3.07
Adjustment for bond buying	0.80	0.80
Adjustment for Credit spreads	0.15	0.30
Utility risk premium	2.25	3.30
Adjustment to ROE	0.50	0.50
Estimate	6.77	7.97

The average estimate is 7.37% in a range from 6.77% to 7.97%.

V DCF ESTIMATES OF THE FAIR ROE

Q. WHAT IS THE DCF MODEL?

A. DCF stands for discounted cash flow which is the basic method used for valuing companies by professional investors and corporate executives. It was extensively used in Canada to estimate utility fair rates of return before the mid 1990's when risk premium evidence became more important, and many utilities were placed on automatic ROE adjustment models. This was after land-mark decisions by the National Energy Board and the BC Utilities Commission in 1994/5.[43] The norm, for example, is to value a bond by discounting all the bond coupons and par value to the current point in time to determine its value. It is then possible to take the market value and reverse engineer to estimate the discount rate. This estimate of the bond's discount rate is called the yield to maturity and is widely published in financial newspapers.

My Appendix D reviews this process for equities where the "standard" DCF model used in regulatory hearings was developed by my late colleague Professor Myron Gordon and is commonly called the Gordon model in finance textbooks. This model states that if there is a long run *constant* average growth rate in dividends per share in perpetuity, then like the bond valuation model there is a simple equity valuation model:

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

If we rearrange this equation to solve for the discount rate, we get

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

I show in Appendix D that this model holds for the overall stock market but 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

[43] Along with my late colleague, Professor Michael Berkowitz, I was involved in both these hearings.

in the S&P500 index. For the period form 1967-2019 the following were the critical growth rates in earnings (EPS) and dividends per share (DPS) and US GDP.

	GDP	EPS	DPS
Average	6.26%	11.14%	6.00%
Median	5.88%	10.98%	6.40%
Volatility	3.18%	39.87%	6.26%
Compound	6.21%	5.57%	5.81%
OLS	6.11%	6.03%	5.75%

Over this long period the average annual growth rate in GDP was 6.26%, the median 5.88%, the compound 6.21% and the least squares estimate of the annual growth rate 6.11%. These are all slightly different ways of estimating the growth rate but tell a similar story. Volatility is the standard deviation or variability of these annual growth rates.

The second two columns are for the average dividends per share (DPS) and earnings per share (EPS) of the firms in the index. First, if we focus on the long run estimates where we see that both EPS and DPS growth rates are very similar but slightly less than the GDP growth rate. These minor discrepancies could be due to the fact that 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. However, it is hard not to escape the fact that both DPS and EPS growth rates will approximate the GDP growth rate for the overall market. This is logical, otherwise corporate profits would be a declining share of GDP, when in fact they show no trend.

The second observation is that the average EPS growth rate is so much higher than the average growth rate in GDP and DPS. How can this be? The answer is by looking at the volatility, where we see that EPS volatility it twice that of either the GDP or DPS growth. Why this matters is that the higher the volatility, the greater the discrepancy between average and compound growth rates. To illustrate. In 2007 the EPS of the S&P500 was 66.17 and collapsed in 2008 to 14.88 or a growth rate of -77.51%. In 2010 the EPS rebounded to 50.97 or a growth rate of 242.54%. The average of these two numbers is 82.51% which indicates huge average growth and yet in 2010 the EPS on the SP500 was less than it was in 2007, so there had been no growth at all. In contrast firms smooth their dividends so their DPS growth does not experience the same volatility.

The upshot of this is that any DCF estimate relying on short run earnings growth to proxy for long run DPS growth is biased high: the shorter the horizon for the growth estimates the bigger the bias. This is before consideration of the well-known bias involved with sell side analyst forecasts discussed in Appendix D. Schedule 5 includes a recent extract referring to analyst bias and the fact that it is relevant and well accepted by investors.[44] However, even if analysts are not biased, by focussing on short term EPS growth this unambiguously over-estimates the long run expected DPS growth and this is what is needed in the Gordon model. Further even if a multi-stage model is used this does not remove the bias, it simply moderates it since the biased short-term growth estimate is still used in the first stage of a multi-stage model.[45]

The fact that it is difficult to envisage a situation where dividends and earnings can consistently increase substantially as a share of GDP constrains the DCF estimate for the market. to considering short run growth and any departures from the economy's long run growth potential. In the DCF model I use the long run growth rate since 1961 which has been about 3.0% with the current dividend yield. Using the Bank's median inflation target of 2.0%, I estimate the DCF required return on the equity market at 8.21-8.87% for Canada. However, currently there is spare capacity in Canada, which is confirmed by the unemployment rate. So, I tend to put more weight on the top of this range. For the US a similar estimation procedure estimates the DCF US market return at slightly over 9.0%. Overall, I judge the DCF estimate for the market to be in the range 8.5-9.5%. These estimates are slightly higher than those provided by the respondents to Fernandez's survey.

Consistent with survey results in both the US and Canada the DCF estimate of the fair rate of return is not placed in as high regard as the CAPM estimate for individual firms. Partly in response, I have traditionally viewed my DCF estimates as "checks" on my CAPM estimates, since in my view CAPM estimates have usually been in the right "ball-park." However, the recent very low long Canada bond yields have forced me to re-evaluate this and look at what

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[44] There is an enormous literature on the bias involved in analyst growth forecasts. Very few if any academics judge analyst forecasts to be objective forecasts of what is expected to happen.

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

drives the difference between the DCF and simple CAPM estimates. This is because they should be consistent. The CAPM equation is as follows:

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

In words, the required (fair) return is the risk-free rate (R_F) plus the risk premium comprised of the market risk premium (MRP) times the beta coefficient (β). For the market we can simply set the beta to one since this is definitional, so the required return is the risk-free rate plus the market risk premium.

The constant growth version of the DCF model is most appropriate for the market as whole for the reasons discussed above and states:

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

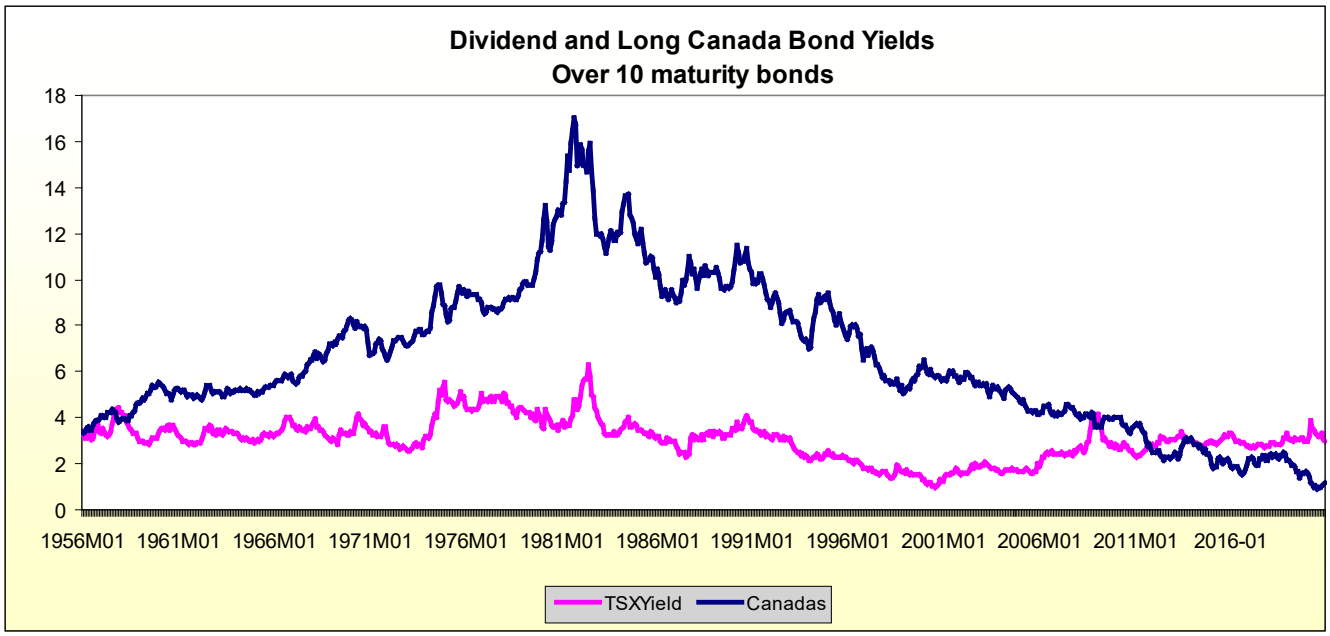
Conceptually the DCF model and CAPM should give the same value, but, of course, since they approach it from a different perspective there is always estimation error. For the overall market the forecast dividend yield can be estimated with very little error, so the estimation error is with the forecast long run growth rate. As a result, if the CAPM and DCF estimates differ significantly, then it is mainly due to the difficulty in estimating the growth rate and the risk premium CAPM.[46] Since both the DCF model and CAPM should give the same answer, we can set them equal which indicates that for the market as a whole

$$DCF - CAPM = {}^{d_1}\!/_{P} - R_F = MRP - g$$

We can assess the relative value of the DCF and CAPM by graphing these "known" parts of both models for the overall market, which are the long Canada bond yield and the TSX dividend yield. Note that in the following graph lately the dividend yield on the TSX is *higher* than the LTC bond yield, which is unusual. However, this has been a persistent phenomenon due to the

