FAIR RETURN AND CAPITAL STRUCTURE FOR HYDRO QUEBEC TRANSPORTATION AND DISTRIBUTION

EVIDENCE OF

Laurence D. Booth

BEFORE THE

Régie de L'Énergie

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EXECUTIVE SUMMARY

1) I accept HQ's assessment that the appropriate common equity ratios for HQT and HQD should be 30% and 35% respectively. These are my standard recommendations for transmission and distribution utilities respectively.

2) The Canadian economy has stalled somewhat compared to what was expected last year as fiscal drag continues to weaken the US recovery and Canadian exports. The Bank of Canada has now put off a return to full employment until mid-2015 rather than 2014. However despite this weakness the Bank of Canada expects the real growth rate to pick up in both the US and Canada in 2015 and my best estimate for the average long Canada yield in 2014 is 3.60%, up from 3.0% estimated for 2013.

3) The actions of the US Federal Reserve in implementing Operation Twist and its commitment to keeping the Federal Funds rate at 0-0.25% brought down global interest rates. This led to a precipitous drop in long Canada bond yields so corporate spreads over government bond yields remain high at 166 bps. This is mainly due to unusually low government bond yields, since all the standard stress indicators show normal capital market conditions. Furthermore Canadian utilities have started to issue 40 and in some cases 50 year bonds at extremely low interest rates.

4) I have been recommending a credit spread adjustment of 50% of the change in the credit spread from the normal spread of 100bps to my ROE recommendations. This adds 30 bps to simple CAPM estimates, but should even out over the business cycle. I regard this as simply converting the simple CAPM into a Conditional CAPM as required by theory (CCAPM).

5) However, the corporate credit spread adjustment does not adjust for the overall drop in bond yields since July 2011. This is due to the fact that Canada is one of a very small number of AAA rated countries and is seen as a safe haven. As indicated by the behaviour of the spread of preferred share yields over Canada bonds much of the lower long Canada yield is due to foreign and institutional purchasers. However, since Governor Bernanke indicated the off ramp for quantitative easing in May 2013 this "Operation Twist" effect has moderated. I now add only 0.35% to my CAPM estimates due to Operation Twist.

6) For 2014 I recommend an ROE of 7.50% for a benchmark utility. This recommendation includes a 0.30% adjustment for credit spreads and 0.35% for Operation Twist. For 2015 and later years I recommend an ROE adjustment mechanism that adjusts for 75% of the change in the forecast long Canada bond yield and 50% of the change in the credit spread, subject to a minimum long Canada bond yield forecast of 3.95%. Alternatively I would recommend a fixed ROE for the indefinite future of 8.25%. This is 0.75% below what the "old" NEB ROE formula would generate for an equilibrium long Canada bond yield forecast of about 5.0%.

7) If the Régie does adopt a formula ROE then I recommend that it base the parameters on the same Bloomberg Utility and Cansim series (for the long Canada yield) that it adopted in its Gazifère decision.(D 2010-147)

I INTRODUCTION AND OVERVIEW

Q. PLEASE DESCRIBE YOUR NAME, QUALIFICATIONS AND EXPERIENCE.

A. Laurence Booth is a professor of finance in the Rotman School of Management at the University of Toronto, where he holds the CIT Chair in Structured Finance. Dr. Booth appeared before the Régie most recently in a 2013 hearing into Intragaz, as well he has appeared before most of the major utility regulatory boards in Canada including the CRTC, the Ontario Energy Board (OEB), the BC and Alberta Utility Commissions (BCUC and AUC), the Nova Scotia Utilities and Review Board, the New Brunswick Public Utilities Board, the Manitoba Public Utilities Board, the Board of Commissioners of Newfoundland and Labrador and the Prince Edward Island Regulatory and Appeals Commission. He has also filed testimony before the Ontario Securities Commission and in a variety of civil suits pertaining to financial matters. A detailed resume is filed as Appendix A. Further information and copies of working papers by Dr. Booth can be can be downloaded from his web site at the University of Toronto at http://www.rotman.utoronto.ca/~booth.

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR TESTIMONY

A. I was asked by the Association Québécoise des Consommateurs Industriels d'Électricité (AQCIE) and the Conseil de l'Industrie Forestière du Québec (CIFQ) to review Hydro Quebec's application on behalf of its transmission (HQT) and distribution (HQD) divisions and to offer an opinion on 1) the fair rate of return on common equity (ROE), 2) an ROE adjustment mechanism and 3) to recommend an appropriate common equity ratio.

Q. DO YOU HAVE SOME OVERALL REMARKS?

A. Yes. My understanding is that the allowed ROE was set for both HQT and HQD in 2003-4 and at that time the Régie applied the stand alone principle as recommended, for example, by Dr's Kryzanowski and Roberts (R-3492-2002) for HQD. However, unlike other Canadian utilities the allowed ROE was adjusted each year by 100% of the change in the forecast long Canada bond yield. At the time of Dr. Kryzanowski and Robert's testimony they forecast a long Canada bond yield of 6.0%. However, these bond yields have subsequently collapsed partly due

to the direct effects of the financial crisis of 2008/9 and partly due to the continuing problems in the United States that have forced a heavy reliance on monetary policy and very low interest rates to stimulate the US economy. The result has been that the allowed ROEs for both HQT and HQD have fallen by considerably more than those for other Canadian utilities including Gaz Métro, which is also regulated by the Régie. This decline in the allowed ROE for both HQT and HQD has been offset by the fact that both divisions have considerably exceeded their allowed ROE.

I am also aware that Hydro Quebec accepts the existing common equity ratios of both HQT and HQD. HQT's common equity ratio was set at 30% in D-2002-95 and HQD's at 35% in D-2003-93. These also happen to be my "standard" recommendations for transmission and distribution utilities. I also agree with Hydro Quebec that different capital structures adjust for differences in the underlying risk of the two regulated divisions. HQ refers simply to "risk differentiation" but correctly the capital structure is set to offset differences in ***business*** risk. The fact that HQ is not asking for a change in these common equity ratios I take as a confirmation that HQ judges the underlying business risk of HQT and HQD to be the same as in 2002/3. Mr. Olivier Charest, who has looked at this in detail in his separate testimony, is of the opinion that the overall risk of both HQT and HQD has declined since 2002/3, which I agree with since regulation for these companies is maturing. Consequently I see little value in discussing this in detail again and have relegated a discussion of some key points to my Appendix E.

The result is that this hearing has to address the allowed ROE for the purposes of setting rates for 2014 (if possible), how to adjust this ROE going forward to avoid repetitive rate hearings and how to deal with the tendency of both HQT and HQD to over-earn their allowed ROE. While such over-earning may have been "acceptable" in the context of allowed ROEs that were below those allowed for other Canadian utilities, it is not acceptable once those allowed ROEs are rebased to a fair level.

In achieving this objective my report is structured as follows:

First, I consider the general financial and economic outlook since this is what has caused the allowed ROEs of HQT and HQD to deviate from a fair level. Second, I consider fair ROE estimates derived from risk premium models and discounted cash flow (DCF) models. I then

consider how to adjust the fair ROE in a formulaic way that avoids most of the problems that have bedevilled ROE mechanisms over the last five years. Finally, I discuss the use of US comparables. I have relegated most of the more detailed and technical discussion to a series of appendices. A includes my resume; B has a discussion of the market risk premium which anchors all fair ROE estimates; C has a relative risk assessment for a benchmark utility; D discusses DCF estimates and E business risk and capital structure. These appendices are written to be free standing from the main text.

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 stemmed from "altered 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 the following statute:

> (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:

This statute articulated the "fair and reasonable" standard in terms of rates, and that the regulatory body should consider all matters that determine whether or not 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 by definition 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.

Most statutes also allow the regulatory authority to examine all factors that enter into the rates to ensure that the rates are "fair and reasonable." This includes the firm's capital structure decision, 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.

In terms of financial charges, in Northwestern Utilities vs. City of Edmonton (1929), it was stated that a utility's rates should be set to take into account 'altered conditions in the money market.' A fair rate of return was further confirmed in the BC Electric decision when Mr. Justice Lamont's definition of a fair rate of return, put forward in Northwestern utilities, was adopted:"

> "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 an 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 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.

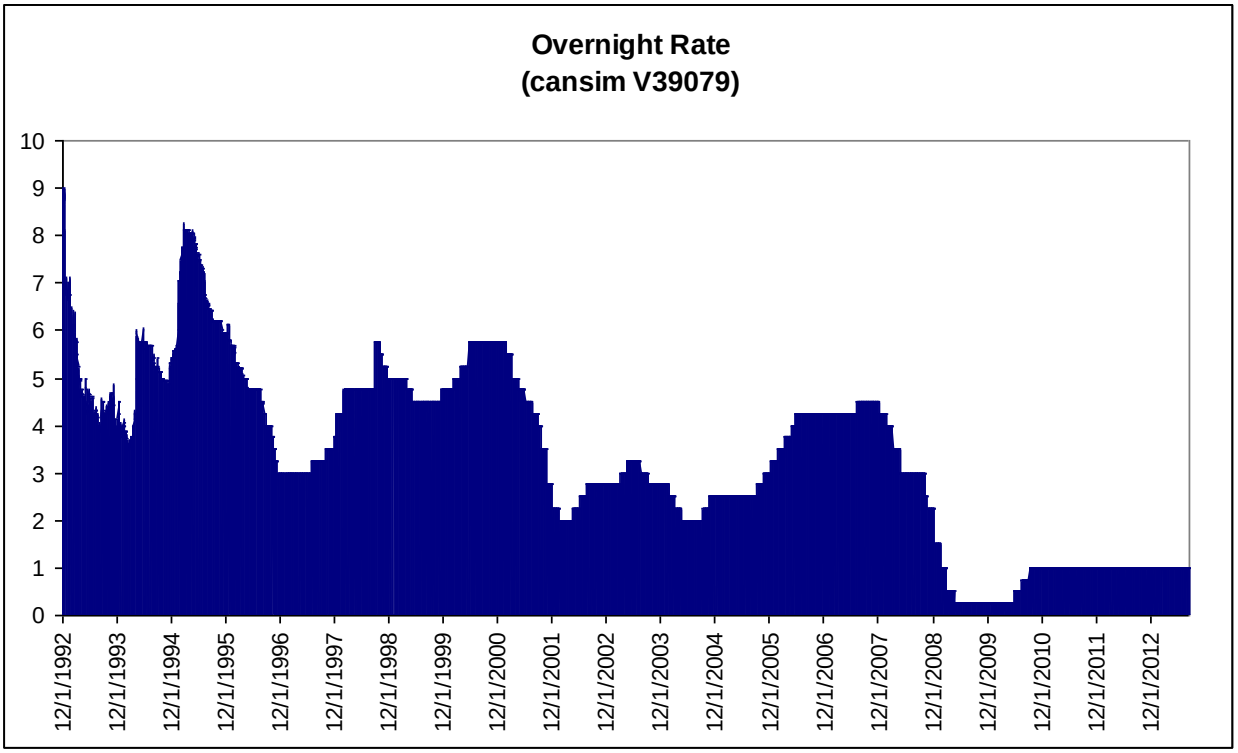
To any modern financial economist Mr. Justice Lamont's definition of a fair rate of return as an opportunity cost means a risk adjusted discount rate or expected rate of return. This is the rate that is determined in the capital market as conditions constantly change.

Q. WHAT ARE CAPITAL MARKET CONDITIONS AT PRESENT?

A. Basic macroeconomic data since 1987 is provided as background in Schedule 1. Into 2008 we had good economic growth and for a time the unemployment rate was actually below the natural or non-accelerating inflation rate of unemployment (NAIRU) of 6.0%. Consumer spending was strong as low interest rates supported the purchase of consumer durables and new housing as starts exceeded 200,000 for the sixth year in a row. 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 a perception that Canada was again a "petro," or at least a "raw materials" based, economy as commodity prices reached record highs in summer 2008. This perception allied to the continuing strength of the current account surplus running at 1.0% of GDP, resulted in a strengthening Canadian dollar and incipient inflationary pressures. The result

was that starting in September 2005 the Bank of Canada increased its overnight rate from 2.5% to reduce the stimulus being injected into the economy.

The following graph shows the impact of this tighter monetary policy, just before the first signs of the financial crisis appeared. Throughout 2006 and up until December 2007, the Bank of Canada set the target rate to try and slow down the economy and reduce inflationary pressures. Of importance is that consistent with the Bank of Canada's 2% inflation target the overnight rate should be at least 3.0%; so 4.5% up until December 2007 was restrictive. The Bank pays interest on deposits that the chartered banks keep with it at 0.25% less than the overnight rate and the banks can borrow at 0.25% more than the overnight rate; a rate that is called the Bank Rate. Bank Prime is then about 2.0% more than the overnight rate. Consequently up until December 2007 the Bank was actively trying to increase borrowing costs to slow interest sensitive demand. This policy stance was reversed due to the impact of the sub-prime mortgage mess coming out of the United States.



The above graph shows that the Bank conservatively lowered the overnight rate to 3.0% in May 2008 and it kept it there through the summer. It was then forced to dramatically cut the overnight

rate to 0.25% in response to the financial crisis triggered by the failure of Lehman Brothers. 0.25% is defacto the lowest rate that the Bank can set the overnight rate, since otherwise it would mean negative deposit rates for the settlement balances the chartered banks keep with it.

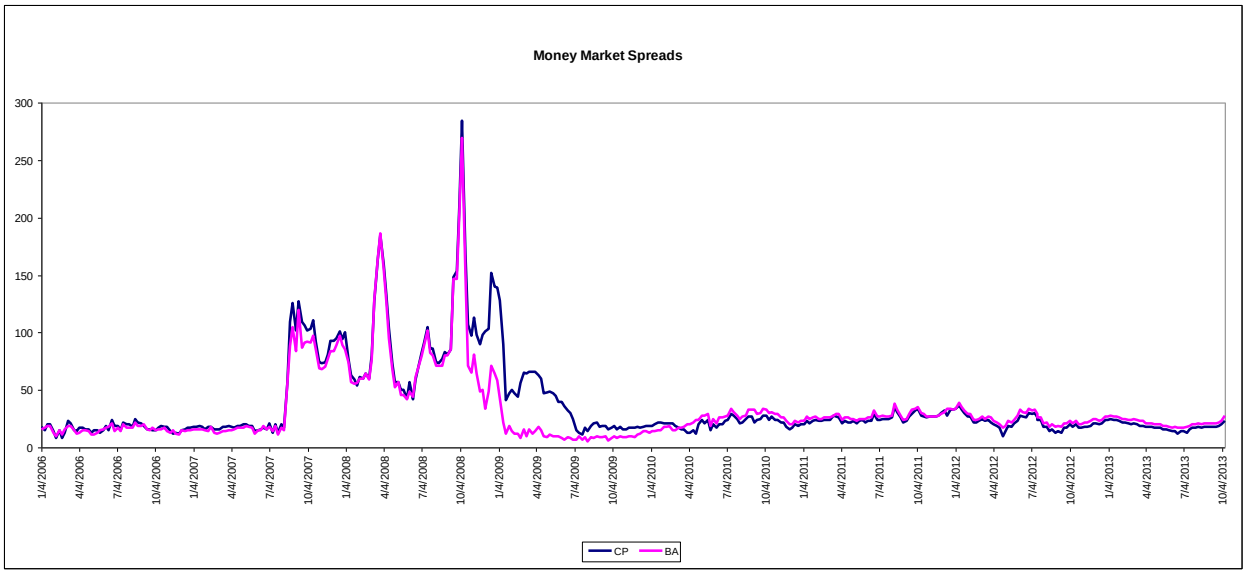
The Bank of Canada started increasing the overnight rate in June 2010 as there were obvious signs of recovery in the Canadian economy. The Bank of Canada increased the overnight rate on three separate occasions each time by 0.25% to bring it to 1.0% and with it Prime to 3.0%. Expectations in 2011 were that the Bank would resume increasing the overnight rate as the economy continued to strengthen, since it was still at least 2.0% below the "equilibrium" rate.

In particular, the Bank of Canada and the Federal Government were increasingly worried that at 1.0% the overnight rate would encourage too much personal borrowing and lead to levels of indebtedness which might have negative implications when rates returned to their normal level. They were, and still are, very worried about a housing bubble in Toronto and Vancouver[1] where house prices increased strongly in response to both lower interest rates and a stronger economy. In response on July 8, 2012 the Federal Government announced a third round of tightening in the mortgage market by restricting amortisation periods to 25 years, reducing the maximum amount that can be borrowed to 80% of appraised value for home equity lines of credit, capping household debt ratios and limiting CMHC insurance to homes with a purchase price less than $1 million. They also moved responsibility for Canadian Mortgage and Housing Corporation (CMHC) to the Department of Finance, as it will now be subject to OSFI supervision. Finally in August 2013 CMHC notified the banks that each was restricted to a maximum of $350 million in new guarantees under its mortgage backed securities program. The problem is simply that CMHC was given authority for an additional $85 billion under the program for 2013 but by June the banks had already used up $66 billion, such is the strength of the Canadian housing market.