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

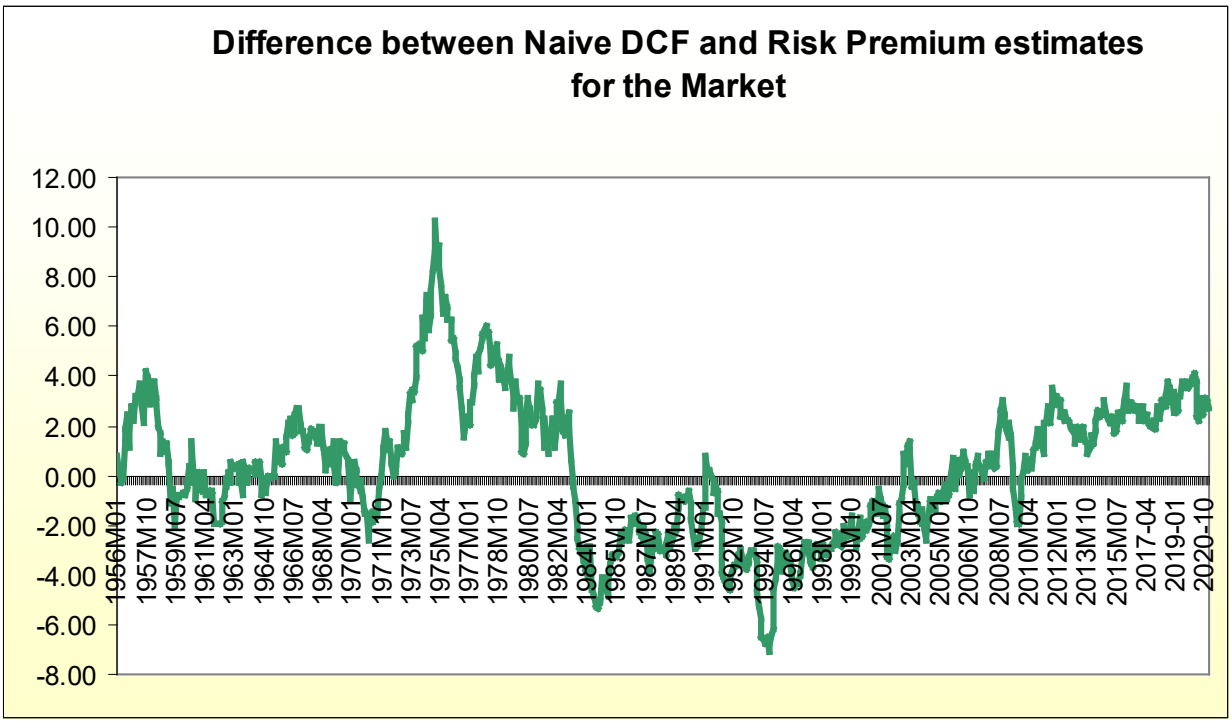
very low LTC bond yields. This simply indicates that the gap between the dividend yield and LTC yield reflects the difference between the market risk premium and the growth rate. As is immediately obvious the difference was greatest in the 1970s and 1980s when from Schedule 1 inflation was greatest.



This also means it is possible to come up with a simple or "naïve" estimate of the market return by adjusting for this bias. For example, I can assume that for the DCF model the forecast growth rate is the actual CPI inflation rate at the time, based on year over year changes, and then add a 3.50% real growth rate. This gives a simple growth rate forecast to add to the dividend yield and thus a simple or naïve DCF estimate for the market as whole. Similarly, we can add a long run market risk premium of 3.5% to the long Canada yield for a simple CAPM estimate. For the entire period, the average naïve DCF estimate is 10.40%, while the average naïve CAPM estimate is 10.11%, or a difference of only 0.29% between the two, so "on average" these assumptions seem to make sense.

To see how robust this simple procedure is, the following graphs the difference between the two estimates for every month since 1956. The graph indicates that the difference was very large from the mid 1970's until the early 2000's, but not consistent. The reason was twofold. First, in the 1970s inflation was increasing and was captured in the DCF estimate whereas bond investors

did not believe that the Bank of Canada would allow these high levels of inflation to continue. This resulted in very *low* real yields on LTC bonds and a positive difference between the DCF and CAPM estimates. In other words, during this period the naïve DCF estimate was higher than the risk premium estimate



Once investors caught up to the impact of high inflation the reverse set in, as the budget deficits at the Federal level convinced the market that the government would inflate its way out of its deficit problems, rather than bring down inflation. As a result, while the year over year inflation rate dropped dramatically, LTC bond yields did not at first similarly drop, leading to very *high* real yields and simple CAPM estimates that exceeded the DCF estimate. It is this phenomenon of low real bond yields in the 1970 into the 1980s and high real bond yields in the 1990s that is a major reason for these significant differences.

The second reason is simply that the real GDP growth rate and the market risk premium have not remained constant since 1956. I testified extensively in the 1990s to the effect that the market risk premium was very low due to the high real interest rates and the risks attached to investing in government bonds. Subsequently, I have increased my estimates of the MRP as this risk has been removed and now use an estimate of 5.0-6.0%, rather than the 3.5% I used in the 1990's.

Similarly, the long run real growth rate may have dropped and could be significantly lower than the 3.5% used in the naive model.

However, the point is that we can "ballpark" the broad range for the DCF estimate for the market just as we can for risk premium models like the CAPM. The most recent naïve estimates are 7.36% for the DCF estimate and 4.67% for the risk premium model. I regard these as low and naïve, but the 2.69% difference supports an adjustment from the 3.5% market risk premium I used to use, as well as from the historic Canadian estimate in Appendix B, Schedule 9 of 4.67%. It also supports the value of currently looking at DCF estimates despite the fact they are downplayed by both professionals and academics.

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

A. Yes. What is important is that there is another side to estimating the fair ROE and cost of equity capital. This is that the required rate of return on the part of the investor (cost of equity capital) is also the expected rate of return. Otherwise, they wouldn't invest. Defined benefit pension funds need this expected rate of return to determine whether a fund is in deficit or surplus. On January 5, 2016, TD Economics updated its October 19, 2012 report on long term returns of the type needed in defined benefit pension plans.[47] The important point about the TD Economics forecast is that the going forward risk premium for equities minus LTC bonds was 5.00% and the expected return on the TSX 7.0%. If this seems low, they expected the return on the S&P 500 to be 4.5% and these are long run, that is, ten-year forecast returns. The 5% difference between equities and bonds is not the market risk premium, since adjustments need to be made, but it is certainly in the right ballpark.

[47] TD Economics, Canadian long-Term Financial Asset returns: An Economic Perspective, January 5, 2016.

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				

Q. WHAT ADJUSTMENTS ARE NEEDED?

A. As TD Economics notes, its return forecast is for ten-year or geometric returns, so they must be converted to arithmetic one-year returns. To make this adjustment for very long returns we add half the variance of the arithmetic return as explained in my Appendix B, with data in Schedule 8. Historically the standard deviation of equity returns has been about 18.26% (0.1826) so the variance is 0.0334 and half this is 0.01667 or 1.67%. Similarly, the volatility of the long Canada bond return has been 8.76%. I would suspect that this overstates the future volatility in long bonds since it is unlikely, we will see LTC yields at almost 20% again, but this means a variance of 0.0076 and half this is 0.378%. Converting these long run returns to arithmetic returns means a market risk premium of 6.29% as follows:

	Long run	1/2 the variance	Arithmetic
Equities	7.0%	1.67%	8.67%
LTC Bonds:	2.00%	0.38%	2.38%

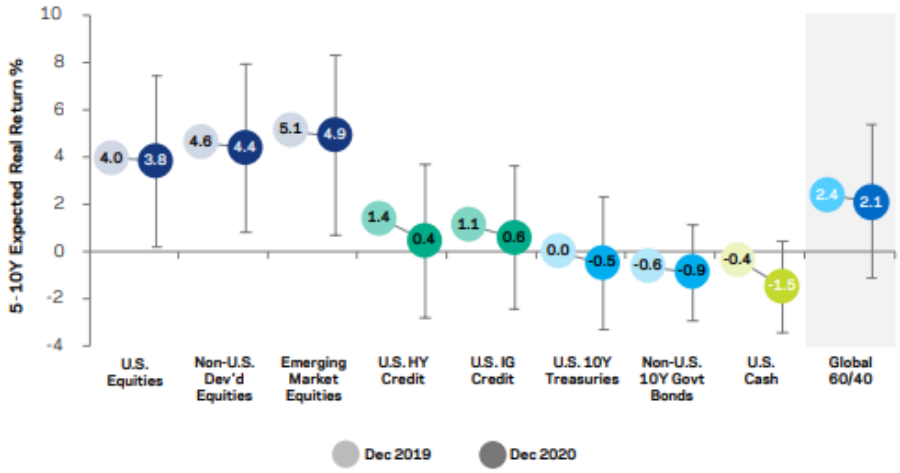
Of interest is that the TD Forecast splits the period into a near term (2015-2019) and later period (2019-2025). For this later period, they forecast increasing returns to the LTC bond with its return increasing from 2% to 3.5% while the return on the TSX is constant at 7%. This means TD's estimate of the longer-term market risk premium declines to 4.79%. from 6.29%. This

range from 4.79-6.29% is wider than my range of 5.0-6.0% but reflects their 2016 expectation of low near term returns from LTC bonds.

Q. ARE GENERAL FORECASTS AVAILABLE?

A. Yes. There are now lots of capital market forecasts readily available from reputable firms and I have looked at several. The first is from AQR,[48] which is a value investing shop,

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



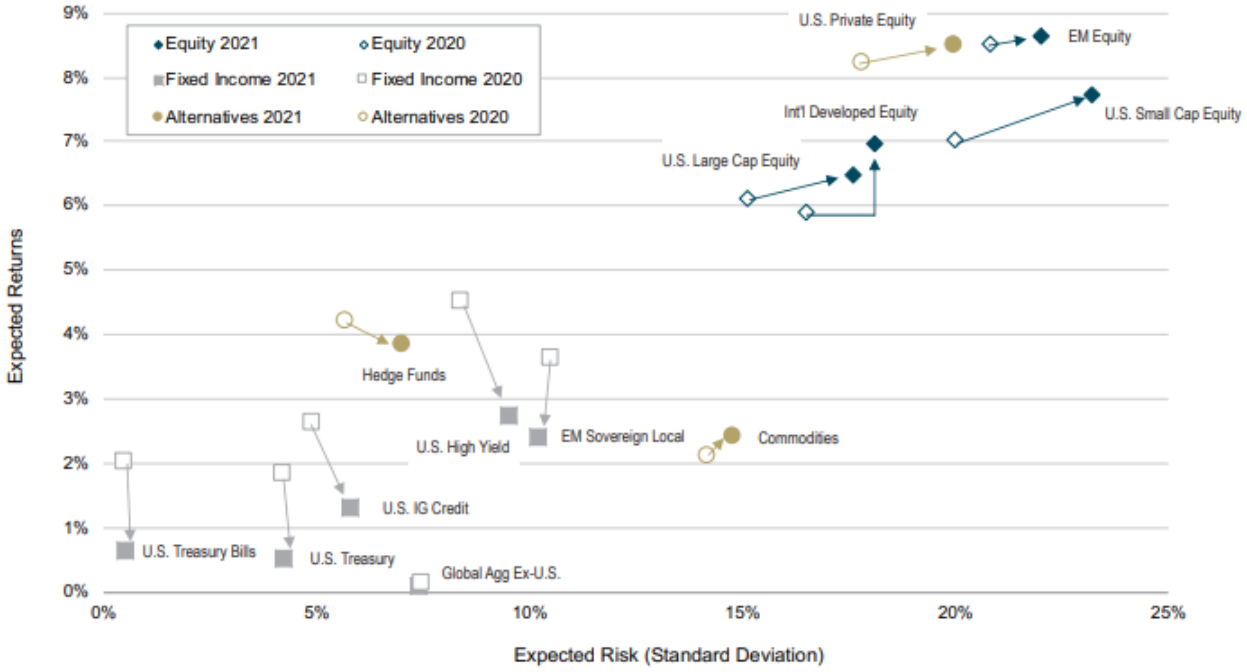
Source: AQR; see Exhibits 3-5 for details. Estimates as of December 31, 2020. "Non-U.S. developed equities" is cap-weighted average of Euro-5, Japan, U.K., Australia, Canada. "Non-U.S. 10Y govt. bonds" is GDP-weighted average of Germany, Japan, U.K., Australia, Canada. Error bars cover 50% confidence 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.

For US equities they are forecasting real returns of 3.8% down from 4.0% in 2019, which with 2.0% inflation puts the nominal return at about 5.8% subtracting the return on ten year US Treasuries gives a market risk premium of about 4.3%, since their forecast is for a negaitve real return on Treasuries.

The following is from the Bank of New York Mellon[49]

[48] Capital market assumptions for major asset classes, 1Q2021.

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

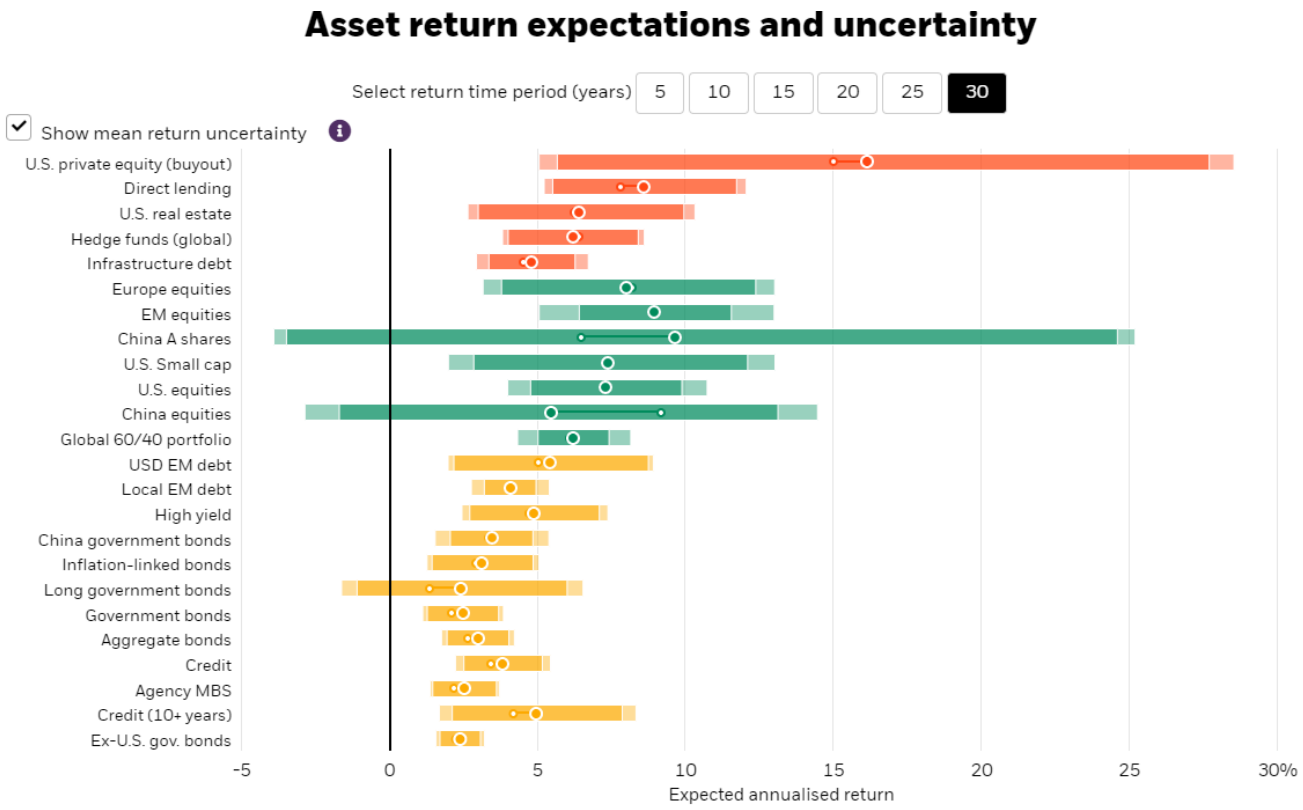


Source: BNY Mellon Investor Solutions. Data as of November 30, 2020.

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

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

[49] 10-year capital market return assumptions. Calendar year 2021



The final forecast is from J.P Morgan the largest US bank where the forecast is the most recent one.[50] It is so comprehensive I have put the main elements in Schedule 6. For US equities they have a long run return assumption of 4.1-4.6% with the lower number for large capitalisation stocks and the higher number for small caps. For long US Treasuries they have a forecast of 0.40% so the market risk remium is 4.2-5.0%.

JP. Morgan also explain how they derived their equity forecast. As they state this year our equity return assumptions decline across most regions. However, they start with revenues which for the US are forecast at 5.2% make an adjustment for increasing profit margins to 5.3% adjust for share sales and buybacks which essentially net out to come up with an estimate of a 7.1% return. They then discount this by 3% for a "valuation impact" which essentially means they thought the US stock market was over-valued at the time.

[50] 2021 Long-Term Capital Market Assumptions, J.P Morgan Asset Management.

This year, our equity return assumptions decline across most regions

EXHIBIT 5A: SELECTED DEVELOPED MARKET EQUITY LONG-TERM RETURN ASSUMPTIONS AND BUILDING BLOCKS

Equity assumptions	U.S. large cap	Eurozone	Japan	UK
Revenue growth	5.2	4.4	3.4	5.3
+ Margins impact	0.1	1.5	1.5	0.2
Earnings growth	5.3	5.9	5.0	5.5
+ Gross dilution	-2.0	-2.0	-2.0	-2.0
+ Buybacks	2.1	1.1	1.5	1.2
EPS growth	5.4	4.9	4.4	4.7
+ Valuation impact	-3.0	-2.2	-1.9	-1.5
Price return	2.4	2.7	2.6	3.1
+ Dividend yield (DY)	1.8	2.5	2.5	3.5
Total return, local currency	4.1	5.2	5.1	6.7
Change vs. 2020 LTCMAs	-1.5	-0.6	-0.4	0.6

Source: J.P. Morgan Asset Management; estimates as of September 30, 2019, and September 30, 2020.
Components may not add up to totals due to rounding.