The conundrum faced by the Federal Government is that while it wants to stimulate the economy by maintaining low interest rates, it does not want a US style debt-fuelled housing bubble. The additional problem is that the Canadian economy is not an island and increasingly the Bank of

[1] In April 2012 housing starts increased by 14.0% to an annualized pace of 244,900 indicating a very strong housing market in Canada.

Canada is concerned about the transfer of events from the Eurozone and the US into Canada. On January 26, 2012 the Federal Reserve announced that it would keep the US equivalent of the overnight rate, the Federal Funds rate, at 0.0-0.25% until at least the end of 2014, a promise renewed on August 1, 2012. Recently this goal has been refined to keep the Federal Funds rate at 0.0-0.25% until the US unemployment rate drops to 6.50%. The assumption is that in the face of rock bottom US interest rates the Bank of Canada will keep the overnight rate at 1.0%, otherwise the Canadian dollar will appreciate hurting manufacturing in central Canada. That it is external events triggering monetary policy in Canada is clear from the following graph of the spread between the yield on 91 day Treasury Bills (TB) and those on Bankers Acceptances (BA) and Commercial paper (CP).



Treasury Bill yields are close to the rate that the chartered banks get from their deposits at the Bank of Canada when they have excess cash. In contrast, the Bankers' Acceptance rate is the rate the market requires on short term investments in the main chartered banks, whereas the Commercial Paper rate is the rate that large Canadian companies with the best credit rating can get by issuing notes in the money market. As a result the spreads between these two private rates

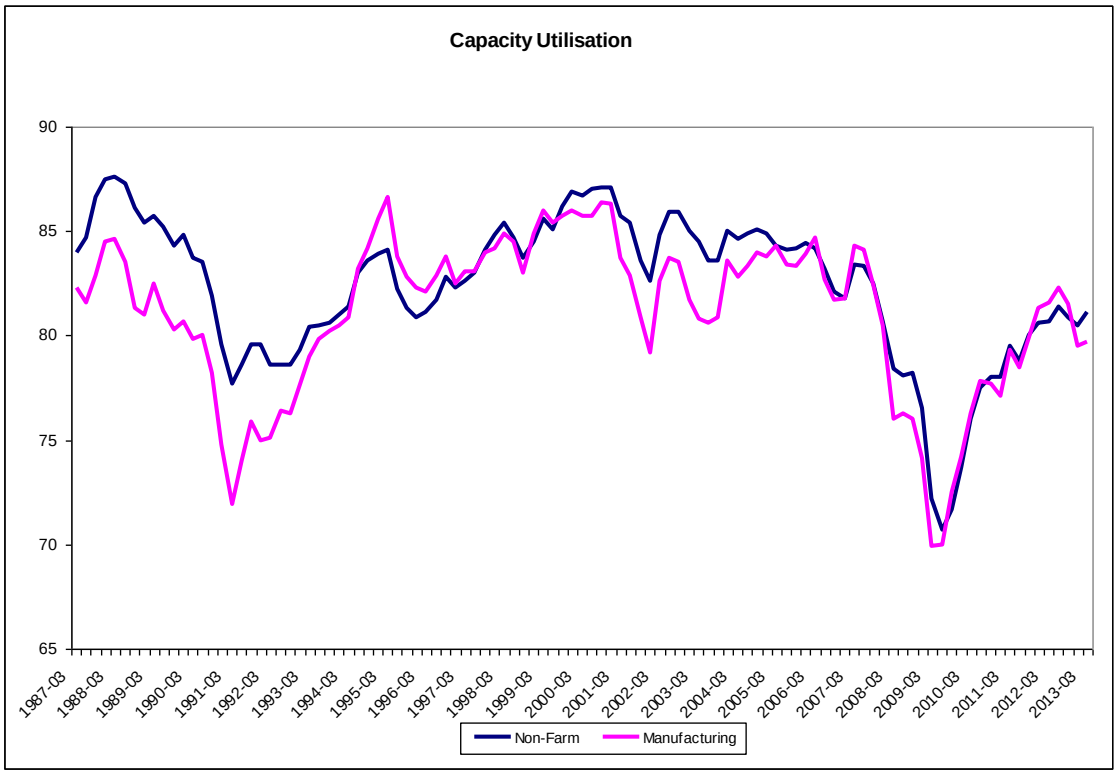
and that on Treasury Bills is indicative of the state of the short term lending market[2] and the willingness of large investors to lend to the banks and very low risk, stable, Canadian companies

Before discussing these spreads, it is important to note that investors in the money market are mainly "parking" their money, rather than investing, since their main concern is security of principal. Consequently, with any hint of default the market seizes up. This happens periodically in the CP market as seemingly low risk institutions default and investors panic and refuse to roll over CP for fear of further losses and an inability to distinguish between good and bad risks. For example, for the last 20 years the money market has been very quiet with spreads at 10-20 basis points. This changed in July 2007 with the US sub-prime problems spilling over into Canada, where we can see the large spike and again with the Bear Stearns bailout in March 2008. This got much worse in September 2008 as Lehman Brothers failed and contagion hit the world's financial markets and spreads in the Canadian money market went close to 3.0%.

However, of importance is that the measures taken by central banks to stabilise the financial system worked. The BA and CP spreads had dropped to normal by 2009 and have remained at close to normal levels for the past four years. The money market reflects the direct impact of the policy stance of the Bank of Canada and the spill over from the Federal Reserve, which currently indicates exceptionally low short term borrowing costs, probably continuing until at least the end of 2014 and probably 2015.

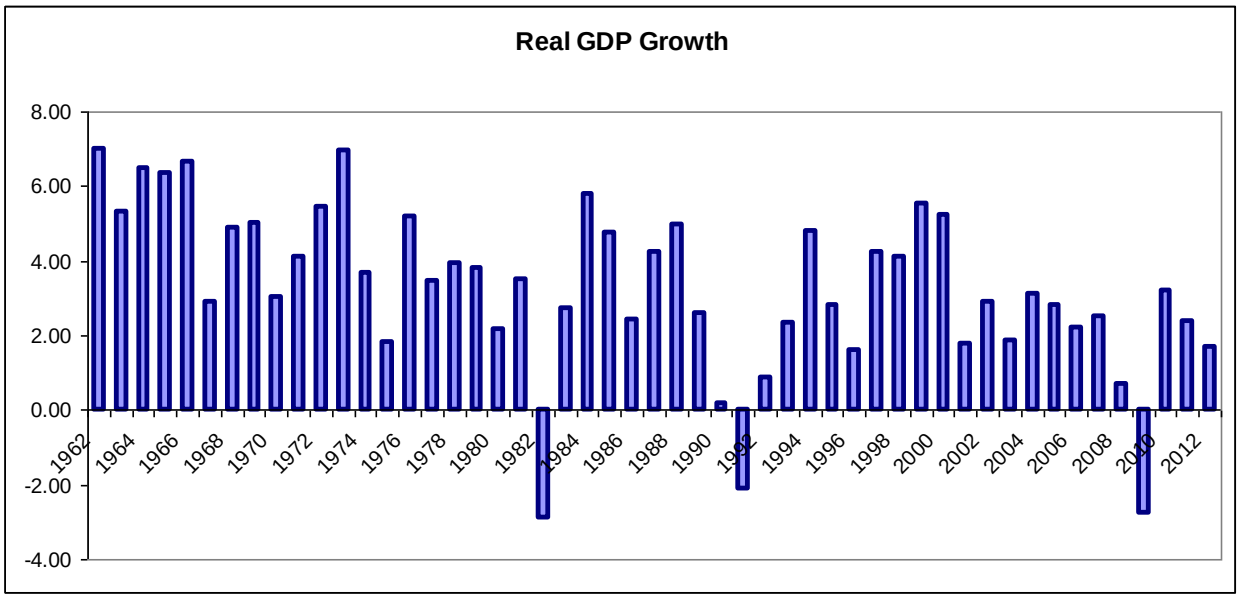
The improvement in the financial sector has impacted the real economy. The following chart is of the capacity utilitisation levels in both the manufacturing and non-farm sectors. We can clearly see the drop during the recession in the early 1990's as Canadian firms reduced output levels and restructured in response to the Free Trade Agreement and a normal cyclical downturn. We can see this again in the slowdown after the financial crisis as capacity utilisation suffered a sharp drop in 2010. In both cases there followed a normal rapid recovery out of recession and a movement towards stabilisation. However, we can also see the slowdown in capacity utilisation in the first half of 2013 that has put the full recovery off for a period.

[2] The main banks are generally rated R-1 (Mid) equivalent to an AA bond rating while CP is a mixture of R-1 (Mid) and R-1 (low), which means down to A.

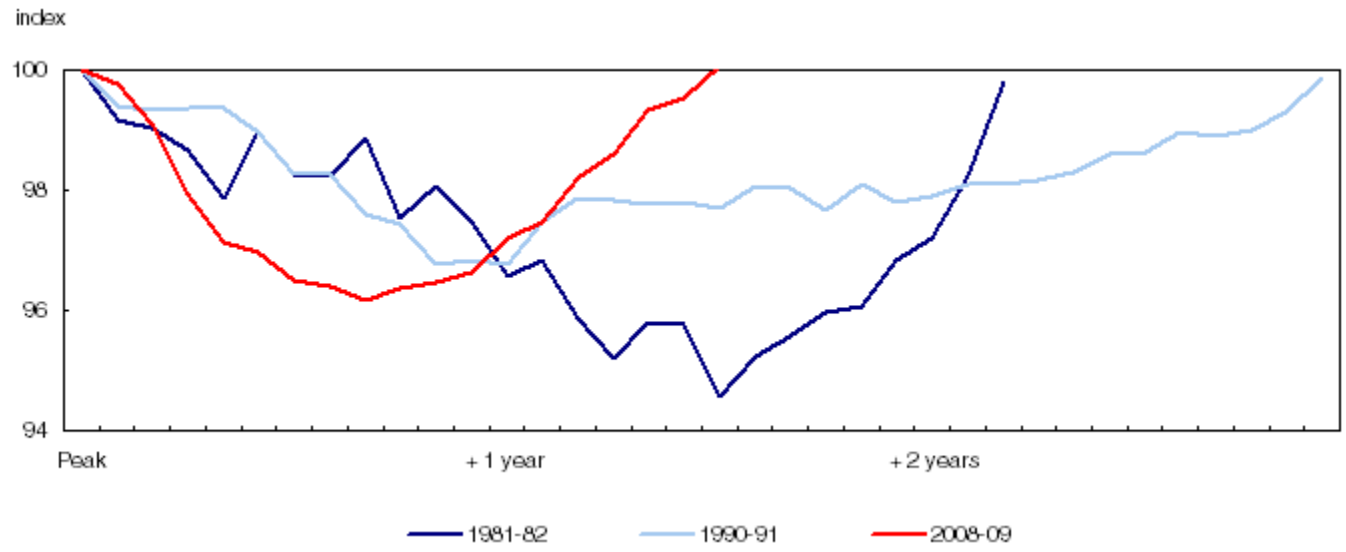


Q. HOW DOES THIS COMPARE TO GDP?

A. The following graph has the annual change in real GDP since 1961.



The start date reflects the initial iteration of the current GDP accounts. These annual changes clearly show the recessions of the early 1980s, 1990's and in 2009/10. The graph also shows the quick recovery in Canada from the financial crisis induced recession. This is confirmed by the following chart from Statistics Canada[3] where in each case GDP is indexed to 1.0 prior to the recession.



Notably the recession of the early 1990s was the longest, since Canada was adjusting to the Free Trade Agreement, as well as a normal cyclical downturn, but not as severe. In contrast the recession of 1981-2 was more severe, but ended more quickly than that in the early 1990s. By any comparison the recession of 2008-9 was both shorter and milder. The Statistics Canada analyst concluded

> "By most conventional measures – real GDP, employment or hours worked – the 2008-2009 recession was less severe than those starting in 1981 and 1990. This holds true whether one is comparing the drop from peak to trough or the time needed to recoup the losses experienced during a recession."

It is also useful to contrast this with the experience in the US, where the following graph from DBRS provides a "jobs" analysis for the US and Canada.[4] Similar to the Statistics Canada graph,

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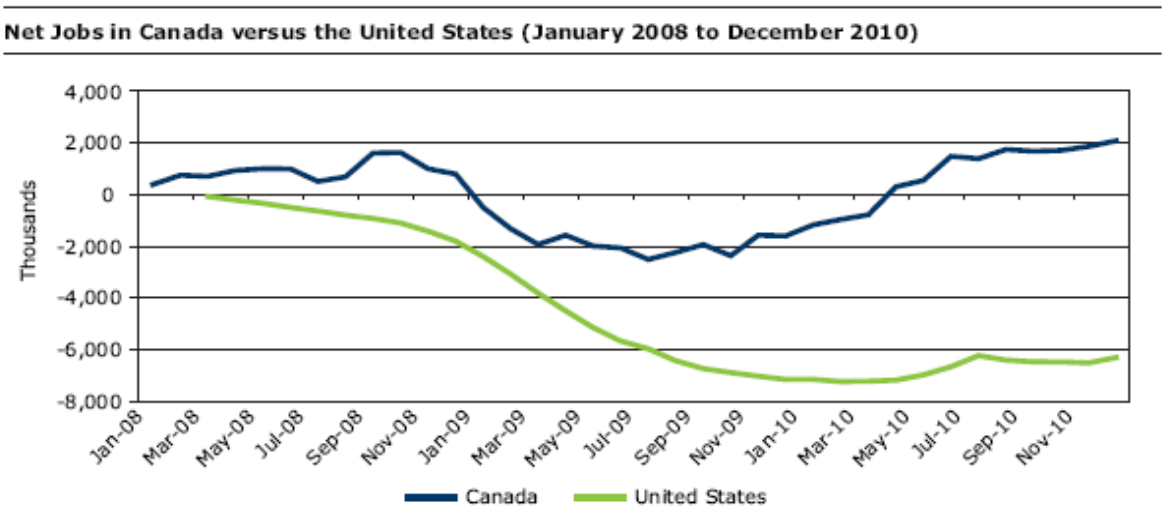
[3] Philip Cross "How did the 2008-2010 recession and recovery compare with previous cycles?" http://www.statcan.gc.ca/pub/11-010-x/2011001/part-partie3-eng.htm, chart 3.2

[4] DBRS, Corporate 2010 Year in Review and 2011 Outlook, January 2011.

it shows that the Canadian economy had recovered and returned to creating employment. In stark contrast, the US economy was still "sputtering" and failing to replace the jobs lost during the recession, let alone creating the new jobs required for an expanding labour market. As DBRS notes the US unemployment rate will probably remain above the "normal" rate for the "foreseeable future."



The above two graphs make it clear that what characterised the 2008-9 recession in Canada was not its severity, or length, but simply the speed with which events unfolded. Further the experience of the Canadian economy is in marked contrast to the serious problems in the United States.

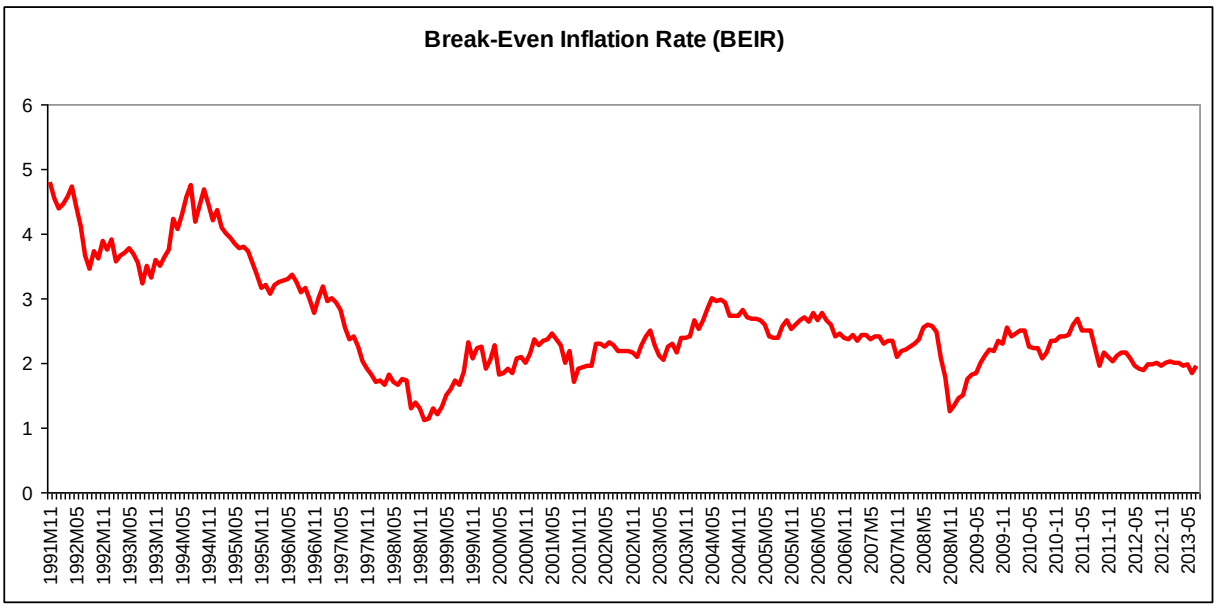
Q. WHAT IS YOUR OUTLOOK FOR INFLATION?

A. The Bank of Canada has had a 2.0% target rate of inflation since 1991 and this was renewed with the Government of Canada in the Fall of 2011. It increases the overnight rate when it judges the forecast core inflation rate[5] to be above this target and likely to go to the top of its 1.0-3.0% operating band. Conversely, it drops the overnight rate when it fears that inflation will drop to the bottom of its range and as a result it needs to stimulate the economy. The inflation

[5] Core inflation is the all items CPI minus energy and food.

rate data in Schedule 1 clearly shows the inflationary pressures in 2008 prior to the recession as well as the dramatic drop in 2009 and recovery in 2010.

Since 1991, the Federal Government has been issuing two types of bonds: a nominal bond where the interest rate is fixed and a real return bond, which guarantees the investor protection from inflation. The difference between the nominal yield and the yield on the real-return bond 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 in the real bond and vice versa. Consequently the BEIR is often taken as one measure of the market's inflationary expectations. The following graphs the BEIR (as a %) since 1991.



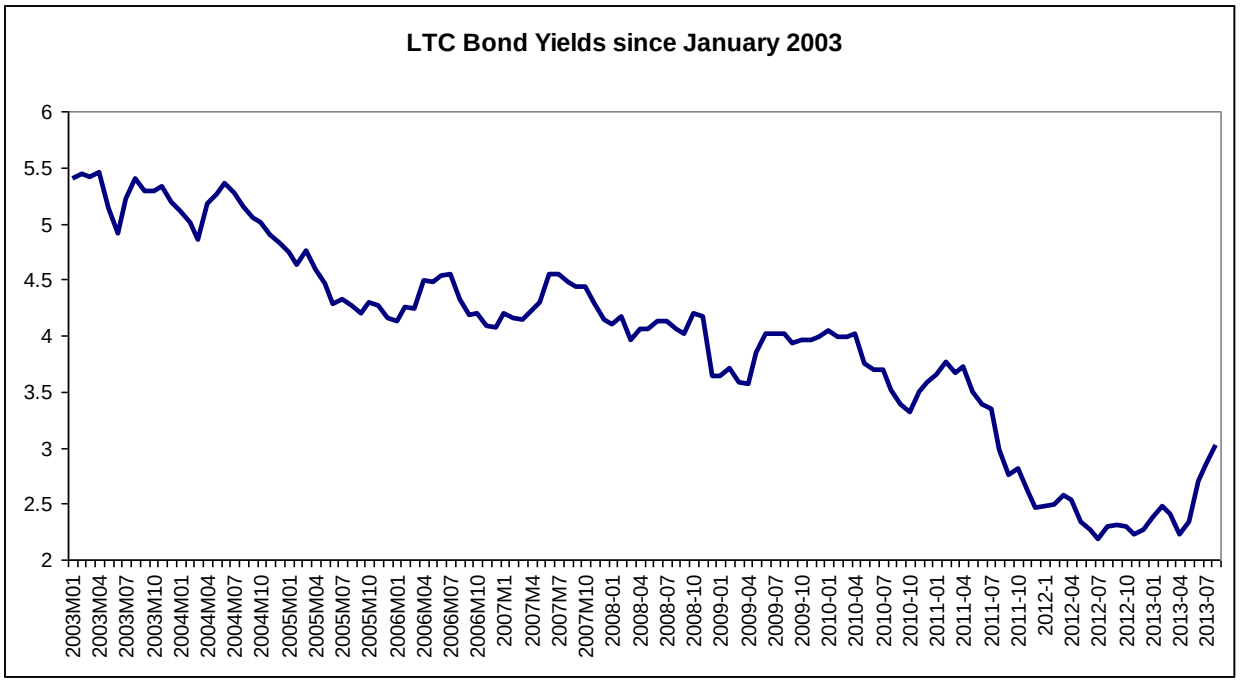
We can clearly see the collapse in inflationary expectations in the late 1990's as the market finally believed the Federal Government's intentions not to inflate its way out of its deficit problems. Since then the BEIR has been slightly above the middle of the Bank of Canada's operating range for inflation of 2.0%, but never above the 3.0% upper limit set by the Bank. We can also see the impact of the traumatic events of 2008Q3 when the BEIR dropped from its "normal" level of just above 2.0% to 1.26% in November 2008. During this period the fears of a deep recession and deflation were so strong that the BEIR essentially halved in the space of a few months. Since these deflationary fears have subsided and economic growth has got back on track the BEIR has moved back to its normal level hovering around 2.0%, but currently sits just

below that at 1.95% as the economy's real growth rate has marginally dropped off. So consistent with the BEI I would expect long run inflation at the Bank of Canada's target rate of 2.0%

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

Schedule 2 provides data on the full range of interest rates across the broad maturity spectrum as of October 10, 2013. What is evident is that interest rates for long maturity instruments are higher than for short dated bonds. This is referred to as a 'normal' or positively sloped yield curve. Typically the maturity spread, or the yield difference between the long Canada bond and 91 day Treasury Bills, is about 1.25%, but currently it is higher at 2.0%. This spread has increased recently due to the actions of the Federal Reserve in the US, which I will discuss later.

Normally yields on long term Canada (LTC) bonds are not as affected by current monetary policy, since monetary policy works on the overnight rate and its influence weakens as the maturity of the bond increases. The following graph shows that the LTC yield stayed at about 4.5% from 2005 until December 2007, when the Bank of Canada started to cut interest rates after which it stayed at around 4.0% until November 2008 when it dropped by 0.50%, as the market began to understand the severity of the recession. However, as these fears receded the LTC yield recovered to the 4.0% level it was at immediately prior to the financial crisis. The expectation in 2009/10 was that long Canada bond yields would increase as the economy recovered. However, in 2010 Q3 long term interest rates started to fall and this fall accelerated into Q4 2011 when the US Federal Reserve embarked on the most dramatic bout of "quantitative easing" (QE). Long Canada interest rates reached their low point in July 2012 at 2.18% when they barely compensated an investor for the purchasing power loss caused by 2% inflation let alone the tax bite on the nominal interest.



Starting in 2010Q2, the markets became increasingly concerned that the deficit financing by governments that spurred aggregate demand and prevented a global depression had in turn increased the debt levels of many developed countries to the point where some might not be able to repay their debts. These concerns were particularly acute for the PIIGS (Portugal, Ireland, Italy, Greece and Spain, who in adopting the Euro as a single currency lost the power to devalue their currency to stimulate demand. The contagion fear from Europe, with a potential domino impact on the banking system world-wide, triggered a rush into "safe' government bonds, which triggered a precipitous drop in Government of Canada interest rates as Canada was perceived to be safe. In contrast, on January 13, 2012 Standard and Poors downgraded most of the countries in the Euro area. These events in Europe were magnified by events in the US.

Q. WHAT ARE THE PROBLEMS IN THE US?

A. The US government's problems are part of the sovereign debt crisis. In 2007 prior to the emergence of financial problems, in aggregate what the IMF describes as the advanced countries ran an average deficit of 1.3% of gross domestic product (GDP). Over the business cycle an average deficit of 1.3% is not a problem, since the economy on average grows by more than this,

so that over time the burden of the debt drops. However, 2007 was at the top of the business cycle and countries should have been building up reserves for the bottom of the cycle, like Canada. When the financial crisis precipitated the recession, most countries initiated stimulus programs on top of the automatic stabilisers that kick in.[6] As a result, the average deficit jumped to 9.6% of GDP in 2009 but has gradually declined since then.

The behaviour of the US was essentially no different from that of the European countries. In 2009 the US deficit hit 12.8% of GDP and in 2011 was still 9.6% of GDP. Since the US controls the printing press and thus the supply of US dollars it can always finance its deficit and solve its problems in a way that the PIIGS cannot. However Congress in its wisdom has passed legislation imposing a debt ceiling that means Congress controls how much the US can borrow. With political grid lock in Congress in 2011 there was a fear that Congress would not increase the debt ceiling as Democrats did not want to reduce fiscal stimulus in the face of a very weak US economy whereas Republicans saw an opportunity to reduce government spending. Ultimately Congress did increase the debt ceiling limit but not before budget cuts were agreed on. In response on August 5, 2011 S&P downgraded the bond rating of the United States from AAA to AA+ due to the lack of will on the part of President Obama and Congress in dealing with the US budget problems. Eventually Congress did increase the US government's borrowing limit and a default was forestalled, but only at the cost of a commitment to set up a super committee to achieve deficit reduction targets with mandatory changes kicking in if there were no agreement. On November 21, 2011 the super committee abandoned further attempts to achieve a consensus indicating the deep ideological rifts in the US Congress and the mandated cuts were imposed in January 2013.

With Congress unable to achieve any fiscal initiatives the "heavy lifting" in trying to get the US economy moving has been left to the Federal Reserve, which on September 21, 2011 announced a new program dubbed "Operation Twist." The objective of "Operation Twist" is simply to spend $400 billion buying US government long term bonds to drive interest rates down and help US mortgage refinancing and thus kick-start the US housing market. Since the US has pledged to

[6] These stabilisers are the drop in tax revenues and the increase in welfare and unemployment payments that automatically cause deficits to increase during recessions

keep the Federal Funds rate at 0.0-0.25%, the effect is "quantitative easing" at the long end of the yield curve. On June 19, 2012 the Fed indicated it would continue Operation Twist beyond its original June 30 deadline, while on September 13, 2012 the Federal Reserve introduced a third round of quantitative easing (QE). The announcement had three components:

- The Federal Funds rate will stay at 0.0-0.25% until Summer 2015,
- Operation Twist will continue indefinitely at about $40 billion a month; and
- A new QE 3 will involve an additional $45 billion a month in purchases of mortgage backed securities.

In total the Fed committed to purchase every month $85 billion of long dated securities to drive down long term interest rates and inject cash into the US economy through its bond buying program. This is unprecedented in the history of US monetary policy.

Q. HAS ANYTHING CHANGED RECENTLY IN THE US?

A. Yes. The US is gradually recovering as permits for new construction have increased and in August 2013 hit a five year high, further refinancing of mortgages has put more cash into the pockets of the hard pressed American consumer and improved household balance sheets. The slow recovery in the US prompted concern as to when the extraordinary stimulus in the US would be removed. In May the Chairman of the US Federal Reserve indicated a road map whereby QE would be wound down as the US unemployment rate dropped to 7.0% and the Fed Funds rate would start to increase when it further dropped to 6.50%. In this way the stimulus would be completely removed as the US unemployment rate dropped closer to its NAIRU of about 5.3%. The result of Bernanke's comments was immediate as bond market participants woke up to the fact that long term interest rates would soon start to increase. At the end of May 2013 the US 20 year bond yielded 2.39%, whereas at the end of August it had risen to 3.53%, a dramatic jump of 1.14% in three months.

Recently President Obama has announced that the Deputy Governor of the Federal Reserve, Janet Yellen would be his nominee to replace Governor Bernanke. In 2012 Governor Bernanke committed the Federal Reserve to a 2.0% inflation target similar to Canada's and Ms. Yellen's first pronouncements have been to maintain the Fed's unemployment targets. What is clear is

that she is regarded as a “dove” and the Federal Reserve will continue its easy money policy until the labour market substantially improves.[7]

Q. WHAT IS YOUR FORECAST FOR THE LONG CANADA BOND YIELD FOR 2014?

A. Canadian markets have been hit by a tsunami of falling US long term interest rates through “Operation Twist” and fear of Euro area sovereign debt failures. These combined with Canada’s AAA bond rating have led to the dramatic collapse in Canadian long term interest rates. The Governor of the Bank of Canada, Mark Carney, was interviewed by the BBC on August 8, 2012 and as reported by Reuters[8] indicated that he had been swimming against the global current since April with his message that borrowing costs will soon have to rise in Canada. Reuters reported Governor Mark Carney as saying

> "We're in a very different place than the major crisis economies, such as the U.K.,"
>
> "Our economy's almost back at full capacity, the labor market's been growing, we're growing above -- we had been growing above trend, and the extent to which we continue to grow above trend, we may withdraw some of that monetary policy stimulus."
>
> "But we have a financial system that's firing on all cylinders and so we will have to adjust -- we will adjust if it's appropriate,"

Reuters went on to report Governor Carney as saying that the country's relatively strong economic fundamentals had helped push the Canadian dollar to parity with the U.S. dollar on Friday for the first time since May and that the currency's value reflected a "safe-haven premium". As Governor Carney said

> "There are relatively few places in the advanced world that investors can put their money with a degree of certainty that something catastrophic is not going to happen,"

---

[7] A common concern is that the US unemployment rate is falling due to people dropping out of the labour market rather than jobs being created as is clear from the declining participation rate.

[8] Bank of Canada's Carney still leaning towards rate hike, Reuters, August 8, 2012.

Since then Canada has been in a stand pat position relative to the US but the new Governor of the Bank of Canada seems less eager to raise interest rates until the Canadian economy reverts to a stronger growth path.

In its Monetary Policy Report of July 2013, the Bank of Canada forecasts real GDP growth to recover in the second half of 2013 to close at 1.8% for the year or slightly better than 2012. It then forecasts 2.7% real growth for both 2014 and 2015 with the economy closing the remaining output gap by mid-2015. In part this forecast is contingent on events in the US where the Bank forecasts real growth of 3.1% in 2014 and 3.2% in 2015. This level should lower the US unemployment rate sufficiently to cause the Federal Reserve to close QE in 2014, but not seriously increase the Federal Funds rate until 2015.

The September 2013 Consensus Economics Forecast has the 2014 real growth rate at 2.30% for Canada and 2.70% for the US, slightly lower than that of the Bank of Canada. The associated interest rate forecast is then for the ten year government bond yield to increase to 3.10% by September 2014 in Canada and 3.30% in the US. The RBC interest rate forecast (October 4, 2013 Financial Markets Monthly) that I have normally used is more detailed and below

Canada	**12Q3**	**13Q4**	**14Q1**	**14Q2**	**14Q3**	**14Q4**
Overnight	**1.00**	**1.00**	**1.00**	**1.00**	**1.25**	**1.50**
10 year	**2.55**	**2.75**	**2.90**	**3.15**	**3.30**	**3.75**
Long term	**3.07**	**3.25**	**3.40**	**3.55**	**3.65**	**3.75**
US						
Fed Funds	**0.13**	**0.13**	**0.13**	**0.13**	**0.13**	**0.13**
Ten year	**2.64**	**2.85**	**3.05**	**3.30**	**3.45**	**3.60**
Long Term	**3.69**	**3.90**	**4.10**	**4.20**	**4.30**	**4.35**

The RBC forecast is consistent with my analysis and that of the Bank of Canada. They also see no change in the Federal Funds rate, but that the overnight rate in Canada will increase in the second half of 2014. RBC also sees the end of QE as long term rates in the US are forecast to increase from the current 3.69% level to 4.35%. Effectively the end of QE means that RBC sees

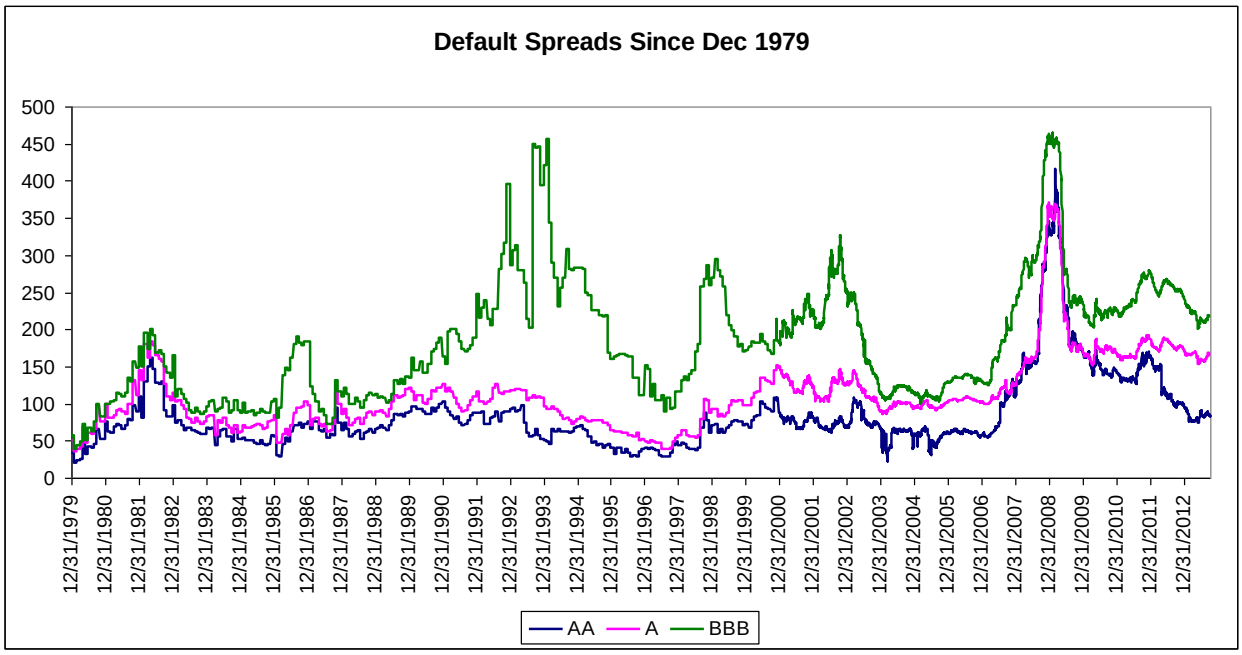
long term US interest rates almost doubling from May 2013 to the end of 2014. For Canada RBC sees the long Canada bond yield increasing to end at 3.75%. Although this is an increase of 67 basis points from today it is still less than RBC was forecasting two years ago when in their June 3, 2011 forecast they had long Canada yields at 4.55% by the end of 2012. The continued weakness in the US and the consequent weakness in Canadian exports has pushed back a full recovery by at least a year.