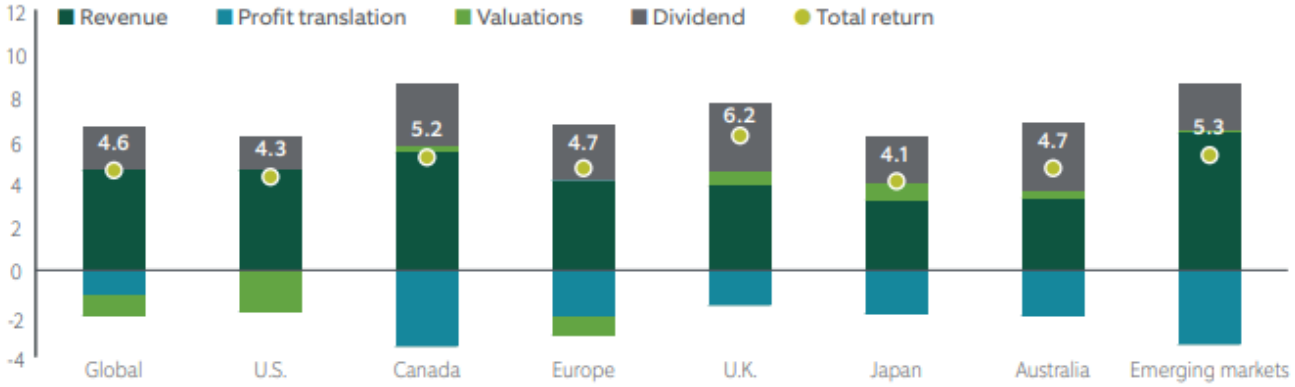
What is important from this brief review is that these capital market assumptions are from some of the leading financial institutions in the world. The important big picture is the consensus, similar to that from the Fernandes survey, that long run equity returns are on the 6-8% range and the market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

Finally, below is the vary latest 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

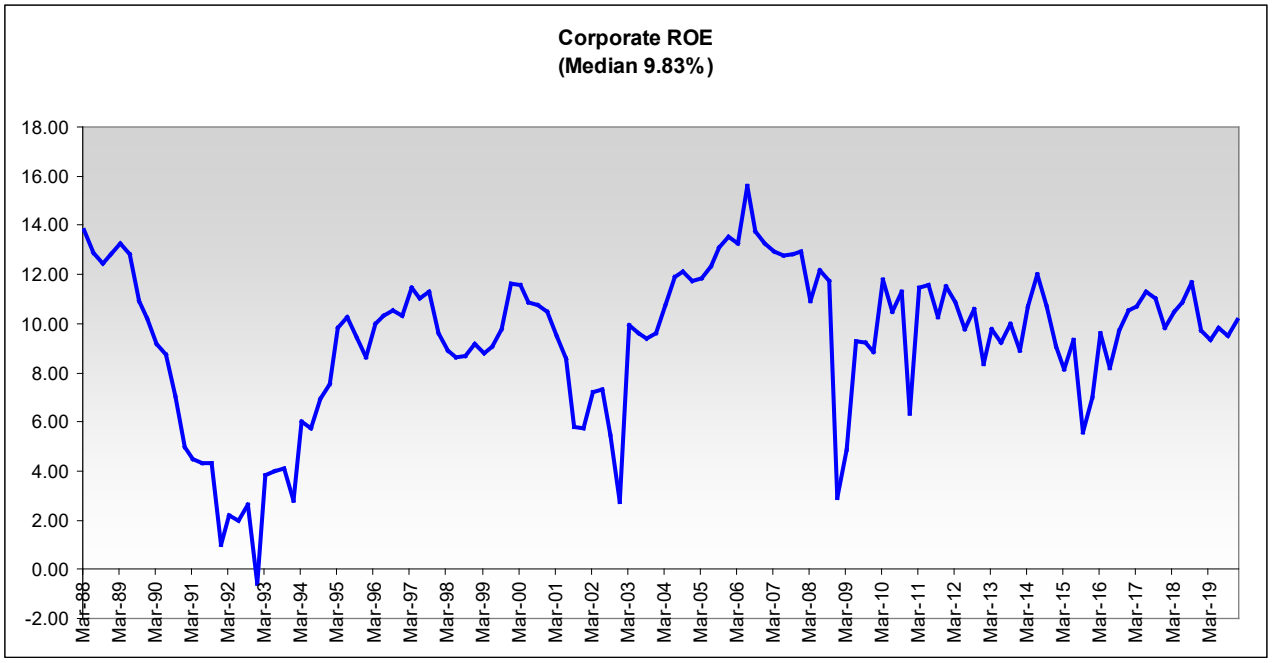
Northern Trust sees a reversion to trend after the excellent markets of the last several years. They are forecasting a medium term equity market return of 5.2% for Canada and 4.3% for the U.S. Their "best pick" is for the UK equity market with a 6.2% forecast return.

Q. DOES NP USE THESE SORT OF FORECASTS?

A Yes**.** NP has a defined benefit pension plan and needs a forecast of the returns on that plan to determine whether it is underfunded. In answer to CA-NP-080 it said the expected equity return was 7.3% and in a footnote that adjusting it to an arithmetic from a geometric return estimate would increase it to 8.9%. NP qualifies this explicit forecast by stating that it is for a "diversified equity portfolio" and not NP. This is true but irrelevant, as it is indicative of the expected return on the market like the forecasts just presented. It also just happens to be almost smack in the middle of my own estimates of 8.5-9.5%. NP's allowed ROE then must be downwardly adjusted to reflect its lower risk.

Q. IS THERE ANY OTHER EVIDENCE SUPPORTING YOUR ESTIMATE?

A. Yes. Ultimately, stock market returns are driven by the returns earned by companies and the productivity of the underlying economy. Highly productive, rapidly growing economies are generally short of financing, so the cost of capital is higher and vice versa. Below is the average ROE for "Corporate Canada" as estimated by Statistics Canada. This is the quarterly version of the average data in Schedule 1.



From 1988 until 2019-Q4 the median ROE has been 9.83%. I regard this as representative of the typical ROEs earned by Canadian firms. These corporate ROEs are obviously tied to the market rates of return earned by investors. For example, in 1925 John Maynard Keynes pointed out[51] that there were two sources of returns from investing in the stock market. The first he called the ***investment return*** which Keynes defined as "forecasting the prospective yield of an asset over its entire life."[52] In modern terminology this would be the internal rate of return on the firm's cash flows, or an approximate ROE. The second component he called the ***speculative*** return, which involved forecasting the psychology of the market and what Keynes referred to as the change in the "basis of valuation." In modern terminology this would be a change in the price earnings ratio. Keynes discussed this speculative return as being generated by the "state of confidence" and "animal spirits" but he also pointed out it is affected by the level of interest rates.[53]

[51] 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

[52] This definition comes from chapter 12 of the General Theory of Employment Interest and Money, Macmillan London, 1936

[53] Page 149 of the General Theory

Keynes' point would be that a firm may earn an ROE of 10%, but if the valuation of that firm changes by 10% then the investor would earn both a speculative return as well as an investment return. This total return is what we look at when we examine stock market returns over long periods of time. However, in aggregate the change in the basis of valuation cannot go on forever. We cannot continue to have a state of high confidence, any more than interest rates can continue to increase or decrease forever: both will tend to revert to some long run average. However, professional investors according to Keynes are mainly concerned with speculative returns or forecasting the change in this basis of valuation six months out. In contrast, buy and hold or fundamental investors are mainly concerned with the investment return: finding good companies and holding them regardless of the speculation in the stock market.

Warren Buffet is probably the most successful fundamental investor of the last fifty years. He repeated Keynes' argument by stating:[54]

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

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

This discussion of what generates stock market returns is provided since in the long run the average stock market return should approximate the average investment return or ROE,[55] that is the speculative return should average out to zero. There are two ways in which we can look at

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

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

the investment return; the first is to look at average rates of return on equity and the second to look at a DCF model for the overall market.

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

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

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

Q. ARE THERE ANY DCF ESTIMATES FOR INDIVDIUAL UTILITY SHARES?

A. The DCF model is appropriate for "pure" utilities, unfortunately these are now few and far between due to mergers and acquisitions activity. However, we can get some insights from the data in my Appendix D Schedule 15 where I estimate the median DCF cost using analyst forecast data at 8.95%. However, this estimate reflects the well-known analyst optimism bias where they persistently forecast optimistic growth rates and then gradually lower them to zoom in on the actual growth closer to its realisation. Schedule 8 has a recent Economist take on the well-known analyst optimism bias. Using more realistic sustainable growth rates the DCF equity cost is 6.04%.

We can assess the validity of sustainable versus analyst growth forecasts by looking at the historic experience. Until 2018 S&P produced an Analyst Handbook that had earnings and dividends for the utility sector like that for the Index as a whole. Further, S&P sub divided utilities into gas, electric and multi-utilities. However, even in the 2018 edition there was no data for gas utilities after 2015 since they had all been acquired.[56] However, for the overall utility 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%
OLS	1.34%	1.67%	6.11%

Over the period from 1967-2017 US GDP grew[57] on average (median) 6.49% (5.99%), both slightly above the full period due to the absence of the 2020 negative growth rate. In contrast, these US utilities had average (median) dividend per share growth of 3.1% (4.10%) with average (median) earnings growth of only 4.25% and 3.91%. The compound growth rates are even worse at 2.04% for earnings and 2.37% for dividends, while the least squares regression results are worse still at 1.34% and 1.67%. The reason for the latter two is that they implicitly put more weight on the later performance where the utility EPS was $12.01 in 2017, but was also $12.36 in 2009, and $10.48 as far back as 1993. So, there is little evidence of significant earnings growth.

This evidence from the S&P500 utility data is for the larger utilities included in the S&P500 index and this reflects the problems of holding companies like Duke Energy and PG&E. However, this is also in the minds of investors in utility stocks in the U.S. From this data it is extremely difficult to justify U.S utilities growing at rates higher than the US GDP growth rate as is implied in the use of analyst growth forecasts. It is also difficult to justify including growth at

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

[57] These are nominal growth rates and include inflationary growth.

the GDP growth rate when a multi-stage DCF model is used.[58] I would regard long run growth at 65-68% of the GDP growth rate as being reasonable based on actual experienced median growth rates.[59] This would mean 3.3-3.4% long run growth rates based on a 5% GDP growth rate, and a DCF equity cost of 6.8-6.9% when added to their current typical dividend yield of 3.4%. This estimate is consistent with the sustainable growth rate estimates and a risk hierarchy when compared with the overall stock market equity cost of 8.50-9.50%.

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

A. I would judge a fair ROE based on my CAPM estimates to be in a range 6.77-7.97% with an average of 7.37% based on the following numbers:

Risk Premium

	Low	High
Forecast long Canada bond yield	3.07	3.07
Adjustment for bond buying	0.90	0.80
Adjustment for Credit spreads	0.15	0.30
Utility risk premium	2.25	3.30
Adjustment to ROE	0.50	0.50
Estimate	6.77	7.97

My DCF analysis I use to directly estimate the overall equity market return. This is extremely important since it is the basic ingredient in any risk premium approach as it indicates the market's trade-off between risk and return.