Overall I am confident that the full recovery in the US will eventually happen. What has to be remembered is that unlike normal recoveries this recovery has come against a background of fiscal weakness particularly in the US state and municipal levels where there is still weakness (note Detroit's bankruptcy). Fiscal drag is costing the US economy at least 0.6% in GDP growth due to the budget cuts imposed in January 2013 and Federal Reserve member William Dudley (Bloomberg March 6, 2013) estimated the total cost of fiscal restraint in 2013 had cut US GDP growth by 1.75%. However, as the economy works its way through this restraint its growth should reassert itself. On this basis I would accept RBC's forecast that long Canada bond yields will increase during 2014 and by the end of the year will be about 3.75%. ***For 2014 RBC's average yield forecast is 3.6% and I take this as the base for my risk premium models.***

Q. WHAT HAS BEEN THE STATE OF THE CORPORATE BOND MARKET?

A. The following graphs the generic yield or default, spreads between corporate and government bonds of the same maturity using the AA, A, and BBB indexes maintained originally by Scotia Capital markets.[9]

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



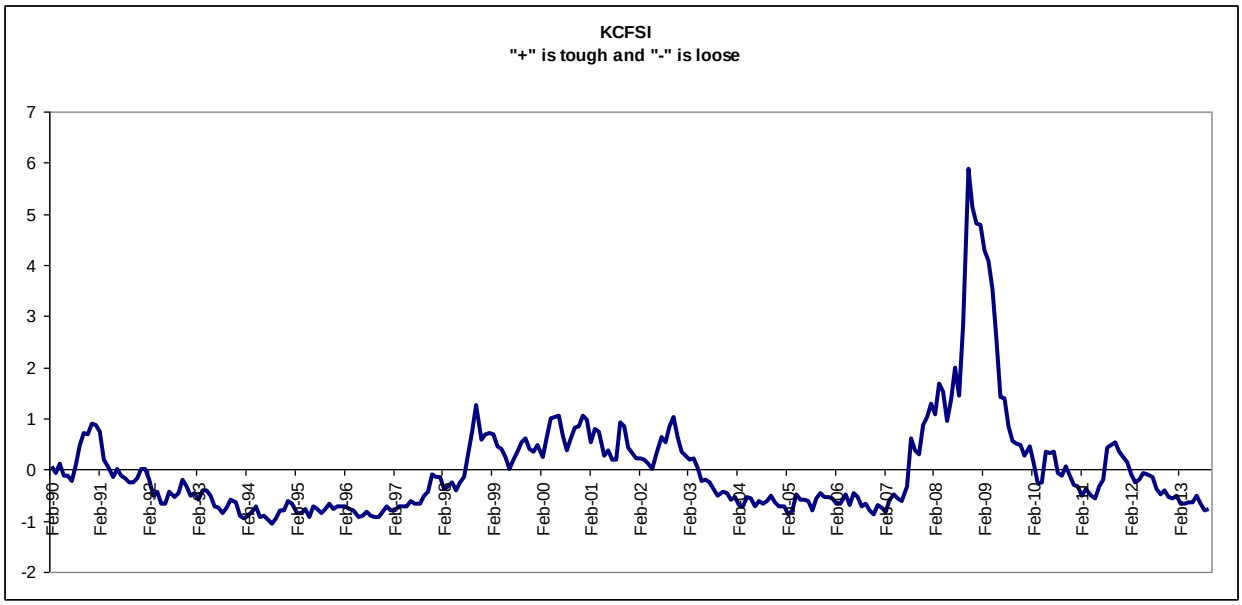
Corporate bonds have default risk, since companies can run into financial difficulty whereas governments borrowing in their own currency like Canada cannot.[10] These yield spreads usually behave in a predictable manner. In a recession as the risk of bankruptcy increases, investors sell off default-risky 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 this clearly in the high spreads during the long recession of the early 1990s, the panic of the Asian crisis and the bursting of the Internet Bubble and in particular the financial crisis of 2008-9. Note also that usually the spread increases most for the BBB bond which is the riskiest. The exception to this general rule was during the last financial crisis when the spreads for even A and AA bonds widened dramatically as liquidity in the market dried up as many banks ceased making a market

[10] This assumes they simply print more money to pay off their debts. The US can do this, but it has been the behaviour of Tea Party Republicans in Congress arguing that the US should default that has frightened global investors since 2011.

in corporate bonds except on an agency basis and were themselves subjected to greater default risk.[11]

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

A. In response to the financial crisis several more comprehensive indicators of financial stress have been developed. In the US the Federal Reserve Bank of Kansas City has developed the Kansas City "Financial Stress" Index (KCFSI) which is graphed below.

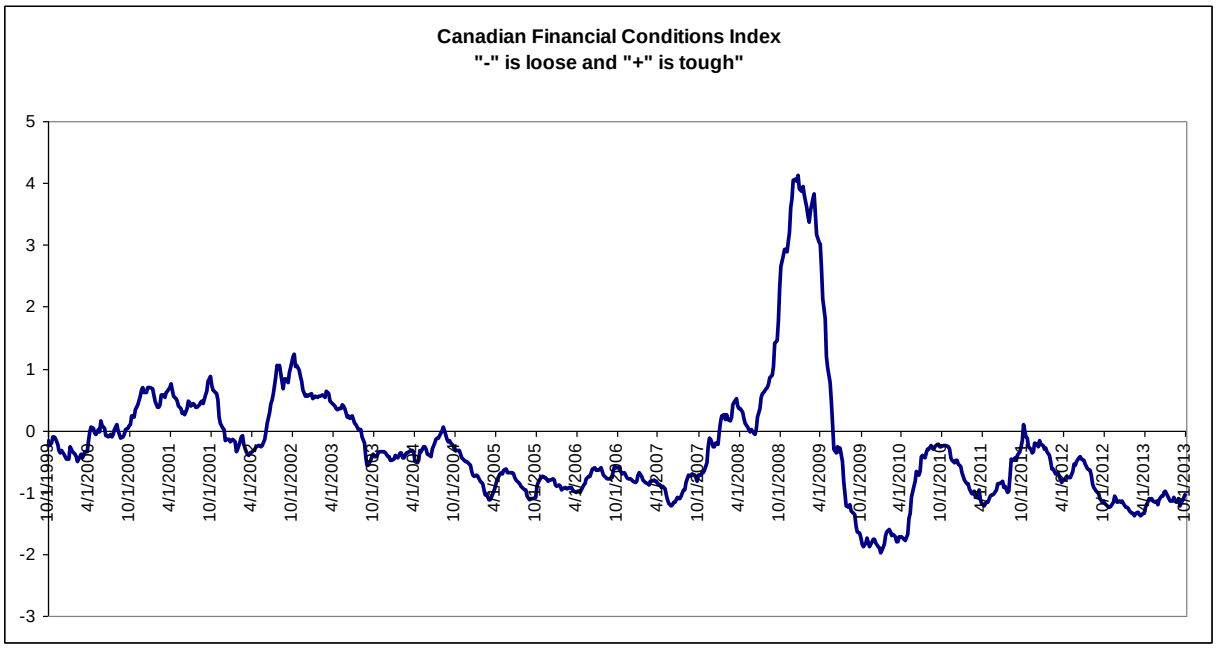


This index is designed to capture a variety of financial indicators in addition to the two which I have traditionally focussed on, which are the spreads between corporate and government yields, both the short term spreads in the money market and longer term spreads in the bond market. The additional indicators include the 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; similarly when it is below 0 it indicates relatively easy, "stress-free" capital market conditions. The value of the KCFSI is simply that it captures in one number the impact of a

[11] Agency trades do not require capital, whereas normally banks hold an inventory and trade out of inventory for clients.

variety of capital market indicators.[12] The major insight of the KCFSI is that it emphasises the enormous pressure in the US financial system during the financial crisis. Unlike the internet bubble crash in 2001 the crisis in 2008/9 struck at the very core of the US financial system, which is the banking system, where liquidity, that is, the ability to trade securities at 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. After consistently improving the KCFSI started to back up slightly in 2010 but has recently been consistently below 0 indicating easy financial market conditions.

The work by the Kansas City Fed follows pioneering work done by researchers at the Bank of Canada who developed a simpler financial conditions stress index,[13] which is graphed below.

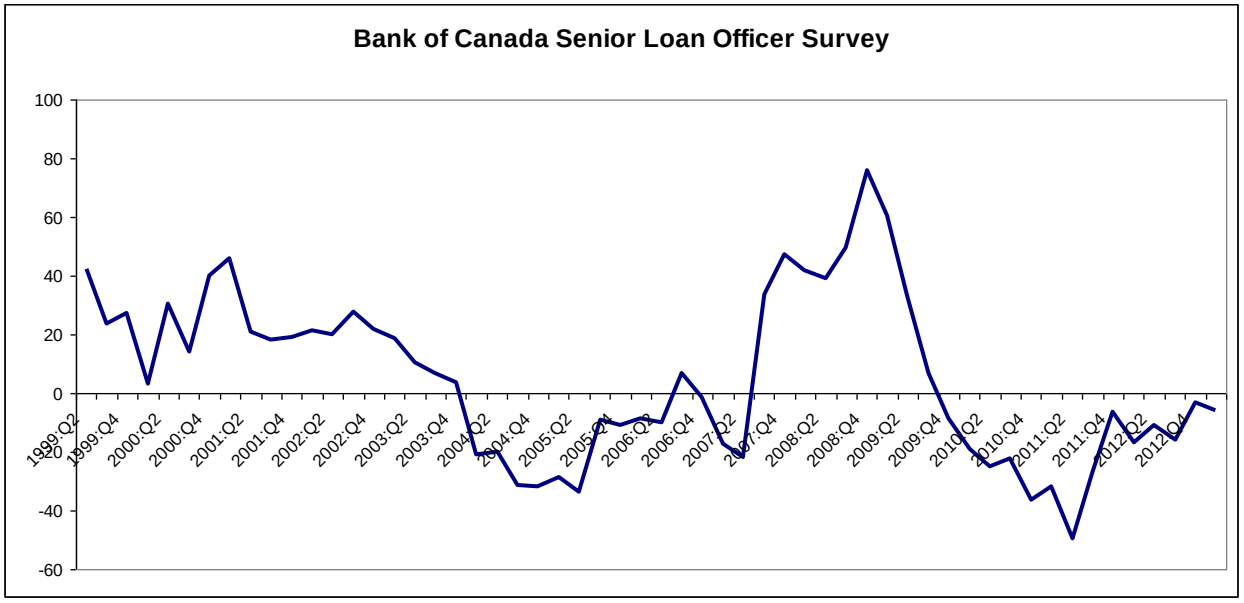


The Bank of Canada indicator similarly tracks the enormous stress in the financial markets during the financial crisis. Similar to the KCFSI the index reflects the currently loose or easy financial market conditions.

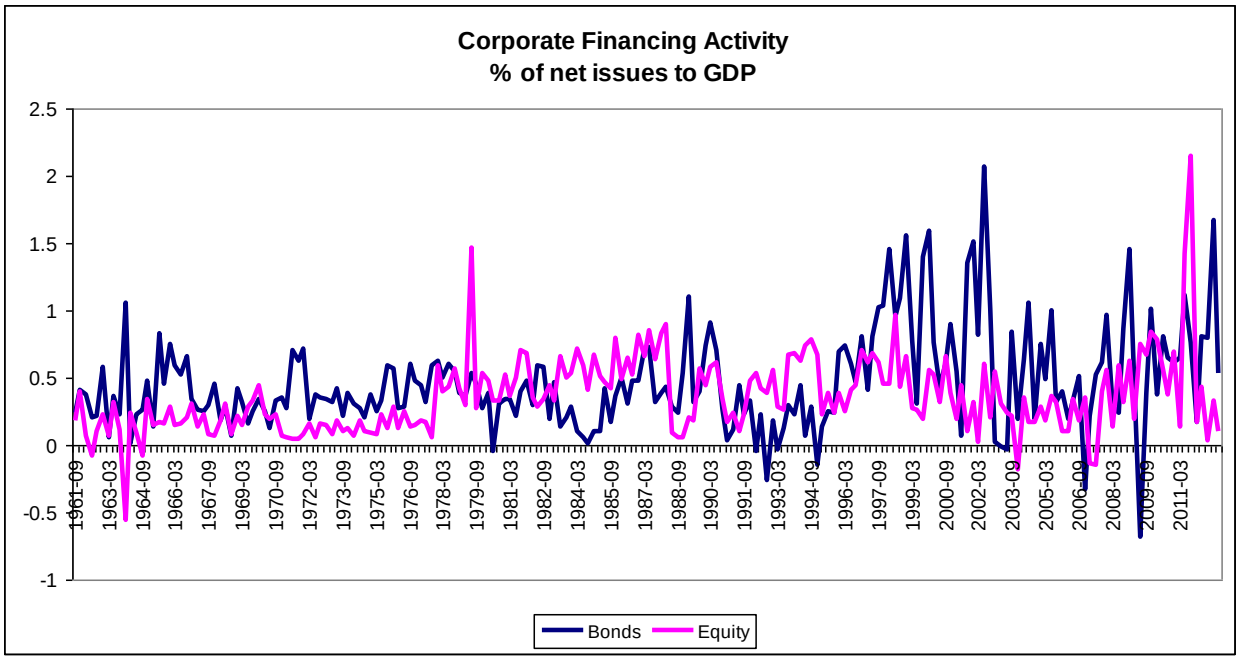
[12] Technically it captures the common element in all these indicators by using principal components analysis.

[13] The Bank of Canada index is actually the inverse of this, I multiplied it through by -1 to get the same interpretation as for the KCFSI

The performance of the Canadian Financial Conditions index mirrors the assessment of the Bank of Canada's survey results from senior lending officers. The survey reflects their assessment of the lending conditions to Canadian non-financial firms. Again we see the tightening credit market conditions during the financial crisis and the loose conditions thereafter with a gradual return to normal pricing and credit conditions.



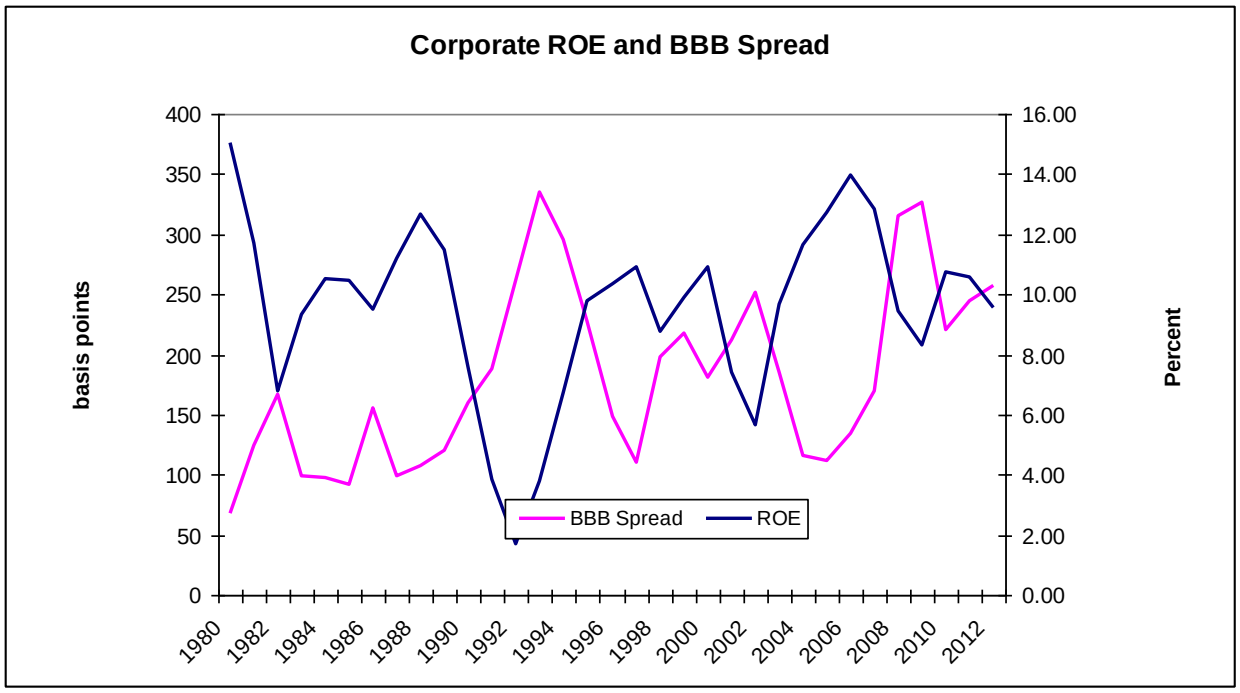
Finally the following graphs the level of corporate financing activity in the public markets. It graphs net bond and equity issues both common and preferred as a percentage of GDP. We can see the huge drop off in net bond issues during the financial crisis (negative net issues in Spring 2009) in response to the very high spreads of the previous graph, but the corporate bond market has been very active recently and there are no signs of access problems.



Even with slightly elevated corporate spreads, companies have easy access to financial markets. The capital market remain very attractive for corporate issuers, while lending officers are no longer keeping their purses tightly shut.

Q. HOW DOES THE STATE OF THE ECONOMY AFFECT PROFITS AND THE CAPITAL MARKET?

A. The following graphs the average annual ROE against the spread between the yield on BBB debt and long Canada bonds. The graph illustrates the basic inverse relationship that spreads tend to increase during recessions when corporate profitability drops and then weaken when the economy and corporate profits recover. We can clearly see this in the recession of the early 1990s and again to a lesser degree during the financial crisis. However even during the recent crisis, basic corporate profitability in Canada remained healthy indicating that much of the spread pressure was coming from events in the US.



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

A. Overall the Canadian economy is in good shape. As the Bank of Canada noted the remaining spare capacity will be used up by mid-2015 and the financial system is still firing on all cylinders. The stock market is valuing utilities very favourably, credit is easy and utilities are issuing 40 and 50 year debt at very low rates. The only "problem" is that as one of the few AAA rated issuers the Government of Canada is borrowing on extremely low interest rates; significantly lower than the US government. However, this does not indicate any "heightened risk aversion in the credit markets." Overall market conditions are remarkably benign.

III RISK PREMIUM ESTIMATES OF THE FAIR ROE

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

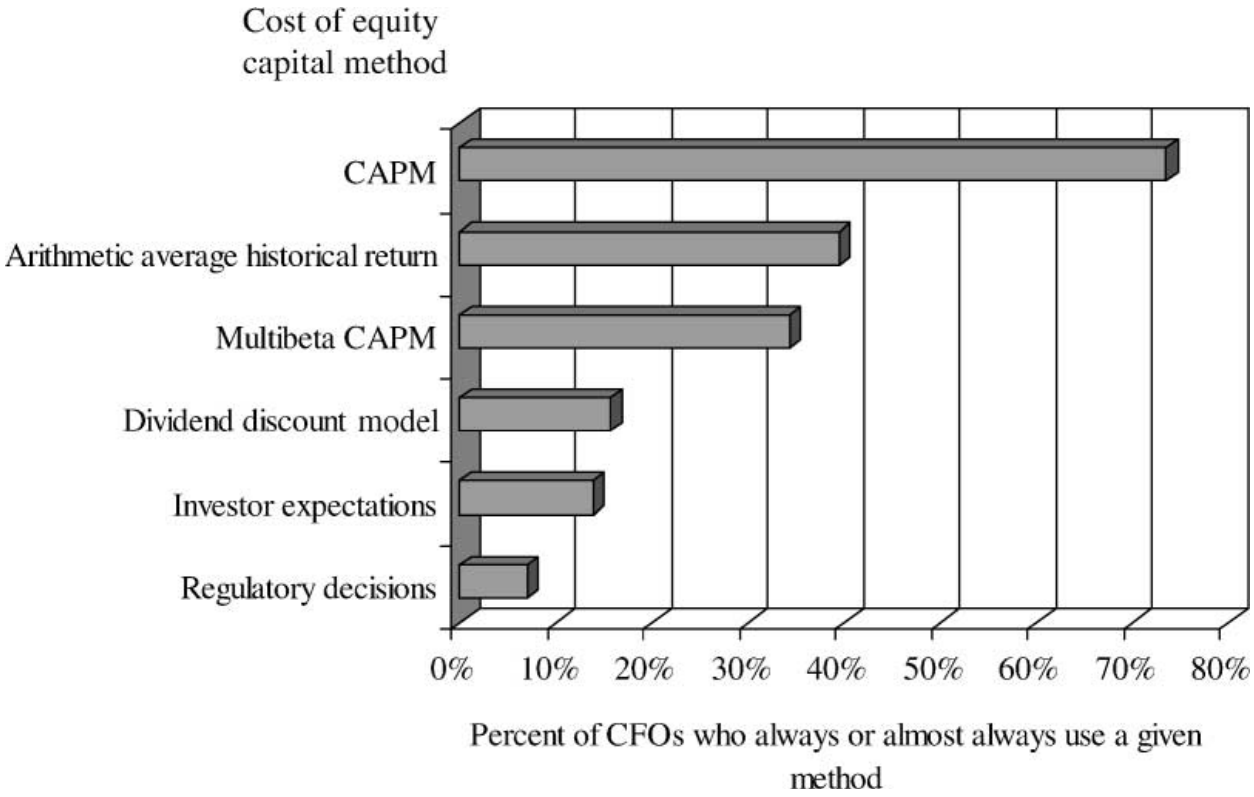
A. The capital asset pricing model or CAPM is the most common way of estimating the fair rate of return. It is a special form of risk premium model which simply says,

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

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 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 simply to relate an individual risk premium to the overall market risk premium and its relative risk coefficient.

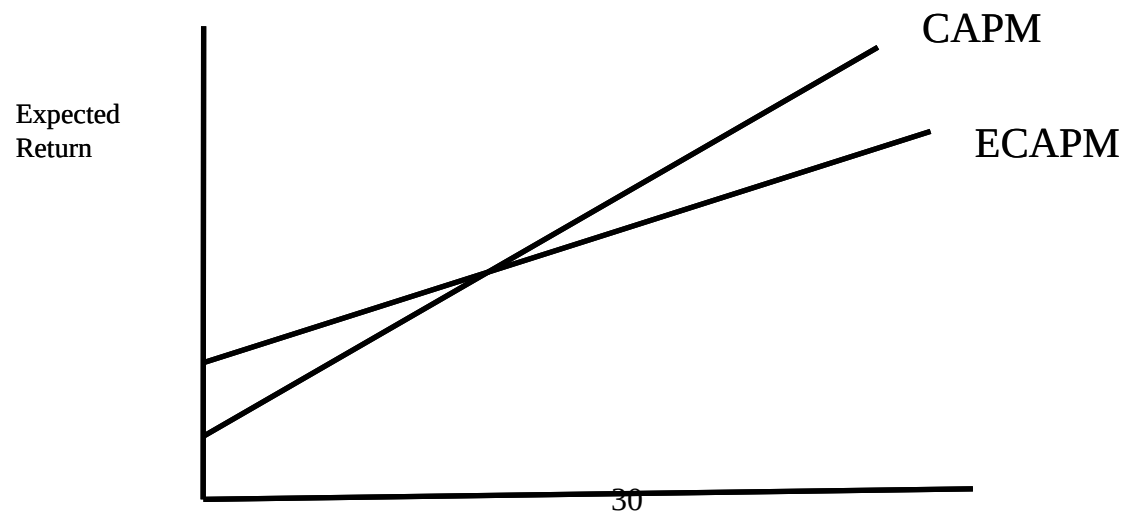
Why the CAPM is so widely used is because it is intuitively correct. It captures two of the major "laws' of finance: the ***time value*** of money and the ***risk value*** of money. I will discuss the third law of finance the ***tax value*** of money later, but the time value of money is captured in the long Canada bond yield as the risk free rate. The risk value of money is captured in the market risk premium, which anchors an individual firm's risk. As long as the market risk premium is approximately correct the estimate will be in the right "ball-park." Where the CAPM normally gets controversial is in the beta coefficient; since risk is constantly changing so too are beta coefficients. This sometimes casts doubt on the model as people find it difficult to understand why betas change. Further it also makes testing the model incredibly difficult. However, the CAPM measures the right thing: which is how much does a security add to the risk of a diversified portfolio, which is the central idea of modern portfolio theory. It also reflects the fact that modern capital markets are dominated by large institutions that hold diversified portfolios.

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



70% of US CFOs use the CAPM and a further 30% use a multi-beta approach similar to the two factor model I often use. Note in this respect that multi-beta models, while slightly more general, don't alter the average rate of return which is anchored by the risk free rate and market risk premium: all they do is generate slightly different estimates for individual firms.

Although the CAPM is the premier model for estimating required or fair rates of return, early tests showed that it tended to over-estimate returns for high-risk ($\beta>1$) and under-estimate returns for low risk ($\beta<1$) stocks. This is illustrated in the following graph



For this reason some expert witnesses have used an empirical CAPM or ECAPM, where the risk free rate is increased, the market risk premium flattened as in the above graph or the beta adjusted. For low risk stocks like utilities such a practice clearly increases the estimate of the fair rate of return. However, while this practise is consistent with the early empirical tests it is not appropriate when used for estimating utility rates of return. To understand why we should understand how these tests were conducted.

First, the ECAPM is based on tests that use the 30 day return on the 90 day Treasury bill yield as the risk free rate. As a result the tests are based on trying to see whether the CAPM predicts 30 day returns. Such a practice is only appropriate for very short horizon (30 days) investments. In regulatory hearings it is customary to use the CAPM with the LTC bond yield, since equities have longer time horizons than even the longest maturity LTC bond. To the extent that LTC yields have averaged a maturity premium of about 1.25% over the Treasury bill yield, this use of the CAPM automatically increases the risk free rate and lowers the slope in the same way as the ECAPM. In this way it adjusts for the bias noted in these early tests of the CAPM.

The second problem is that these tests used actual betas and were simply mechanical: whatever was the beta over the previous five year period was used in the test as a forecast beta. This is not how betas have ever been used in a regulatory context. I have always used judgement in adjusting betas back to their average value, a practice accepted by many boards, whereas company witnesses in part adjust them using the Marshall Blume adjustment model appropriate for a typical or average stock.[14] I discuss this procedure in my Appendix C where I discuss relative risk adjustments, but the point is simply that the empirical tests that justify the ECAPM don't do this.

At the current point in time the 91 day Treasury Bill yield is 1.00% and with the Fed's commitment to keep the Federal Funds rate at 0.0-0.25% constant through the end of 2014 the likelihood is that the Canadian Treasury bill yield will also remain around this level. With the forecast long Canada bond yield for 2014 increasing to 3.75% the use of a long Canada bond

[14] They often hide this by simply using other people's betas that they know have been adjusted in this way.

yield as the risk free rate already increases the CAPM estimate by about 2.75% over a "normal" ECAPM estimate, so there is no need for any further adjustment. Finally, note that if I used the CAPM in the way that it has been tested I would use the recent actual beta coefficient. In Appendix C I show that Canadian Utilities has a recent beta coefficient of 0.03, so a naïve CAPM estimate, similar to that in the tests, would be for a CAPM fair return of say 1.00% + 0.03*MRP, with an MRP of 5% this indicates a fair return of 1.15%, which I don't think anyone would accept as fair!

The fact is that by using forecast LTC yields as the risk free rate and judgment in estimating beta coefficients, the right adjustments have already been made to the way the CAPM was tested and from which the ECAPM was derived. If the ECAPM is used with a long Canada bond yield and adjusted betas it simply represents double or triple counting for the same effect.

Q. IS THERE ANY OTHER SUPPORT FOR THE CAPM?

A. Yes. Levy and Roll have recently revisited the question of the empirical support for the CAPM. Richard Roll in a path breaking paper[15] pointed out that as long as the market portfolio is ex post efficient then by definition the CAPM will work in empirical tests and all securities will lie along a straight line relating returns to betas. In the Levy and Roll paper[16] they reverse engineer the tests and consider how much the sample parameters can vary to make sure the normal proxies for the market portfolio are efficient. Levy and Roll find that even slight variations, within the normal estimation bounds, make the proxies efficient. As they conclude:

> "This article shows that a small variation of the sample parameters, well within their estimation error bounds, can make a typical market proxy efficient. Thus, the empirically measured return parameters and the market portfolio weights are perfectly consistent with the CAPM using a typical proxy..... Hence, minor changes in estimation error reverse previous negative and disappointing findings for the CAPM."

[15] Richard Roll, "A Critique of the Asset Pricing Theory's Tests: Part 1: On Past and Potential Testability of the Theory", Journal of Financial Economics 4: 129-76, 1977.

[16] Moshe Levy and Richard Roll, "The Market Portfolio May be Mean Variance Efficient After All," Review of Financial Studies, 2010.

The point is that the normal criticism of the CAPM provided by utility witnesses relies on very old and stale tests of the CAPM and the Levy and Roll results show that even slight changes in the parameters will nullify those results.

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

A. 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 drawn from the Canadian capital market history going back to 1924 so encompasses periods very similar to today, such as the bleak 1930s of slow growth and falling prices, as well as booms and serious inflation problems 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 two main reasons. First, most of the restrictions on keeping Canadian capital within Canada have been removed resulting in significant capital outflows and higher expected returns on Canadian investments. Second, Canadian governments have moved to a primary surplus on their budgets. The primary surplus is the actual surplus after stimulus expenditures and the impact of an economic slow-down have been removed. The result has been lower interest rates in Canada than the United States for the last five plus years, which has removed the historic bias of a smaller Canadian market risk premium over a higher and riskier Canadian government bond yield. Finally, I give significant weight to survey results by Professor Fernandez, who now annually surveys thousands of academics, financial analysts and corporate executives making investment decisions.

My Appendix C discusses relative risk adjustments or betas. The recent history of Canadian and low risk US utilities is of beta coefficients about 0.30 as they have withstood the impact of the financial crisis much better than the market as a whole, that is, the crisis demonstrated yet again the low risk nature of regulated utilities. These estimates are consistent with the price behaviour of Canadian regulated utilities and estimates by the Royal Bank of Canada. It is indisputable that as low risk investments the relative risk of Canadian utilities has been less than 0.30. However, any estimates reflect the time period over which they are estimated and once a unique event falls out of the estimation window it is no longer in the estimate. On a going forward basis I do not expect the US financial system to collapse again, as it did in 2008/9, and trigger a global meltdown. As a result, I believe that the relative risk of Canadian utilities will move back to their

historic range reflecting normal market risk. This is why I continue to judge the relative risk of a Canadian utility to be 45-55% of that of the market as a whole.

I would therefore judge the going forward utility risk premium to be 2.25% to 3.30% representing the combination of the low end of the relative risk adjustment and the low end of the market risk premium (.45 and 5%) combined with the top end of both (.55 and 6%). If this is added to a 3.60% forecast long term Canadian bond yield for 2014 and a 0.50% flotation cost allowance, I would judge a "simple" CAPM fair return to be as follows:

Simple CAPM Estimates	2014
Low end	**6.35%**
High end	**7.40%**

Q. DO YOU USE THIS SIMPLE CAPM ESTIMATE FOR YOUR RECOMMENDATION?

A. No. The CAPM estimate is appropriate under "normal" circumstances, since it uses a normal or average market risk premium and assumes that conditions in the bond market affecting the long Canada bond yield are also driving conditions in the equity market, that is, that the correct "opportunity cost" for an equity investor is the bond market plus a risk premium. However, at the current point in time conditions in the Canadian bond market are largely being driven by external factors. These are still not "average" market conditions, which has been reflected in regulatory decisions since the onset of the financial crisis.