DCF & Other return estimates:

DCF equity market return:	8.50-9.50%
Average Canada ROE since 1980:	9.83%
Asset Manager long run equity returns:	7.00-9.00%
NP Actuaries expected return:	8.90%
DCF Costs for SP500 utilities:	6.8-7.0%

[58] Mr. Coyne includes analyst earnings growth forecasts in his first stage and then blends them into a long run GDP growth rate in the third stage. Each of these growth stages are demonstrably too high and biased.

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

These DCF estimates are for the equity cost and would need an adjustment to get the fair rate of return like that from the CAPM. A final consideration is that NP's common equity comes from Fortis where it has been financed with a mix of common shares and preferred shares. There are a variety of different types of preferred shares in the same way that there is a variety of different types of debt. However, what they share with common equity is that any dividends must be declared by the Board of Directors, and like common shares, dividends are paid out of after-tax income. These means that dividends are tax preferred in Canada since they attract the dividend tax credit. Consequently, for the highest tax bracket investor in Newfoundland the tax rate is 42.6% on these preferred shares versus 51.3% for an equivalent risk debt instrument. However, since the dividend is not a contractual expense, like interest, it can be missed without creating a similar credit event. Preferred shares are sometimes compared to high yield bonds since their risk characteristics are in between investment grade debt and common shares.

In Schedule 9 I have a screen capture from Yahoo Finance on Fortis preferred shares. There are two important insights from this. First, the yield of 4.82% provides a lower bound for the equity cost. This is because although preferred shares are just a class of shareholder's equity, like common shares, they have a preference in terms of both the dividend and payment in the event of bankruptcy. Second the price of these preferred shares and thus the yield fluctuates with market conditions with a similar drop during the worst of the Covid 19 pandemic where on March 24, 2020 their price dropped to $19.35. With a 1.23 dividend this meant a yield of 6.4%.

I would expect the investor's required return on NP's common shares to be in between the yield on preferred shares (4.82% at the start of September 2021) and the overall return on the stock market (8.50-9.50%). My average risk premium and DCF estimates for a benchmark utility satisfies this requirement. Balancing the different estimates, I would continue to recommend a 7.5% fair ROE for a benchmark utility in a range 7.0-8.0%.

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

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

A. Mr. Coyne is from the US and bases his evidence heavily on U.S returns from US utility holding companies. I continue to regard these estimates as biased high when applied to pure Canadian regulated utilities for three reasons.

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

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

* Third, although the principles of regulation are largely the same between the US and Canada, as is widely recognised the implementation is different.

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

A. NP is a transmission and distribution (T&D) utility with minimal generation largely as stand by generation. Moreover, most of the revenues are generated by residential and commercial customers with an almost complete absence of industrial load. It is almost impossible to find a traded utility with those characteristics, particularly in Canada. I have traditionally used Emera, Fortis, and Canadian Utilities as the best proxies. However, this has become more questionable each year for the last ten years. Morningstar, for example, recently stated:

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.

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.

It is quite clear that the stock prices of both Emera and Fortis are now being driven more by U.S regulatory practise than Canadian. Their historic betas etc may still predominantly reflect their Canadian operations but going forward Morningstar judges this to be no longer true.[60] At least both companies remain predominantly regulated companies and have diversified into similar low risk areas. However, this is not the case for the U.S utilities.

[60] Morningstar itself is a US company and does not issue an analyst report on Canadian Utilities.

Q. WHAT IS DIFFERENT ABOUT THE U.S UHCs?

A. They are almost all integrated electric utilities with considerable generation, where Mr. Coyne before the Regie in 2013 reduced the allowed ROE by 0.41% when comparing U.S electric utilities with generation to Hydro Quebec Transmission and Distribution.[61] In answer to CA-NP-62 Mr. Coyne reported the self-generation for each of the U.S utilities in his sample. The average is 69%. Quite strikingly nuclear generation was present for 6 of his 9 U.S utilities with an average of 43% nuclear generation. Excelon had the largest where Morningstar states

> Exelon's generation continues to be a primary concern and the reason we value the company at a discount to its peer regulated utilities. As the largest nuclear power plant owner in the United States, Exelon has suffered as low natural gas prices slashed power prices. The company has shown its political clout, winning price subsidies in Illinois, New York, and New Jersey to keep some of its nuclear fleet running. Exelon continues to seek additional subsidies for its Illinois plants. State legislators continue to work on clean energy legislation, but there is only a narrow window for legislation to pass given Byron and Dreden's pending closures this fall.

I do not judge Excelon and many of these other U.S integrated utilities as comparable to NP unless Mr. Coyne continues his past practise of making an adjustment to reflect their higher risk.

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

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

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

It is remarkable enough that our prime Minister criticised the U.S so directly, particularly when the principles of regulation for the banking system are under the Bank for International Settlements (BIS) and the same for both the U.S and Canada. The fact is it was the United States

[61] In answer to CA-NP-125 Mr. Coyne states that he has not investigated whether any Concentric witness has made adjustments to a U.S proxy sample for generation risk in their evidence.

that triggered the Great Stock Market Crash of 1929 leading to the Great Depression and almost every major crisis since then, including the Financial crisis of 2008/09.

Mr. Coyne states that "from a business investment perspective, Canada and the U.S are highly comparable." A conclusion he draws from the Coface ratings. However, it is also true that the following have the same Coface A3 ratings: Australia; Singapore; South Korea; Belgium; Estonia; France; Germany; Iceland; Spain; and the United Kingdom. Obviously as former colonies of the United Kingdom both Canada and the US have much in common, but then so too do Australia and the UK itself. This is before considering using data from South Korea, Iceland, and Belgium.

There are dramatically different cultural and institutional values that do not go into the Coface rankings making the comparison misleading. As an example, at Schedule 11 are the political risk assessments for the countries in North and Central America. Top is Canada with the US significantly below and almost as close to Trinidad and Tobago, Jamaica, Panama, and Mexico as Canada. While such rankings are fun to look at, they should not be the basis for a conclusion that any two countries are identical as is implicitly assumed if U.S. data is used in Canada without qualification.

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

A. Yes. In 2012 I referenced two reports by Moody's, one in 2005 and another in 2009 where they reviewed their rating methodology.[62] The first one cited three major factors that determined how it rated the supportiveness of regulation. These were (paraphrasing)

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

[62] Rating methodology: global regulated electric utilities, Moody's March 2005.

Second in 2009 Moody's reviewed this report and issued a new one[63] where they refined their assessment into the following four major areas where the % indicates the weights applied by Moody's,

- Regulatory framework: 25%
- Ability to recover costs and earn profits: 25%
- Diversification: 10%
- Financial strength and liquidity: 40%

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

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

Moody's goes on to discuss how 4 of the 6 investor-owned bankruptcies in the US resulted from regulatory disputes culminating in insufficient or delayed rate relief for the recovery of costs and/or capital investment in utility plant. Moody's further states "as is characteristic of the US, the ability to recover costs and earn returns is less certain and subject to public and sometimes political scrutiny." I would emphasise here Moody's phrase "as is characteristic of the US" since this reflects how legal principles are implemented rather than differences in those principles. This phrase betrays an underlying cultural attitude towards risk that is different from Canada.

What must be remembered is that utilities are low risk investments with hefty dividend yields. In Canada, *Canadians* get the dividend tax credit which lowers the effective tax rate on dividends from *Canadian* securities to 33.51% for a resident of New Brunswick who is in the highest tax bracket.[64] In contrast, the dividends from an otherwise identical US utility would pay tax at

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[63] Infrastructure Finance; Regulated Electric and Gas Utilities, August 2009.

[64] https://www.ey.com/en_ca/tax/tax-calculators

53.30%. The result is that most investors would obviously prefer to pay the lower tax rate and thus buy the Canadian utility, thereby segmenting the market for dividend paying shares. As a Canadian tax-paying investor myself, I judge these tax differences to be relevant, and published a key paper in this area in 1987 and nothing has changed since then.[65] The fact is the Canadian tax system is one where personal and corporate taxes are "integrated" whereas the US is referred to as a classical system and is not integrated. Further the fact that personal and corporate taxes are integrated means that Canada is unwilling to extend the dividend tax credit to foreign securities, since the corporate tax that they pay is not to the Government of Canada. As a result, dividends from foreign utilities are taxed at full personal tax rates and high dividend paying shares are predominantly held by Canadian retail investors.

Another way of saying this is that US estimates can only be used in Canada *without* any adjustments if the markets are perfectly integrated so the shares trade in an identical manner and are valued on the same basis. While Mr. Coyne admits that the markets are not perfectly correlated, he judges them to be not too dissimilar, but this is a judgement he makes without considering the basic legal and tax differences.

Q. HAVE CANADIAN REGULATORS CONFIRMED THIS?

A. Yes. In a 2009 Decision this Board commented on Ms. McShane use of US "comparables" and stated (Decision page 17)

[65] Laurence Booth, The Dividend Tax Credit and Canadian Ownership Requirements, Canadian Journal of Economics, (May 1987).

> The Board believes that, in this type of analysis, it is not enough that the chosen comparables are the best available. If this data is to be relied on it must be shown to be a reasonable proxy or that reasonable adjustments can be made to account for differences. The evidence showed significant differences in virtually all of the comparables including significant levels of non-regulated and non-utility business as well as riskier generation projects, earnings volatility, more competition and less regulatory support. While it was argued that, on balance, the U.S. comparables are reasonable proxies the Board notes the overwhelming evidence of a lack of balance as it was clear that on almost every measure Newfoundland Power would have to be considered less risky than the U.S. comparables. The Board heard evidence that the rating agencies consider U.S. companies to be peers for Newfoundland Power but the Board does not conclude from this that they are the same. Moody's comments acknowledge the differences in operations in the U.S. and Canada:
>
> > *"NPI's Baaa1 issuer rating reflects the fact that the company's operations are exclusively based in Canada, a jurisdiction where regulatory and business environments in general are relatively more supportive than those of other international jurisdictions such as the United States, in Moody's view."* (Application, 1st Revision, Exhibit 4 - Moody's Credit Opinion, August 3, 2009)

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

Also, the BCUC (decision page 52) commented on Ms. McShane's use of US comparables and 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.