A good example is the Régie's 2009 Gaz Métro decision which specifically stated that it regarded the CAPM as being the most appropriate model for determining a reasonable rate of return. It also presented the following table to show how it arrived at its fair ROE for Gaz Métro (Paragraph 2956):

Parameters	Bottom of range	Top of range
Risk-free rate	4.23%	4.50%
Market risk premium before financial crisis	5.50%	5.75%
Benchmark gross beta (not adjusted)	0.50	0.55
Adjustment for Gaz Métro's risks	0.25%	0.35%
Issuance costs	0.30%	0.40%
Sub-total n° 1: Result produced by CAPM	**7.53%**	**8.41%**
Adjustment to take account of results of other models	0.25%	0.50%
Sub-total n° 2: Rate of return before adjustment to take account of effect of financial crisis	**7.78%**	**8.91%**
Adjustment to account for the effect of the financial crisis	0.25%	0.55%
Total: Rate of return after adjustment to account for the effect of the financial crisis	**8.03%**	**9.46%**

If we look at the bottom of the range we can clearly see how the CAPM result was obtained: a 4.23% LTC forecast yield plus a utility risk premium of 5.5% * 0.50 or 275 bps to which a 0.30% flotation cost allowance was added to get 7.28%. A similar approach was used to get the high end estimate of 8.06%. Ignoring the additional ROE for Gaz Métro's higher risk than the benchmark, the Régie estimated a CAPM fair ROE of 7.28%-8.06%. The Régie then increased the range by 0.75% - 1.40% for

1) Gaz Métro's higher risk: 0.25% - 0.35%
2) The result of other models: 0.25% - 0.50%
3) The financial crisis: 0.25% - 0.55%

The AUC adopted a similar approach in its generic decision (Decision 2009-216, November 12, 2009)

> 325. Based on the Commission's findings with respect to CAPM, the Commission found a reasonable range of CAPM results of 7.13 percent to 8.62 percent. However, given the Commission's observations with respect to the impacts of the financial crisis on the traditional relationships in the financial market, the Commission considers that these CAPM may be unreasonably low.
>
> 326. The Commission's analysis of the performance of high grade bonds relative to the risk free rate during the financial crisis, as explained in Section 5.7, reveals that the traditional spread between the long Canada bond yield and the yield on high grade bonds had increased to well above the traditional spread of one percent and by the close of the record in the proceeding had moved back to a spread of approximately 1.5 percent. As a result, the Commission concludes that the CAPM results likely underestimate the required market equity return by at least 50 basis points. Accordingly, the Commission has adjusted its CAPM results to arrive at a range of 7.63 percent to 9.12 percent.

In arriving at their reasonable CAPM range of 7.13%-8.62% the AUC used similar values to the Régie: a market risk premium range of 5.00-5.75% and a relative risk (beta) coefficient of 0.50-0.63 and a forecast long Canada yield of 4.13-4.50%. Together with a 0.50% flotation allowance these result in a bottom-to-top range of 7.13-8.62%, which is slightly wider than the Régie's. In addition the AUC added an additional 0.50% to the ROE largely due to changes in yield spreads and its assessment that this "reasonable range" for the CAPM may be unreasonably low. The overall adjusted CAPM range was 7.63-9.12% and by considering the results from other models the AUC awarded an ROE of 9.0%.[17]

The Board of Commissioners of Newfoundland and Labrador in its 2009 decision based its allowed ROE for Newfoundland Power on the CAPM. The Board used a 4.5% risk free rate, a 6% market risk premium, a beta of 0.60 and a 0.50% flotation cost allowance for a CAPM fair return of 8.60%. The Board then decided that NP was an average risk Canadian utility and allowed a 9.0% ROE due to financial market conditions and NP's credit metrics.

The BCUC's 2009 decision is a bit of an outlier. For their direct risk premium estimate they stated (Decision, Dec 16, 2009 page 60)

[17] In its 2011 generic decision the AUC (page 15) estimated a CAPM range of 6.40-9.0% produced from essentially the same beta coefficients, but a higher market risk premium range of 5.0-7.25% and a lower forecast long Canada bond yield of 3.40-3.80%. .

> The Commission Panel establishes a CAPM estimate by using the Consensus estimate of 4.30 percent for the risk free rate, establishing an equity market premium in the range of the consensus estimate of Canadian professors of finance of 5 percent to 6 percent, and using an adjusted beta in the range of 0.60 to 0.66. This produces a "bare-bones" CAPM estimate in the range of 7.30 percent to 8.30 percent before an allowance for financing flexibility.

To all intents and purposes this is very similar to that of the AUC, Régie, and the Board of Commissioners of Newfoundland and Labrador except for the relatively high risk assessment (beta) placed on Terasen Gas Inc. (TGI) of 0.60-0.66.

I mention these decisions since they were made in 2009 in the aftermath of the worst of the financial crisis when utilities were claiming that the ROEs flowing from automatic ROE adjustment formula were not fair and reasonable. In almost every instance the decisions reflected reasonable values for the market risk premium, relative risk adjustment and forecast long Canada bond yields, but added a financial crisis risk premium, largely based on conditions in the credit market or credit spreads.

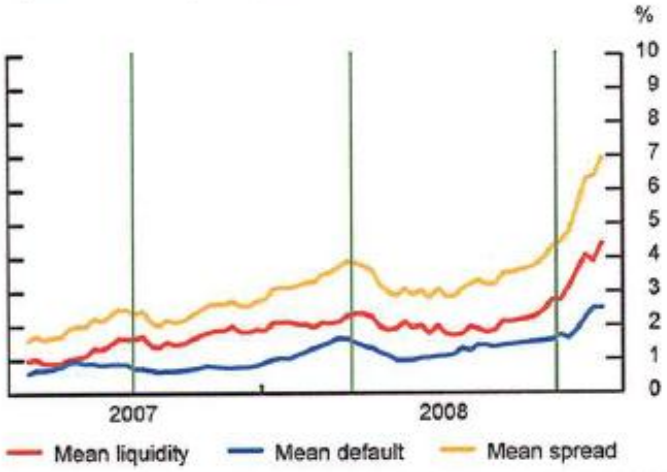
Q. DO YOU AGREE WITH A CREDIT SPREAD ADJUSTMENT?

A. Yes. Before several boards in 2009 I stated that much of the increase in credit (or corporate) spreads was caused by liquidity problems in the market making function of investment banks. Since then research at the Bank of Canada has helped to disentangle the liquidity from the pure default risk components in the corporate spread. Garcia and Yang[18] looked at Canadian US$ issuers in the US market, where credit default swaps were traded. They had to look in the US market, since there is no data within Canada. However, for these Canadian, investment grade, US$ issuers, investors could purchase credit default swaps to insure against default. Further, since the liquidity risk is minimal in credit default swaps, by comparing these spreads with conventional yield spreads, they were able to disentangle the two components. The graph that follows provides their key result.

[18] A. Garcia and J. Yang, "Understanding Corporate Bond Spreads Using Credit Default Swaps," Bank of Canada Review, Autumn 2009

Chart 2: Corporate bond spreads for an average investment-grade firm

Synthetic zero-coupon 5-year bond



Note: The green lines represent the dates when Bear Stearns liquidated two hedge funds that had invested in mortgage-backed securities (31 July 2007), the Federal Reserve Bank of New York announced that it would provide term financing to facilitate JPMorgan Chase's acquisition of Bear Stearns (24 March 2008), and Lehman Brothers filed for Chapter 11 bankruptcy (15 September 2008).

Source: Bank of Canada estimates

The average (mean) overall spread increased from under 200 basis points (bps) in 2007 to 700 bps at the peak of the crisis. However, the vast bulk of this increase was due to liquidity effects, where the spread increased from 100 bps to over 400 bps. In contrast, the pure default risk component increased from under 100 bps to about 250 bps. Garcia and Yang conclude (page 29)

> "our results show that for investment grade firms, the majority of the spread corresponds to liquidity: on average, the liquidity component accounts for 63% of the spread."

Garcia and Yang go on to say that for non-investment grade bonds the result is reversed, that is, it is the pure default risk that dominates rather than the liquidity risk. Although it remains very difficult to disentangle the liquidity from the pure default risk components on corporate spreads, the Garcia and Yang results confirm the view that I expressed before boards in 2009 that there are factors in the bond market that affect corporate spreads that are *independent* of the equity market. As a result, it is incorrect to reward the equity holders with a 1:1 adjustment to changes in the spreads between utility and Government of Canada bonds, since equity holders are not affected by the regular liquidity changes in the bond market during a flight to quality.

Garcia and Yang show that 63% of the change in spreads between corporate and Government of Canada yields is caused by changes in liquidity. These changes can be ignored as far as changing the allowed ROE, since they do not affect equity holders as liquidity in the equity market generally increases during a flight to quality. This leaves only 37% of the change in spreads due to the pure default risk that may also affect the equity holders and thus the fair ROE. Given the imprecision of "37%" since 2010 I have been recommending a 50% adjustment to changes in corporate (utility) yield spreads to pick up this credit market effect.

While I judge much of the corporate spread to be bond market specific, the changes in the spread do pick up the business cycle, with increased spreads during recessions when investors are more risk averse and lower spreads during the boom when they get optimistic and less risk averse. In this way the corporate credit spread adjustment generates a conditional risk premium, where the risk premium is conditional on where we are in the business cycle. This makes the CAPM estimate a little more sensitive to the business cycle. Further, the average corporate credit spread is about 100 bps and I would expect the adjustment to average out to zero over the course of the complete business cycle.

At the current point in time "A" spreads are at 166 bps or 66bps more than normal or average for the business cycle, this would indicate that the fair ROE should increase by 0.33% for this credit market effect. I regard this sort of adjustment as converting the CAPM into a conditional CAPM where the CAPM holds conditional upon the state of the financial markets.[19] However, I still regard the resulting ROE as an under estimate at the current point in time.

Q. WHY IS THIS SPREAD ADJUSTED CAPM AN UNDER-ESTIMATE AT THE MOMENT?

A. 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 dummy variables for WW2 and the 1970s, when there was huge liquidity during the petro dollar recycling period, the model essentially says that the real LTC

[19] At the current point in time I also view the size of the spread as being caused by the reduced supply of AAA rated government debt as much as by increased demand caused by a flight to quality.

bond yield is 1.04% plus a premium based on bond market uncertainty and a premium based on 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, while we have seen bond market uncertainty go down, the aggregate deficit in Canada has gone from a surplus to almost 5% of GDP. Normally this would cause a flood of government debt pushing down prices and pushing up yields. Plugging numbers into the regression model would predict real long Canada yields of almost 4.0%, rather than the skimpy 0.22% we actually see (2.22% long Canada yield minus 2.0% inflation) However, the flood of government debt is being bought in part by non-residents and my model's estimates are mainly derived from periods when the Canadian bond market was essentially segmented from the rest of the world. Although I would not base an estimate on this real yield model, it does indicate that current real Canada bond yields are not being made solely in Canada.

An additional insight is from looking at preferred yields. In old testimony I (along with my late colleague Dr. Berkowitz) presented four ROE estimation methods. One of them estimated the fair ROE by looking at the premium of the earned ROE over the yield on traditional fixed rate preferred shares and how this premium was valued by investors in terms of the market to book ratio for a sample of traditional rate regulated Telcos. The reason for doing this was that preferred shares are an equity instrument taxed at the same rate as dividend income from ordinary shares. As a result the tax bias from comparing the fair ROE from a regulated utility with the yield on long Canada bonds is removed, since interest income is fully taxed whereas dividend income via the dividend tax credit is not. This is the third iron law of finance I mentioned at the start of my testimony.

This tax effect is well known in capital markets. BMO-Nesbitt-Burns used to produce a Preferred Share Quarterly that tracked the performance of the preferred share market. In their June 2004 issue Nesbitt Burns provided the following yields:

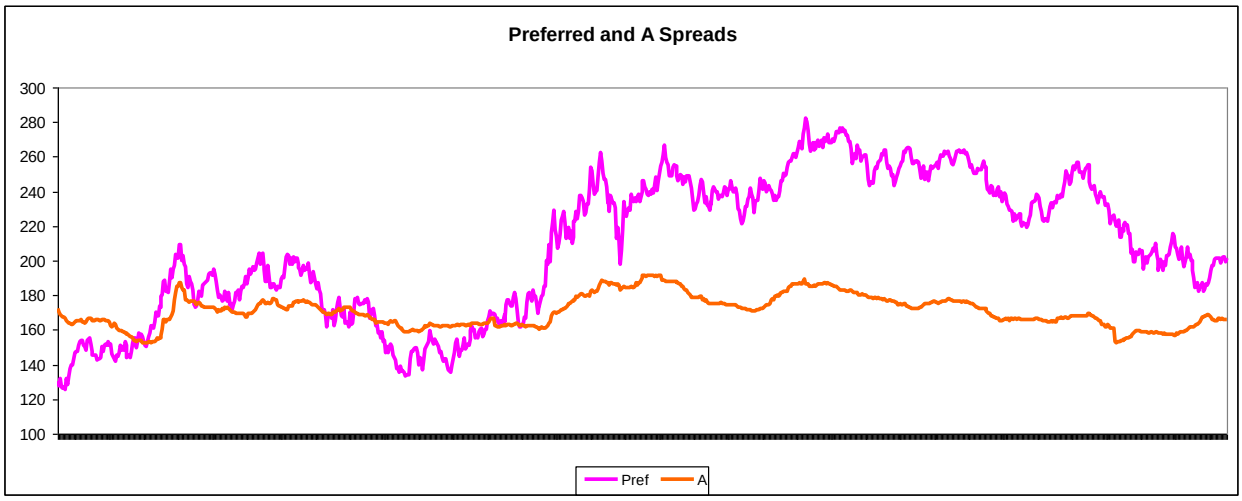
	June 2004
Retractable Preferreds (%)	
Dividend yield	4.01
Mid Canada yield	4.09
After tax spread (corp)	1.77

After tax spread (indiv)	0.63
Straight Preferreds (%)	
Dividend yield	5.48
Long Canada yield	5.34
After tax spread (corp)	2.54
After tax spread (indiv)	0.98
Floating Rate Preferreds (%)	
Dividend yield	3.42
BA (3 month)	2.12
After-tax spread (corp)	2.25
After-tax spread (indiv)	1.22

The retractable preferreds are compared to mid Canada bonds, since the retraction feature shortens their maturity as compared to a long bond. The traditional straight preferreds are compared to long Canada bonds, while the floating rate preferreds are compared to 90-day Bankers acceptances (BAs), since their dividends are usually reset quarterly.

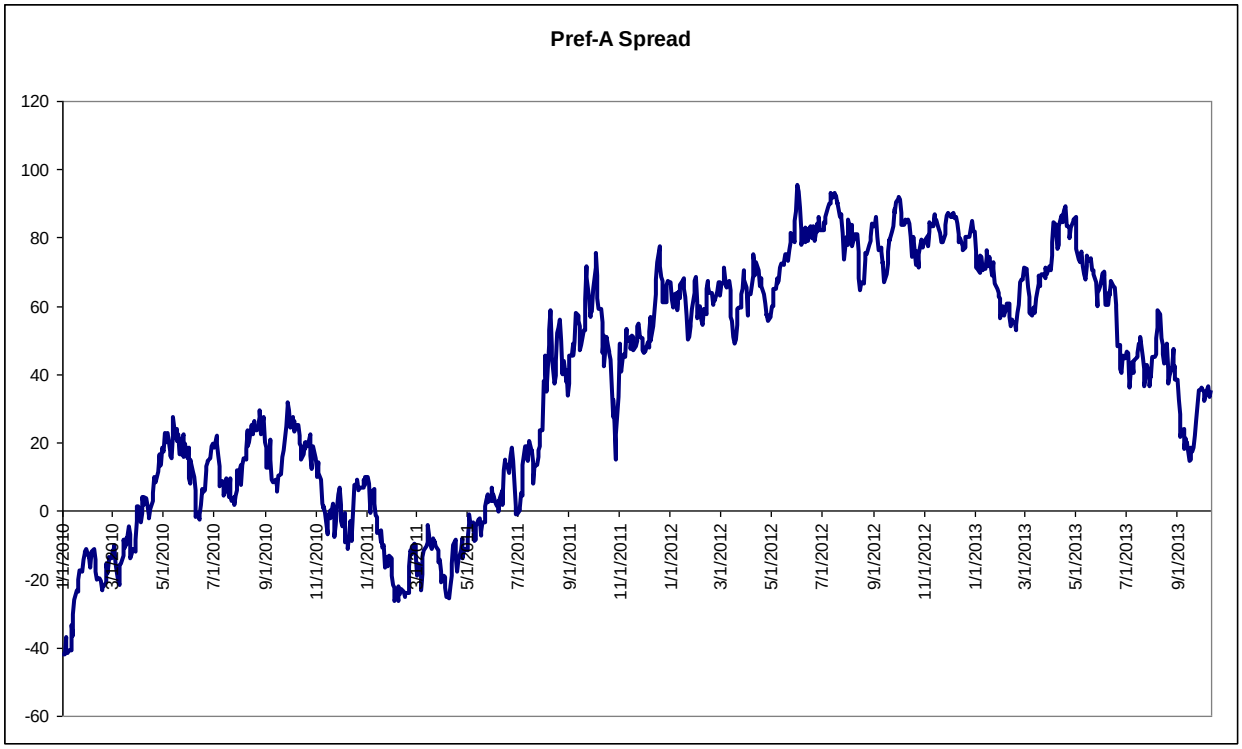
The important point about the comparison is that what we observe in the capital market is a pre-tax yield. This is determined by both risk and taxes. Take the straight preferreds, for example, in June 2004 the long Canada bond had a yield of 5.34%, while straight preferreds had a yield of 5.48%. Clearly the preferreds would be regarded as riskier than the long Canada bond, since the corporate issuer can default. However, the yield on the preferred shares was only 0.14% higher. The reason is that the dividend income gets more favourable tax treatment than the interest income from the long Canada bond. The correct comparison is the after tax yield difference, which BMO-Nesbitt-Burns gives as 2.54% in favour of the preferred shares for corporates and 0.98% for individuals, which is the correct result: that on an after tax basis the riskier preferreds give a higher yield.