As the BCUC Decision clearly indicates evidence drawn from US utilities is useful but needs to be adjusted. In subsequent decisions the BCUC has not needed to restate this, since by and large the Decisions have been based on subsequent changes. In the 2013 Decision referenced by Mr. Coyne the BCUC again stated that they have the potential to be useful and are a check on the Canadian estimates.

The Regie in a 2009 Gaz Metro decision also concluded (295) that

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

All of these decisions have had to grapple with the smaller sample of pure regulated Canadian utilities traded in the capital market, as indeed all witnesses have had to do. However, I am not aware of any decision that has simply taken estimates from US companies or the US capital market and said that they are appropiate for use in Canada without making any adjustments. That is a procedure I agree with. Further, I am not aware that the subtractions made by both this Board and the BCUC from U.S estimates (0.50-1.0%) have been withdrawn in subsequent hearings.

VII. NP's FINANCING

A. CAN NP FINANCE ON REASONABLE TERMS WITH YOUR RECOMMENDATIONS?

A. Yes. At Schedule 12 is a table taken from the Alberta Utilities Commission 2018 Decision (AUC 22570-D01 August 2018). The AUC normally has a summary table making sure that the utilities that it regulates meet the requirements of some form of an A bond rating. I do not normally recommend that regulators follow other regulators since the process is circular. However, the objective of the table is simply to see what credit metrics drop out of certain parameters set by the regulator to assess the potential impact on the credit rating. The table is based on an allowed ROE of 8.5%, a 27% tax rate, an embedded debt cost of 4.7% and an average depreciation rate of 5.73%. As the table shows, a distributor could meet the standard 2X interest coverage ratio with a 31% common equity ratio. An interest coverage ratio of 2X is standard for distributors, since many in their bond covenants have a new issue test of 2X which must be met before the utility can issue debt.[66]

The AUC's actual allowance of 37% common equity for a generic distributor on an ROE of 8.5% results in a 2.4X coverage ratio and at NP's current 45% equity ratio would, all else constant, mean an interest coverage ratio of 2.9X if it were an Alberta utility.[67]

Q. WHAT IS NP's BOND RATING?

A. Morningstar DBRS rates NP's debt at A and Moody's at A2. In Moody's case they assign both an issuer and an issue rating. Moody's issuer rating for NP is BAA1, which they then upgrade by two notches because NP issues mortgage bonds. DBRS does not do this since there is no other long-term debt outstanding. In both cases they are higher ratings than normal for a regulated Canadian utility.

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[66] This differs from that contained in the financial statements, since there is some averaging of earnings allowed and it is adjusted for changes in the debt outstanding.

[67] FFO stands for funds flow from operations which is essentially the same as cash flow from operations.

In Fortis Q3 2021 Investor presentation they provided the following credit ratings where Fortis's policy is to have the main operating subsidiaries raise debt under their own name. Note that while Fortis is a Moody's Baa3 issuer all the Canadian operating companies have higher ratings indicating the higher risk of a holding company as compared to its underlying operating companies. Also note that no Canadian utility has a higher rating than Newfoundland Power at A2.[68]

Company	S&P Global	Moody's	Morningstar DBRS
Fortis Inc.	A-(1)	Baa3	A (low)
ITC Holdings Corp.	A-(1)	Baa2	n/a
ITC Regulated Subsidiaries	A	A1	n/a
TEP	A-	A3	n/a
Central Hudson	A-	A3	n/a
FortisBC Energy	n/a	A3	A
FortisBC Electric	n/a	Baa1	A (low)
FortisAlberta	A-	Baa1	A (low)
Newfoundland Power	n/a	A2	A

(1) S&P credit ratings for Fortis Inc. and ITC Holdings Corp. reflect the issuer credit ratings. The unsecured debt rating for Fortis Inc. and ITC Holdings Corp. is BBB+.

[68] This converts NP's actual Moody's rating to a consistent scale.

Q WHY DOES AN AVERAGE RISK UTILITY LIKE NP HAVE A HIGHER-THAN-AVERAGE BOND RATING?

A. This is mainly due to the generous financial parameters allowed NP by the Board. Overall, rates must be fair and reasonable, and this is determined mainly by the combination of both the allowed ROE and common equity ratio. When these two components are multiplied together it gives the net income or equity return as a % of rate base, that is, given the target rate base this percentage gives the target allowed net income. As this net income gets larger there is a greater equity cushion to support the debt so if material the rating goes up. For the Canadian utilities this data, from Fortis Q3 2021 Investor Presentation, is

			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%

With an 8.5% allowed ROE and 45% common equity ratio NP's target net income as a % of rate base is 3.83%, which is the highest of any of the Canadian utilities owned by Fortis.

If the Board continues to regard NP as an average risk Canadian T&D utility, then the average for Fortis' Canadian utilities ignoring NP is 3.51%. At the current allowed ROE of 8.5% that means a 41% common equity ratio or at the current allowed 45% common equity ratio an allowed ROE of 7.8%. Anything else indicates that the Board does not actually regard NP as an average risk Canadian utility.

Adjustments can always be made for every utility. For example, some might say that NP is a small utility, but the Ontario utilities and Maritime Electric are smaller; or that Fortis BC Electric is a comparator electric utility, but Fortis BC Electric has significant generation; or that NP serves a widely spread customer base, but then so to do other utilities. The fact is that NP is an outlier in having a higher equity charge in its revenue requirement than these other Fortis utilities and if they are not comparators which Canadian utilities are?

Q. WHAT ARE YOUR RECOMMENDATIONS?

A. The Board set NP's common equity ratio at 40-45% as far back as 1991 and I have consistently stated for the last several hearings that it is time to move the deemed common equity ratio to the lower level of 40%. This common equity ratio is the most allowed Fortis' other Canadian utilities indeed Fortis Alberta gets the same 37% common equity ratio allowed the average risk T&D utilities in Alberta, while Fortis BC Gas is allowed 37% from the BCUC. I have consistently judged 35% to be a fair common equity ratio for a gas or electric T&D utility, which was the amount allowed the Ontario gas distribution utilities prior to a negotiated settlement increase to 36%.[69]

My personal recommendation is for a 7.5% allowed ROE on 40% common equity, similar to my past recommendations. At that time, I suggested that the Board deem 5% of the then allowed 45% common equity as preferred shares. This could be a book-keeping exercise using the average for Fortis outstanding preferred shares or simply deeming them at the current 4.82% yield. This latter option is more generous since some of Fortis preferred shares have a floating dividend rate and as a result a much lower cost. A 7.5% allowed ROE on 40% common equity gives a 3.0% equity return as a % of forecast rate base, which is marginally lower than the 3.17% the AUC allows Fortis BC. However, using the current 8.5% allowed ROE and simply reducing the common equity ratio to 40% is the more pressing concern as it is the common equity ratio that is out of line with comparable Canadian T&D utilities. With these parameters NP's rate would be 3.4% which I still regard as marginally high but at least consistent with what other Fortis Canadian utilities are allowed.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes

[69] Union Gas was historically allowed a 29% common equity ratio, partly due to its mainline gas transmission lines, where the NEB allowed a 30% common equity ratio.

SCHEDULE 1

	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	3.04	1.60	0.71	2.18	0.77	10.72
2018	5.82	2.43	2.27	1.40	2.17	0.77	10.68
2018	5.73	1.86	1.95	1.66	1.75	0.75	9.70
2020	9.60	-5.40	0.72	0.42	1.12	0.75	N/A
Cansim	V13682111	v62305752	v41690973	V122484	V122501	V37426	V634672/V634628

CANADA BOND YIELDS

Overnight money market rate		0.20
Benchmark bonds		
Canada	91-day Treasury Bill yield	0.19
Canada	Six-month Treasury Bills	0.17
Canada	One-year Treasury Bills	0.27
Canada	Two-year	0.43
Canada	Three-year	0.53
Canada	Five-year	0.81
Canada	Seven-year	0.97
Canada	Ten-year	1.18
Canada	Long-term (30 year)	1.74
Canada	Real-return bonds	0.06
Marketable Bond Average yields		
Canada	1-3 year	0.39
Canada	3-5 year	0.72
Canada	5-10	1.08
Canada	Over tens	1.66

Source: Bank of Canada's web site at http://bankofcanada.ca August 31, 2021.

SCHEDULE 3

US. Electric UHC ROEs

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Variability	Average
Duke Energy	7.53	5.56	6.48	4.58	6.99	5.33	7.39	6.23	8.36	2.8	1.63	6.13
Allete Inc.,	9.13	8.52	8.23	8.45	8.23	8.36	8.69	8.24	8.46	7.7	0.37	8.40
Eversource	10.09	7.94	8.34	8.37	8.64	8.95	9.07	9.15	7.54	9.03	0.72	8.71
OGE Energy	8.63	8.19	8.36	8.34	6.26	7.05	11.26	7.89	7.84	-0.79	3.12	7.30
Pinnacle West	9.05	9.79	9.94	9.29	9.77	9.42	9.96	9.99	10.11	9.95	0.35	9.73
Evergy	8.9	9.63	9.79	9.83	8.38	9.27	8.38	7.69	7.2	7.15	1.03	8.62
Alliant	9.87	10.3	11.17	11.4	10.56	9.79	11.37	11.68	11.38	11.27	0.69	10.88
American Electric	13.72	8.42	9.45	9.93	11.79	3.46	10.72	10.31	9.94	10.95	2.67	9.87
Entergy	15.26	9.28	7.56	9.58	-1.83	-6.73	5.12	10.08	13.02	13.13	6.93	7.45
Southern	13.04	13.1	8.81	10.08	11.75	10.8	3.44	9.11	18.15	11.24	3.75	10.95
Excelon	17.86	6.48	7.78	7.16	9.38	4.39	13.54	6.63	9.32	6.06	4.03	8.86
POR	9.03	8.32	5.92	9.38	8.25	8.39	7.86	8.61	8.4	5.96	1.17	8.01
PNM	11.26	6.61	6.13	6.85	0.93	7.02	4.74	5.06	4.6	9.27	2.79	6.25

SCHEDULE 4

U.S. Electric UHC Market (price) to book ratios

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Current
Duke Energy	1.28	1.1	1.18	1.43	1.23	1.34	1.41	1.46	1.5	1.6	1.74
Allete Inc.,	1.5	1.34	1.6	1.66	1.37	1.7	1.86	1.85	1.9	1.41	1.53
Eversource	1.62	1.33	1.4	1.72	1.57	1.65	1.82	1.81	2.32	2.12	2.17
OGE Energy	2.19	2.01	2.25	2.18	1.57	1.94	1.82	1.94	2.13	1.74	1.96
Pinnacle West	1.35	1.41	1.36	1.68	1.54	1.79	1.85	1.78	1.82	1.54	1.53
Evergy	1.4	1.25	1.36	1.66	1.64	2.1	1.91	1.36	1.71	1.43	1.74
Alliant	1.63	1.55	1.75	2.14	1.89	2.24	2.37	2.18	2.7	2.26	2.62
American Electric	1.36	1.36	1.45	1.76	1.62	1.79	2	1.94	2.37	2.03	2.09
Entergy	1.42	1.23	1.2	1.54	1.33	1.31	1.69	1.93	2.38	1.86	2.06
Southern	2.27	2.03	1.94	2.25	2.06	1.98	2.01	1.83	2.44	2.29	2.48
Excelon	2	1.19	1.07	1.35	0.99	1.26	1.35	1.41	1.39	1.25	1.49
POR	1.15	1.2	1.32	1.57	1.45	1.67	1.69	1.65	1.94	1.48	1.7
PNM	0.91	1.02	1.15	1.37	1.38	1.62	1.82	1.85	2.42	2.35	2.04
Average	***1.54***	***1.39***	***1.46***	***1.72***	***1.51***	***1.72***	***1.82***	***1.77***	***2.08***	***1.80***	***1.93***

5. Alternative Fuel Risk

Maritime Electric faces competition from alternative fuel sources such as fuel oil for space heating needs, but this competition is not significant. The majority of the Company's residential customers are oil-based heating customers. However, Maritime Electric has experienced higher than normal sales growth due to an increase in the use of electric-based space heating (primarily heat pumps), as customers are switching from oil-based heating. Maritime Electric estimates that approximately 30.00 percent of its customers are currently using electricity for space heating. This trend is expected to continue in the near term with the recent announcement of incentives from the Government (efficiencyPEI) for energy efficient equipment for heating/cooling and the 10.00 percent rebate applied on the first block (2000 kwh) for residential customers, but is not expected to be sustained over the longer term.

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SCHEDULE 6

Fama-French Application

Company	β_i	β_i^S	β_i^V	3FM	β_i	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%**

Stock Market Betas

			Canadian Utility Holding Companies (UHCs) and Pipelines							
	CUL	Emera	Fortis	GMI	UHCs	Enbridge	TRP	VERESEN	PPL	Pipelines
12-29-00	0.36	0.28	0.22	0.18	0.26	0.05	0.17			0.11
12-31-01	0.25	0.21	0.13	0.10	0.17	-0.13	-0.07			-0.10
12-31-02	0.18	0.16	0.13	0.07	0.14	-0.20	-0.08		0.46	0.06
12-31-03	0.05	-0.05	-0.05	0.02	-0.01	-0.40	-0.40	0.02	0.11	-0.17
12-31-04	0.03	-0.02	0.03	0.16	0.05	-0.32	-0.19	0.10	0.21	-0.05
12-30-05	0.21	0.05	0.23	0.19	0.17	-0.18	-0.19	0.19	0.29	0.03
12-29-06	0.33	0.09	0.48	0.42	0.33	0.22	0.30	0.33	0.30	0.29
12-31-07	0.53	0.21	0.61	0.75	0.53	0.52	0.48	0.33	0.50	0.46
12-31-08	0.18	0.14	0.20	0.51	0.26	0.32	0.37	0.51	0.45	0.41
12-31-09	0.09	0.16	0.20	0.38	0.21	0.32	0.40	0.44	0.33	0.37
12-31-10	0.09	0.22	0.16	0.35	0.20	0.34	0.40	0.37	0.30	0.35
12-31-11	0.06	0.21	0.15	0.36	0.19	0.32	0.37	0.35	0.32	0.34
12-31-12	0.01	0.23	0.13	0.32	0.17	0.22	0.33	0.40	0.29	0.31
12-31-13	0.03	0.25	0.28	0.18	0.18	0.19	0.33	0.22	0.12	0.21
12-31-14	0.20	0.32	0.26	0.27	0.26	0.11	0.28	0.34	0.29	0.25
12-31-15	0.10	0.08	0.06	0.23	0.12	0.26	0.33		0.46	0.35
12-31-16	0.47	0.09	0.00	0.25	0.20	0.41	0.47		0.64	0.51
12-31-17	0.49	0.00	0.01	0.15	0.16	0.62	0.57		0.79	0.66
12-31-18	0.40	0.14	0.05	0.34	0.23	0.79	0.86		1.11	0.92
12-31-19	0.46	0.29	0.07		0.28	0.97	1.02		1.11	1.03
12-31-20	0.55	0.24	0.07		0.29	0.95	0.72		1.76	1.14
	Pembina Pipeline (PPL) doubled its market value by buying Versen in 2017 for $9.7 billion									
	Since September 27 2019 Valener (GMI) is a 10% owned private subsidary of Noverco									

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 prowess (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. ■

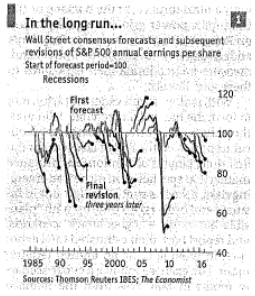
Analyst forecasts

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.

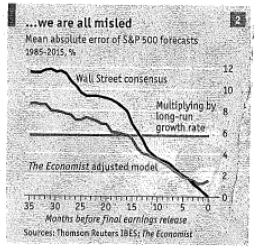
Surveys conducted by Lawrence Brown of Temple University found that two-thirds of sell-side analysts found private calls with company managements to be "very useful" in making their estimates. Analysts' need to maintain relationships with the companies they cover must colour their projections. They are 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 incentive 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. ■