In June 2004 the long Canada bond yield is given by BMO as 5.34% and the preferred share yield at 5.48%. At the end of June 2004 the Scotia Capital "A" yield was 6.34% for a spread of 100 basis points over the long Canada bond yield, which is about "average" for a complete business cycle. Since then Standard and Poors/TSX have published a preferred share index and the spread of the yield on this index along with that on the Scotia Capital "A" bonds over equivalent maturity long Canada bonds is graphed below.



On January 1, 2010 long Canada bonds yielded 4.14%, "A" bonds 5.86% and TSX's preferred share series 5.44%. So the spreads were 130 bps for the preferreds, and 172 bps for the generic "A" bonds. Compared to June 2004 these spreads had increased; the preferred share spread from 14 bps to 130 bps and the "A" spread from 100 bps to 172 bps. The graph then indicates two things. First, the generic "A" yields moved broadly in tandem with the long Canada bond yield as the A spread does not show any trend. This is the change that the corporate credit spread adjustment would pick up. Second, while the preferred yield spread moved in tandem with the bond spreads until August 2011, afterwards the spread increased dramatically. Another way of saying this is that by December 2011 the preferred share yield had dropped 0.44% from 5.44% to 5.00%, while the A bond yield had dropped by 1.53% from 5.86% to 4.33%.

The implication of the change in yields from 2010 to 2012 is that after the Federal Reserve embarked on Operation Twist to twist the US yield curve and lower the yield on long term US government bonds. As a result there was a direct effect in Canada. Moreover, this affected both the government and to a lesser extent the corporate bond market, since yields on both came down after September 2011. However, yields in the preferred share market did not come down to the same degree causing the preferred share yield spread to widen. This is probably because preferred shares are unattractive to foreign investors, since the dividends attract with-holding taxes. The following takes the information in the prior graph and specifically graphs the change in the spread between the preferred share spread and the A spread. If all securities reacted in a similar way to the changes in the long Canada bond market then this spread would average out to zero. However, the change in the spreads clearly indicates that this is not true.



It is difficult to precisely estimate the impact of Operation Twist since the duration of these instruments differ, but I would place the "Operation Twist" impact on the Canadian bond market as approximately 80 bps from August 2011 through to May 2013 when Governor Bernanke spooked the markets by indicating a withdrawal plan for the Federal Reserve's bond buying program. This is approximately the spread increase of preferred yields over "A" bond yields since the start of Operation Twist.

When I presented testimony before the Régie on Intragaz in November 2012 the implications of Operation Twist were in full force. At that time I added 0.40% for the increased credit spread and 0.80% for Operation Twist. At that time the forecast long Canada bond yield was only 3.0% which I felt was not a valid yardstick as a base for a fair ROE. Instead I recommended adding the 0.80% Operation Twist adjustment and using a forecast long Canada bond yield of a ***minimum*** of 3.80%.

However, since Governor Bernanke's comments about the ending of QE3 in May 2013 long term government interest rates have increased significantly. At the start of May 2013 the yield on the Scotia Capital long bond index was 2.20%. However, by October 11, 2013 long Canada bond

yields had increased to 3.07% or by 0.87% and the forecast long Canada bond yield from 3.0% to 3.60%. Of more importance the spread of the preferred share yield over long Canada bonds has dropped to 2.01% and has been even lower. In comparison the spread of the yield on A bonds over long Canadas has only dropped to 166 basis points. The result has been that the preferred share yield spread over Canada has contracted as bond yields have increased (both Canadas and A bonds). I would therefore estimate the Operation Twist effect in equity returns to have dropped substantially from 0.80% to about 0.35%. As the graph of the preferred and A bond spreads indicates a substantial part of the differential impact of Operation Twist on equity versus bond yields has been removed. With the current 3.60% forecast long Canada yield, the addition of my 0.35% Operation Twist adjustment means an effective long Canada yield, absent Twist, of 3.95% or a 0.15% increase over my forecast for Intragaz.

There are many problems with relying on a preferred share index, but clearly Canadian bond yields have been affected by the actions of the US Federal Reserve and as a result in my judgment are still not as indicative as an opportunity cost for equity investors as normally. At the current point in time I would judge a reasonable credit spread adjustment for 2014 to be 0.30% and a reasonable "Operation Twist" adjustment to be 0.35%. In total I would add 0.65% to the simple CAPM estimates. This contrasts with the 1.20% addition I was using last year when the impact of Operation Twist was much greater. This produces a fair ROE in the following range.

CAPM Estimates	2014
Low end	**7.00%**
High end	**8.05%**

Overall this would indicate a 2014 fair ROE of about 7.50% for a benchmark utility.

5.0 DCF ESTIMATES OF THE FAIR ROE

Q. WHAT ARE YOUR DCF ESTIMATES?

A. In appendix D I review the DCF model and apply the model to the market as a whole and highlight the problems in applying it to individual stocks. For the market as a whole I would estimate the fair return as being 9.23-9.85% in Canada and slightly higher in the US. With forecast long Canada bond yields at 3.6% for 2014 plus my 0.350% Operation Twist adjustment this means a market risk premium of over 5.28-5.90%, which is broadly consistent with historic earned market risk premiums and the judgment of the respondents to Fernandez' survey. Similarly for the S&P gas and electric index the historic utility risk premium is about 3.19-3.84%. Again this is broadly consistent with my Canadian utility risk premium range, since the US evidence is over the ten year US bond, not the 30 year bond.

I have traditionally viewed my DCF estimates as checks on my CAPM estimates, since in my view CAPM estimates are usually in the right "ball-park." However, the recent very low long Canada bond yields have forced me to re-evaluate this and look at historically what drives the DCF vs. the CAPM estimates, since 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 (Rf) plus the risk premium comprised of the market risk premium (MRP) times the beta coefficient (β). For the market as whole we can simply drop the beta.

The risk free rate is directly observable since the practise in Canada is to use the long Canada bond yield as the risk free rate, while the market risk premium is reasonably objective, particularly now that we have Fernandez' survey data from thousands of professionals in the area. Consequently, the major area of dispute is the relative risk or beta coefficient, and even here there is not much doubt that utilities are lower risk than the market. Hence the big advantage of the CAPM is that it is difficult to make big mistakes. The CAPM also avoids one of the big problems with DCF estimates in that the forecast inflation rate is automatically incorporated into

the long Canada bond yield, since we use the nominal rather than the real yield. This is currently not a significant problem, since inflation is so low, but part of the reason the DCF model fell out of favour was that it was giving bad signals when applied mechanically in the 1990s, when there was a structural break in the forecast inflation rate.

The classic Gordon growth model,[20] referred to as the DCF model in most testimony before regulatory bodies, is as follows:

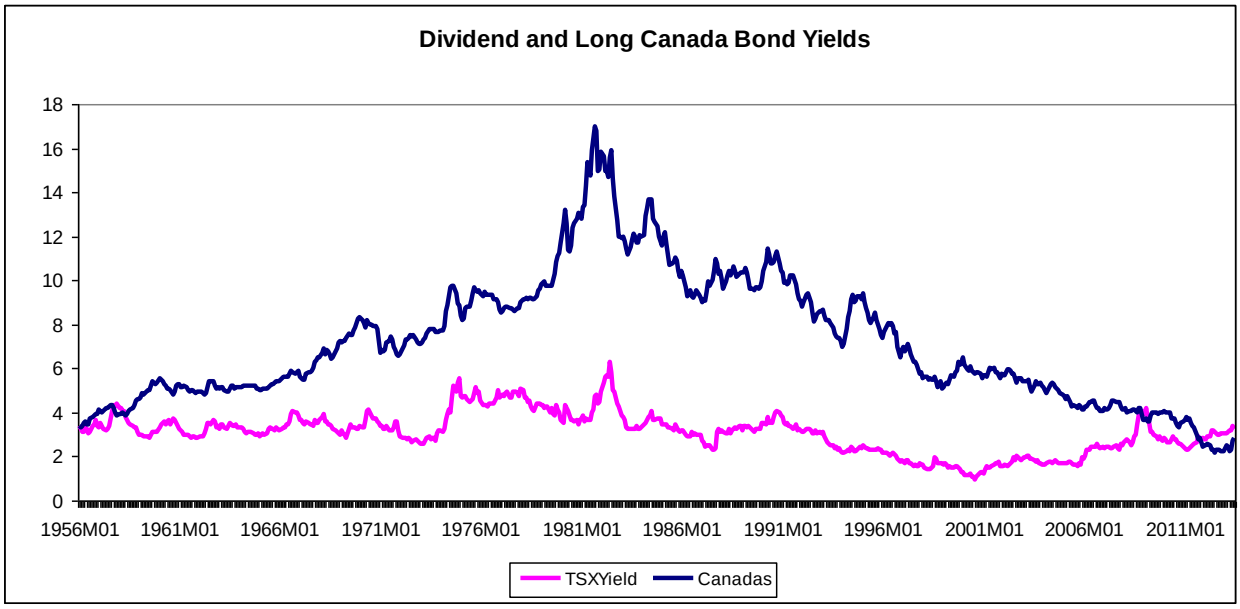
$$K = \frac{d_1}{P} + g$$

In words, the required rate of return is the forecast dividend yield plus the long run growth rate, since it is the long run growth rate in earnings and dividends that drives long run capital gains. Conceptually the DCF model and CAPM should give exactly the same values but, of course, since they approach it from a different perspective there is always estimation error. For the market as a whole the forecast dividend yield can be estimated with very little error, so the estimation error is with the forecast long run growth rate, which also is easier to estimate than for an individual stock. As a result, if the CAPM and DCF estimates differ significantly, then it is mainly due to the difficulty in estimating the growth rate in the DCF model and the risk premium in the CAPM.[21]

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

[20] Named after the late Professor Myron Gordon of the University of Toronto.

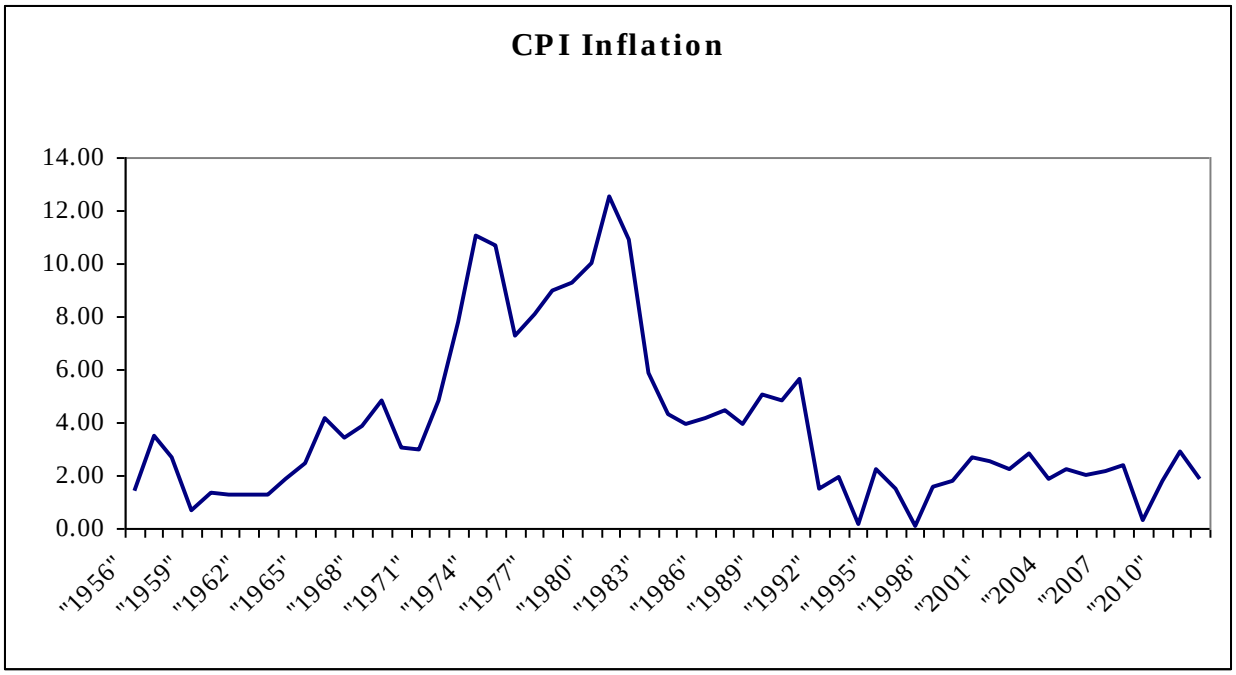
[21] Note since for the CAPM we are dealing with the market return the following analysis is general for any risk premium model



Since both the DCF model and CAPM should give the same answer, we can set them equal to each other, which indicates that for the market as a whole

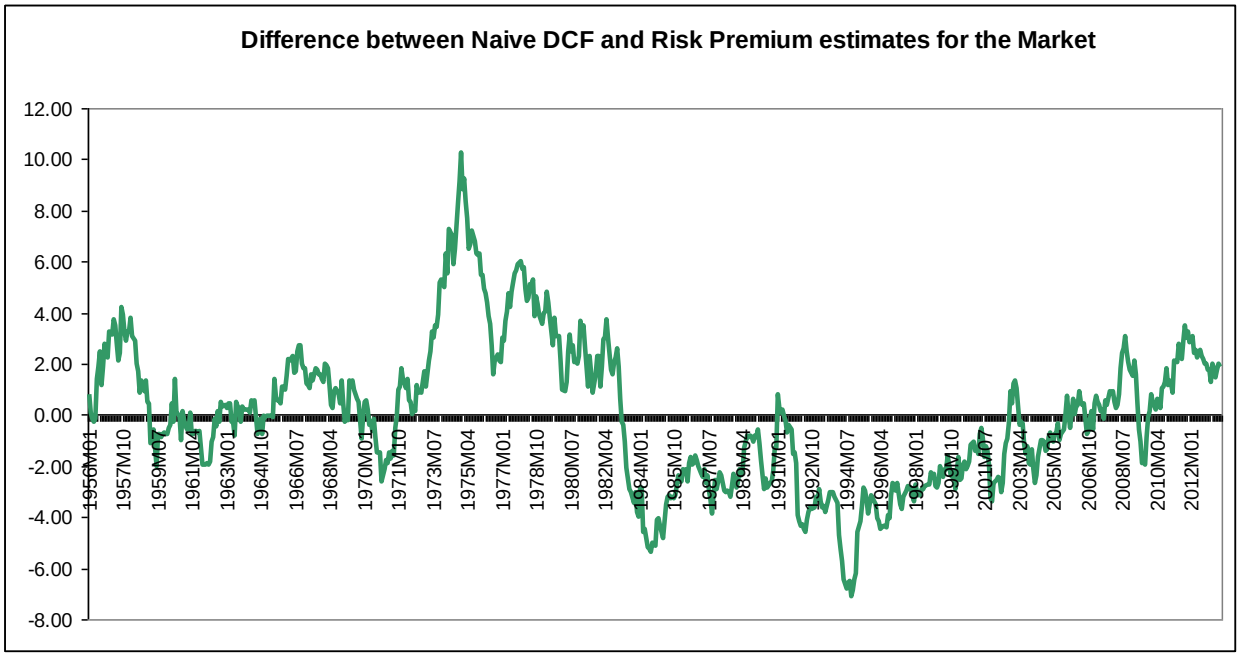
$$CAPM - DCF = R_F - {}^{d_1}\!/_{P} = g - MRP$$

Or in words the directly observable spread between the long Canada bond yield and the TSX dividend yield is equal to the long run dividend groth rate minus the market risk premium. From the above graph we can see that there is generally a very large difference between the two indicating that the expected growth rate was much higher than the market risk premium, which would pull up the dividend yield to close to the long Canada bond yield. The reason for this was the gradual increase and then decrease in the CPI inflation rate over this long period graphed below. This inflation rate is directly captured in the long Canada bond yield and yet is in the "unobserved" growth rate in the DCF model. Note for example, that the increasing and high rates of inflation in the 1960-1980 period coincides with the big difference between the LTC yield and the TSX dividend yield.



It is possible to come up with a simple or naïve estimate of the market return by adjusting for this inflation/real yield bias to the estimates. For example, we 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 1956-2011 the average naïve DCF estimate is 10.68%, while the average naïve CAPM estimate is 10.69%, or a difference of only 0.01%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 late 1990's. The reason for this difference is twofold. First, in the 1970s inflation was increasing and bond yields did not reflect this as investors simply did not believe that the Bank of Canada and the Government would allow these high levels of inflation to continue. This resulted in very low real yields on LTC bonds. As a result whereas the DCF estimate directly captured the year over year inflation rate, the LTC yield did not leading to a positive difference between the DCF and CAPM estimates.



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 exceeding their DCF equivalents. It is this phenomenon of low real bond yields in the 1970s and 1980s and high real bond yields in the 1990s that is the major reason for the positive deviations from 1970-1982, and the negative deviations afterwards.