		COMPOUND RETURN 2020 (%)	ANNUALIZED VOLATILITY (%)	ARITHMETIC RETURN 2021 (%)	COMPOUND RETURN 2021 (%)	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
FIXED INCOME	U.S. Inflation	2.00	2.01	1.40	2.00	1.00																					
	U.S. Cash	1.10	1.10	0.44	1.90	0.09	1.00																				
	U.S. Intermediate Treasuries	1.50	1.54	2.83	2.70	-0.19	0.22	1.00																			
	U.S. Long Treasuries	0.40	1.03	11.38	1.60	-0.16	0.07	0.81	1.00																		
	TIPS	1.50	1.64	5.29	2.70	0.09	0.08	0.58	0.55	1.00																	
	U.S. Aggregate Bonds	2.10	2.16	3.43	3.10	-0.16	0.10	0.79	0.80	0.74	1.00																
	U.S. Securitized	2.40	2.43	2.37	3.30	-0.11	0.15	0.74	0.68	0.67	0.89	1.00															
	U.S. Short Duration Government/Credit	1.70	1.71	1.50	2.80	-0.18	0.36	0.77	0.48	0.60	0.76	0.68	1.00														
	U.S. Long Duration Government/Credit	1.60	2.02	9.24	2.50	-0.17	0.01	0.66	0.87	0.64	0.92	0.72	0.55	1.00													
	U.S. Inv Grade Corporate Bonds	2.50	2.69	6.22	3.40	-0.09	-0.02	0.36	0.46	0.65	0.80	0.63	0.56	0.79	1.00												
	U.S. Long Corporate Bonds	2.10	2.60	10.21	3.00	-0.15	-0.04	0.35	0.55	0.59	0.81	0.59	0.48	0.88	0.96	1.00											
	U.S. High Yield Bonds	4.80	5.13	8.33	5.20	0.11	-0.11	-0.29	-0.25	0.33	0.18	0.15	0.11	0.13	0.58	0.49	1.00										
	U.S. Leveraged Loans	5.10	5.40	7.91	5.00	0.28	-0.14	-0.52	-0.42	0.11	-0.06	-0.09	-0.13	-0.07	0.37	0.29	0.81	1.00									
	World Government Bonds hedged	1.40	1.45	3.03	2.10	-0.24	0.11	0.82	0.85	0.52	0.82	0.69	0.61	0.81	0.51	0.56	-0.18	-0.38	1.00								
	World Government Bonds	1.80	1.99	6.16	2.50	-0.09	0.10	0.64	0.49	0.59	0.69	0.60	0.67	0.61	0.54	0.53	0.14	-0.15	0.59	1.00							
	World ex-U.S. Government Bonds hedged	1.30	1.35	3.05	1.80	-0.26	0.06	0.65	0.69	0.42	0.73	0.57	0.51	0.74	0.50	0.56	-0.08	-0.27	0.95	0.53	1.00						
	World ex-U.S. Government Bonds	1.80	2.09	7.77	2.40	-0.08	0.07	0.50	0.35	0.52	0.60	0.50	0.59	0.51	0.51	0.50	0.23	-0.05	0.47	0.98	0.46	1.00					
	Emerging Markets Sovereign Debt	5.20	5.57	8.82	5.10	0.05	-0.03	0.12	0.14	0.56	0.53	0.47	0.36	0.47	0.75	0.68	0.73	0.47	0.24	0.47	0.28	0.50	1.00				
	Emerging Markets Local Currency Debt	5.20	5.90	12.27	5.90	0.04	0.08	0.06	-0.03	0.38	0.35	0.29	0.33	0.28	0.53	0.47	0.61	0.34	0.10	0.56	0.15	0.63	0.78	1.00			
	Emerging Markets Corporate Bonds	4.70	5.04	8.52	4.90	0.13	-0.05	0.01	0.03	0.52	0.44	0.38	0.33	0.37	0.77	0.66	0.75	0.59	0.11	0.33	0.14	0.36	0.89	0.68	1.00		
	U.S. Muni 1-15 Yr Blend	1.90	1.95	3.28	2.50	-0.08	0.01	0.40	0.40	0.47	0.62	0.57	0.42	0.54	0.54	0.51	0.26	0.11	0.48	0.40	0.47	0.36	0.49	0.26	0.33	1.00	
	U.S. Muni High Yield	4.60	4.88	7.68	4.00	0.34	-0.06	-0.04	0.10	0.36	0.24	0.22	0.00	0.23	0.39	0.31	0.40	0.51	0.08	0.01	0.09	0.00	0.46	0.16	0.46	0.48	1.00
EQUITIES	U.S. Large Cap	4.10	5.13	14.80	5.60	0.02	-0.07	-0.35	-0.33	0.09	0.00	-0.03	-0.07	0.00	0.33	0.29	0.71	0.60	-0.24	0.12	-0.13	0.21	0.53	0.58	0.55	0.01	0.16
	U.S. Mid Cap	4.40	5.73	16.93	5.90	0.05	-0.08	-0.37	-0.33	0.12	0.01	-0.02	-0.07	0.00	0.36	0.31	0.76	0.64	-0.25	0.08	-0.14	0.17	0.55	0.57	0.57	0.04	0.19
	U.S. Small Cap	4.60	6.33	19.44	6.50	0.02	-0.09	-0.39	-0.37	0.03	-0.07	-0.09	-0.12	-0.06	0.26	0.22	0.68	0.56	-0.29	0.03	-0.18	0.12	0.45	0.52	0.47	-0.03	0.08
	Euro Area Large Cap	6.60	8.65	21.42	7.70	0.03	0.00	-0.27	-0.30	0.14	0.07	0.05	0.06	0.03	0.38	0.33	0.71	0.53	-0.20	0.29	-0.11	0.38	0.63	0.70	0.60	0.08	0.17
	Japanese Equity	6.50	7.50	14.76	7.20	-0.01	-0.10	-0.30	-0.24	0.09	0.04	-0.01	-0.01	0.07	0.37	0.34	0.62	0.49	-0.21	0.15	-0.13	0.23	0.49	0.58	0.51	0.01	0.11
	Hong Kong Equity	7.60	9.44	20.30	6.30	0.00	0.01	-0.22	-0.22	0.20	0.14	0.10	0.12	0.10	0.46	0.39	0.66	0.52	-0.16	0.22	-0.10	0.29	0.61	0.66	0.63	0.12	0.25
	UK Large Cap	7.50	8.83	17.20	7.60	0.08	-0.03	-0.36	-0.36	0.13	0.01	0.00	-0.02	0.00	0.38	0.33	0.73	0.63	-0.28	0.20	-0.18	0.29	0.61	0.66	0.62	0.04	0.26
	EAFE Equity	6.50	7.80	16.92	7.20	0.04	-0.03	-0.30	-0.31	0.16	0.07	0.04	0.04	0.06	0.43	0.38	0.75	0.59	-0.22	0.27	-0.12	0.37	0.65	0.73	0.65	0.07	0.20
	Chinese Domestic Equity	7.50	11.43	30.39	10.10	-0.03	0.17	-0.20	-0.19	0.04	0.01	0.01	0.02	-0.01	0.20	0.16	0.35	0.28	-0.12	0.04	-0.06	0.08	0.29	0.31	0.34	-0.05	0.07
	Emerging Markets Equity	7.20	9.19	21.14	9.20	0.06	0.04	-0.25	-0.25	0.25	0.12	0.08	0.11	0.08	0.45	0.38	0.73	0.57	-0.18	0.29	-0.11	0.38	0.68	0.79	0.68	0.07	0.24
	AC Asia ex-Japan Equity	7.10	9.00	20.62	9.20	0.01	0.03	-0.22	-0.21	0.24	0.14	0.10	0.12	0.11	0.46	0.41	0.71	0.54	-0.15	0.27	-0.09	0.35	0.64	0.73	0.65	0.07	0.23
	AC World Equity	5.10	6.25	15.76	6.50	0.03	-0.03	-0.33	-0.33	0.15	0.05	0.01	0.01	0.04	0.41	0.36	0.77	0.62	-0.23	0.22	-0.13	0.31	0.63	0.70	0.64	0.04	0.19
	U.S. Equity Value Factor	6.20	7.42	16.36	7.20	0.00	-0.09	-0.37	-0.36	0.06	-0.03	-0.04	-0.09	-0.03	0.31	0.26	0.71	0.59	-0.26	0.08	-0.14	0.18	0.51	0.58	0.53	-0.02	0.12
	U.S. Equity Momentum Factor	4.10	5.16	15.03	5.40	0.06	-0.07	-0.35	-0.31	0.14	0.02	-0.02	-0.07	0.02	0.35	0.31	0.73	0.64	-0.24	0.10	-0.14	0.19	0.55	0.55	0.56	0.05	0.21
	U.S. Equity Quality Factor	4.30	5.15	13.48	5.60	0.02	-0.07	-0.33	-0.31	0.11	0.02	-0.01	-0.06	0.02	0.34	0.30	0.70	0.57	-0.21	0.13	-0.11	0.22	0.54	0.59	0.55	0.03	0.15
	U.S. Equity Minimum Volatility Factor	4.80	5.47	11.95	5.80	0.00	-0.07	-0.26	-0.20	0.14	0.10	0.07	-0.03	0.11	0.38	0.36	0.70	0.57	-0.10	0.16	0.01	0.24	0.56	0.60	0.54	0.10	0.19
	U.S. Equity Dividend Yield Factor	5.50	6.53	14.90	6.90	0.01	-0.08	-0.30	-0.26	0.14	0.08	0.05	-0.03	0.08	0.40	0.36	0.74	0.61	-0.16	0.15	-0.05	0.24	0.57	0.62	0.58	0.09	0.19
	U.S. Equity Diversified Factor	5.60	6.48	13.76	6.30	0.04	-0.08	-0.34	-0.30	0.12	0.02	0.00	-0.07	0.02	0.36	0.31	0.74	0.61	-0.21	0.12	-0.10	0.21	0.56	0.60	0.57	0.05	0.18
	U.S. Convertible Bond	5.00	5.60	11.28	4.60	0.06	-0.09	-0.32	-0.29	0.21	0.10	0.06	0.03	0.07	0.48	0.39	0.82	0.69	-0.20	0.12	-0.10	0.21	0.62	0.57	0.66	0.15	0.29
	Global Convertible Bond hedged	4.60	5.06	9.91	4.80	0.02	-0.06	-0.34	-0.30	0.19	0.11	0.06	0.05	0.08	0.51	0.42	0.82	0.70	-0.20	0.11	-0.09	0.19	0.65	0.60	0.70	0.14	0.28
	Global Credit Sensitive Convertible hedged	4.20	4.47	7.52	4.40	0.13	-0.04	-0.17	-0.21	0.05	0.03	-0.10	-0.02	0.06	0.26	0.26	0.35	0.40	-0.08	0.09	0.02	0.14	0.25	0.26	0.33	0.01	0.22

Fortis Inc. (FTS-PF.TO)

Toronto - Toronto Real Time Price. Currency in CAD

Add to watchlist

25.40 -0.06 (-0.24%)

At close: September 3 2:21PM EDT

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

Previous Close	25.46	Market Cap	25.704B
Open	25.41	Beta (5Y Monthly)	0.06
Bid	25.40 x 0	PE Ratio (TTM)	9.64
Ask	25.48 x 0	EPS (TTM)	2.63
Day's Range	25.40 - 25.41	Earnings Date	N/A
52 Week Range	23.76 - 26.51	Forward Dividend & Yield	1.23 (4.82%)
Volume	645	Ex-Dividend Date	Aug. 18, 2021
Avg. Volume	1,238	1y Target Est	N/A

Regional Political Risk Index

	20-Oct	19	18	17	16
GLOBAL AVERAGES	70	71	72	72	71
N. & Cent. America Avg.	71	73	73	73	74
Canada	89	91	91	92	92
United States	83	87	87	88	86
Jamaica	78	79	80	78	76
Panama	76	78	78	77	77
Trinidad & Tobago	76	78	78	79	79
Costa Rica	74	75	75	73	72
El Salvador	74	76	74	69	69
Mexico	73	71	70	75	79
Guatemala	70	71	72	71	73
Dominican Republic	69	70	71	71	69
Honduras	67	68	70	67	68
Nicaragua	66	67	66	72	74
Haiti	53	59	61	64	64
Cuba	43	48	50	48	56

https://www.prsgroup.com/regional-political-risk-index/

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

	EBIT coverage		FFO coverage		FFO/debt %	
Equity ratio (%)	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