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 risks attached to government bonds. Subsequently, I have increased my estimates of the MRP as this risk has been removed. Similarly, the real growth rate has dropped over time and is probably lower than the 3.5% I used in the simple 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. At the end of July 2013 TSX dividend yield was 3.26% and the year over year inflation rate 1.32%, so with the 3.5% real growth rate

the simple DCF estimate is 8.24%.[22] Similarly with the current long Canada yield of 2.85% and a 3.5% market risk premium the simple CAPM estimate is 6.35%. As a result, there is currently a 1.88% difference when we subtract the CAPM estimate from the DCF estimate. Further note from the graph that this difference between the two has gradually gone from negative to positive over the last 15 years as long Canada bond yields have gone down. The reason for this is simply the fact that the real yield on the long Canada bond has dropped, which has penalised the risk-premium estimate relative to the DCF estimate. Although some of this bias has been removed with the recent increase in long Canada bond yields there is still a significant difference.

Of course current DCF and risk premium estimates are not the naïve ones graphed above but instead allow for differences in the market risk premium and growth rates, but this analysis confirms the implications of the current problems in the bond market on the CAPM estimates due to Operation Twist and the impact of the business cycle. As a result it supports my adjustments to the CAPM estimates and the value of currently looking at DCF estimates.

Q. WOULD YOU USE THESE ESTIMATES?

A. No. These are very simple estimates that use average numbers. They are presented simply to show that while the DCF and CAPM estimates are consistent over long periods of time, they both have problems when used mechanically during periods of very high and very low real yields. The analysis also helps explain why DCF estimates fell out of favour in the 1990s while the validity of recent CAPM estimates has recently been questioned.

Q. IS THERE ANY OTHER EVIDENCE ON THE VALIDITY OF THESE 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. Defined benefit pension funds need this expected rate of return to determine whether a fund is in deficit or surplus. On October 19, 2012 TD

[22] This is 1.0326*(1.0132+.035)-1

Economics produced its own analysis of the long run returns of the type needed in defined benefit pension plans.[23]

FINANCIAL PROJECTIONS OVER THE NEXT DECADE	
Financial Instrument	Average Annual % Return
Cash (3-Month T-bills)	2.00%
Bonds (DEX Universe Bond Index)	3.00%
Equities	
Canada (S&P/TSX Composite)	7.00%
U.S. (S&P 500)	7.00%
International (MSCI EAFE)	7.00%
Source: TD Economics	

The important point about the TD Economics forecast is that the going forward risk premium for equities minus bonds is 4.00%. This is not the market risk premium, since adjustments need to be made but it is certainly in the right ballpark.

Q. WHAT ADJUSTMENTS NEED TO BE MADE?

A. As TD Economics notes its return forecast is for ten year geometric returns so they have to be converted to arithmetic 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 20% (0.20) so the variance is 0.04 and half this is 0.02 or 2.0%. Similarly, the volatility of the long Canada bond return has been about 9% (0.09). I would suspect that this overstates the future volatility, since it is unlikely we will see LTC yields at almost 20% again, but this means a variance of 0.0081 and half this is 0.4%. So converting these long run returns means an equity over bonds risk premium of 5.60% as follows:

[23] TD Economics, An Economic Perspective on long-term financial returns, available at

	Long run	1/2 the variance	Arithmetic
Equities	7.0%	2.0%	9.0%
Bonds:	3.00%	0.40%	3.40%

However, the TD Economics forecast is over the yield on the DEX universe bond index and not over long Canada bonds. The universe of bonds would have lower duration than long Canadas, but can be expected to earn more since they have default risk. Given the prior long Canada forecast of 3.0%, this would increase the market risk premium estimate to about 6.00%. As a result, I regard TD Economics forecast as being consistent with a current market risk premium of about 6.00%.

Note that TD Economics equity market return is slightly lower than my own forecast. However, a TD Economics market risk premium of 6.00% is consistent with my own range of 5.0-6.0% plus my Operation Twist adjustment of 0.80%, which moves my mid-point to 6.30%.

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

A. I would judge a fair ROE for 2014 to be in a range of 7.00to 8.05% for 2013 with a recommended rounded mid-point for 2014 of 7.50%. My estimates are based on the following:

Risk premium

Base LTC forecast:	3.60%
Normal utility risk premium:	2.25%-3.30%
Issue costs:	0.50%
Normal Fair ROE	6.35%-7.40%
Credit Spread Adjustment	0.30%
Operation Twist Adjustment	0.35%
Fair ROE:	7.00-8.05%
Point estimate:	7.50%

DCF:

Canadian equity market return:	9.23-9.85%
US SP500 Electric Utility risk premiums	3.19-3.84%
Low risk US sample Median DCF:	9.08%

Q. IS THERE ANY OTHER EVIDENCE SUPPORTING 7.50%?

A. Yes. Ultimately stock market returns are driven by the returns earned by companies, that is, what is sometimes referred to as "comparable earnings." In 1925 John Maynard Keynes pointed out[24] that there were two sources of returns from investing in the stock market. The first is called the ***investment return*** which Keynes defined as "forecasting the prospective yield of an asset over its entire life."[25] In modern terminology this would be the internal rate of return on the firm's cash flows, or an approximate average return on equity. 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.[26]

Keynes' point would be that a firm may earn 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 then what we look at when we look at the returns over long periods of time on the TSX Composite or the SP500. 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: both of them will tend to revert back to some long run average. However, professional investors according to Keynes are mainly concerned with speculative returns or forecasting the change in the 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.

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[24] 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

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

[26] Page 149 of the General Theory

Warren Buffet is probably the most successful fundamental investor of the last fifty years. He repeated Keynes' argument by stating:[27]

> "*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 in fees. However, Keynes, Bogle and Buffet all point out the basic fact that short run returns can deviate from the returns generated by the economy and earned by firms, the investment return, 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,[28] that is the speculative return should average out to zero. There are two ways in which we can look at the investment return; the first is to look at average rates of return on equity and the second to look at a Gordon growth model for the economy as a whole.

In Schedule 3 is the average ROE for Corporate Canada since 1987 as reported by Statistics Canada (Table # 1800003). Over this 26 year period the average ROE has been 9.24%. The third column reports the annual return on the TSX Composite which over the same period has been 9.52% or 0.28% more. However, the rough equality over 26 years hides the significant year to year variation where speculative returns have been significantly high or low. For example, in 1987 Corporate Canada earned 11.19% but the TSX Composite only 5.88%, so there was a short term speculative loss of 5.31%. It wasn't until 1989 than the TSX returned 21.37%, compared to Corporate Canada's ROE of 11.79%, that the speculative return turned positive. In each year we

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[27] Warren Buffet's comments in Berkshire Hathaway's 2006 Annual Report as reported in Fortune, March 20, 2006.

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

can see that the speculative return is highly volatile and on average 5-6 times more volatile than the investment return.

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 Gordon 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 4. 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 in reality is *de minimus*. 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)

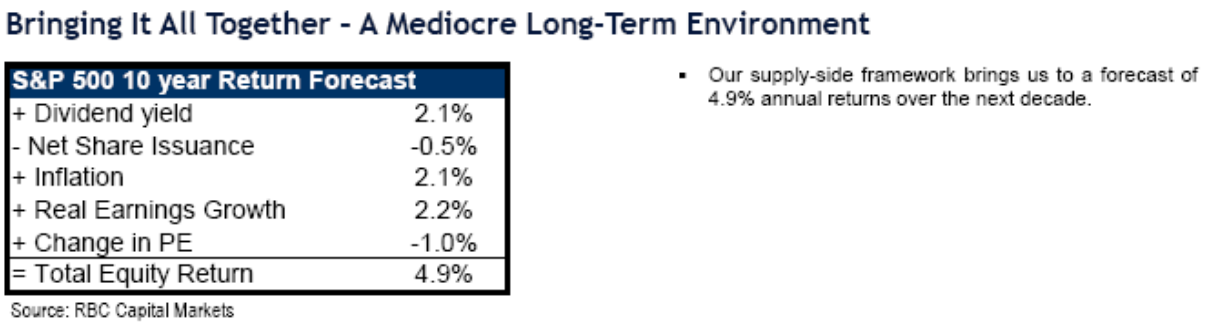
> "Over the long run it is the durable economics of enterprise – enterprise – that has determined total return: the evanescent emotions of investing – speculation –so important over the short run, has ultimately proven to be meaningless."

The approach of Keynes, Buffet and Bogle is a standard approach used by fundamental investors who look at individual stocks, rather trying to time the market. However, it is sometimes used to time the market over a long horizon. In a US Equity Strategy Report (July 18, 2012) RBC pointed out that historic long run equity returns in the US had been 9.4% nominal or 6.2% real since 1900. However, going forward they used what they termed a "Grinold-Kroner-Siegel" supply side model, which is actually just the modified DCF model, where long run return (R.) was equal to:

$$R = \underbrace{\frac{D}{P} - \Delta S}_{\text{Income}} + \underbrace{i + g}_{\text{Earnings Growth}} + \underbrace{\Delta PE}_{\text{Repricing}}$$

This equation says that the long run return is equal to the dividend yield minus share dilution, caused by stock issues, plus inflation and real earnings growth, plus the change in the PE multiple.

RBC placed the dividend yield at 2.1% and while they judged average share dilution from new issues to be 2.0% going forward they expect increased share buybacks to cause this to drop to -0.50% so the adjusted dividend yield is 1.60%. They anticipated inflation in the US at 2.1% and real growth of 3.8% for a nominal growth forecast of 5.9% almost identical to my estimate for the Canadian market. RBC then forecast that the normalised Shiller PE ratio will move back to 16-18X partly due to changing demographics in the US as the proportion of peak savers (demanders of equities) drops as the baby boomers age. They forecast that this would cause a change in the basis of valuation reducing the long run (ten year) equity market return by 1.0%. RBC's long run forecast is therefore for a 4.9% US equity market return. The following graphic pulls together the RBC forecast:



Overall this Statistics Canada ROE data reinforces the aggregate profitability data that the top of the business cycle was in 2007. ***For the whole period since 1988 the median Statistics Canada ROE for Corporate Canada was 9.73% and the average slightly less at 9.24%.*** Of note is that HQ's requested ROE of 9.20% is essentially the average ROE of Corporate Canada as a whole, despite is clearly lower risk.

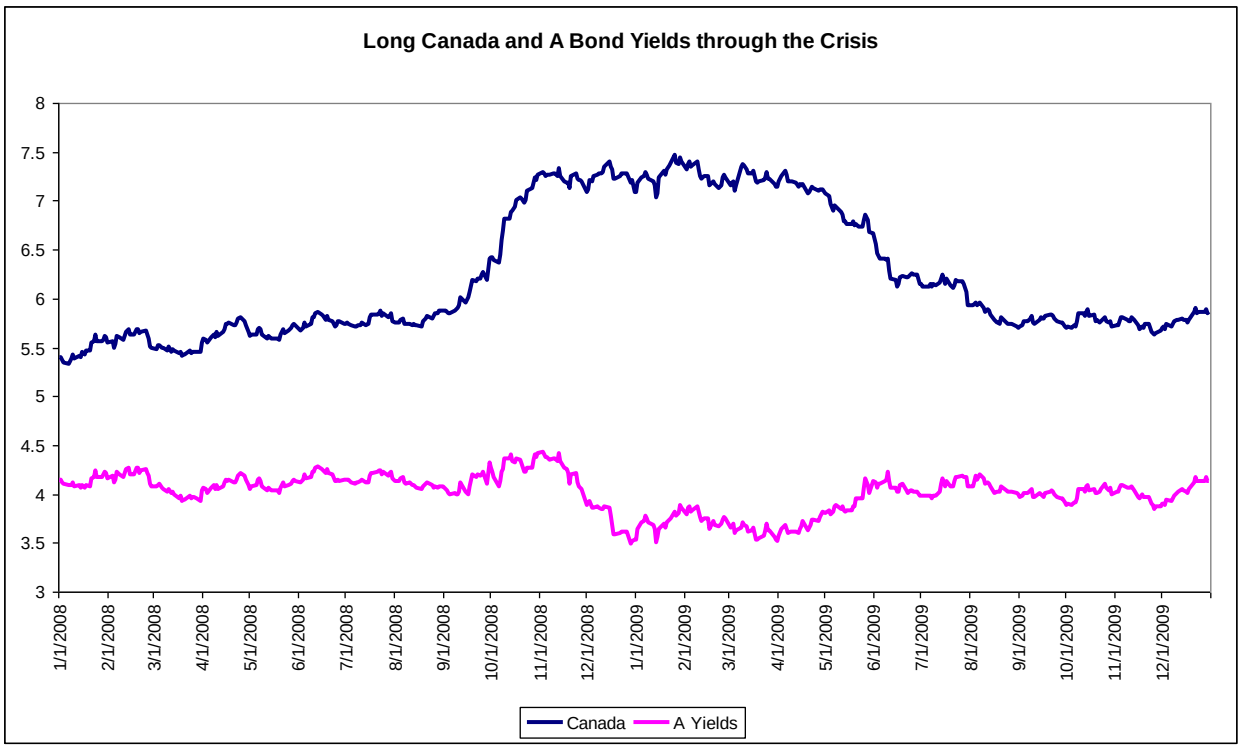
VII AN ROE ADJUSTMENT MECHANISM

Q. WOULD YOU RECOMMEND THE USE OF AN ROE ADJUSTMENT MECHANISM FOR HQT AND HQD?

A. Yes. The defects with the existing ROE formula are three fold:

1) There was a 100% adjustment of the ROE to the long Canada bond yield when almost all other Canadian utilities had their ROE formula vary with 75% (most) or 80% of the change in the long Canada bond yield. As a result, in the declining interest rate environment since 2002/3 the allowed ROEs of HQT and HQD dropped more than for other Canadian utilities. Most agree that fair and reasonable ROEs do not vary one to one with the long Canada bond yield even in normal market circumstances.

2) With the onset of the financial crisis we had an exaggerated version of the normal "flight to quality" as the crisis struck at the core of the global financial system, which is the US money centre banks. The following shows the yields on A and long Canada bonds from January 2008 through the end of 2009 which includes the worst of the crisis.



Of importance is that yields on both long Canadas and A bonds started to increase at the inception of the crisis, but quite rapidly as the seriousness of the crisis dawned on investors, yields on long Canadas dropped while those on A bonds continued to increase resulting in the wide spreads I remarked on earlier. However, since utility ROEs were tied to the forecast long Canada bond yield we had what some perceived as an incorrect result, in that allowed ROEs were falling as utility borrowing costs were increasing. Although this situation quickly reversed itself, so that by the late summer of 2009 both were following a similar pattern, there was a clear desire to take into account corporate borrowing costs. I now do this by an adjustment to corporate spread changes.

3.) Finally as I remarked on earlier, the effect of Operation Twist in September 2011 was to dramatically lower long term US treasury yields which had the side effect of lowering long term yields in Canada as investors sought higher yields on AAA rated bonds. However, as is clear from the behavior of preferred share yields the fair return on equities has not dropped at the same rate as that on long Canadas, since preferred shares are predominantly Canadian owned like Canadian utilities. This requires a third adjustment to the ROE formula for HQT and HQD.

Q. HOW WOULD YOU IMPLEMENT CHANGES TO THE ROE FORUMLA?

A. First it has to be pointed out that until the onset of the financial crisis Canadian regulatory boards seemed to be content that their automatic ROE adjustment formulae, that adjusted the ROE by 75% of the change in the forecast long Canada bond yield, were awarding fair and reasonable ROEs. In many cases these ROE formulae were adopted at the request of the utility. For example, the Régie itself rebased and confirmed its ROE formula in a Gaz Métro decision in 2007. The ROE formulae had also been reviewed and confirmed with minor changes multiple times. Some salient examples are:

- The NEB confirmed its ROE formula in a 2001 TransCanada decision and then refused to hear evidence on its formula in 2004;
- The Alberta Energy and Utilities Board adopted its formula in 2004;
- The Ontario Energy Board imposed an ROE formula in 1997, reviewed it in an extensive hearing in 2003, and confirmed it in subsequent decisions as late as November 3, 2008
- The BCUC retooled its formula with minor changes in 2007

As the Alberta Utilities Commission noted in its Decision 2009-216, November 12, 2009 page 12,

> 51. Notwithstanding the issues and economic developments discussed above, the Commission observes that since the issuance of Decision 2004-052 in July 2004 and before the onset of the economic crisis, there had been few indications that the adjustment formula was not producing an appropriate annual ROE. Decision 2004-052 and the annual formula had resulted in a range of ROEs with a high of 9.60 percent and a low of 8.51 percent well within the off-ramp triggers set out in the Decision of 7.6 percent and 11.6 percent. Further, until the present Proceeding, no party, other than ATCO Gas with respect to its equity ratio for 2008 and ATCO Pipelines with respect to ROE and capital structure for 2008, had requested a review of the generic formula or a change to the allowed capital structure determined in Decision 2004-052.

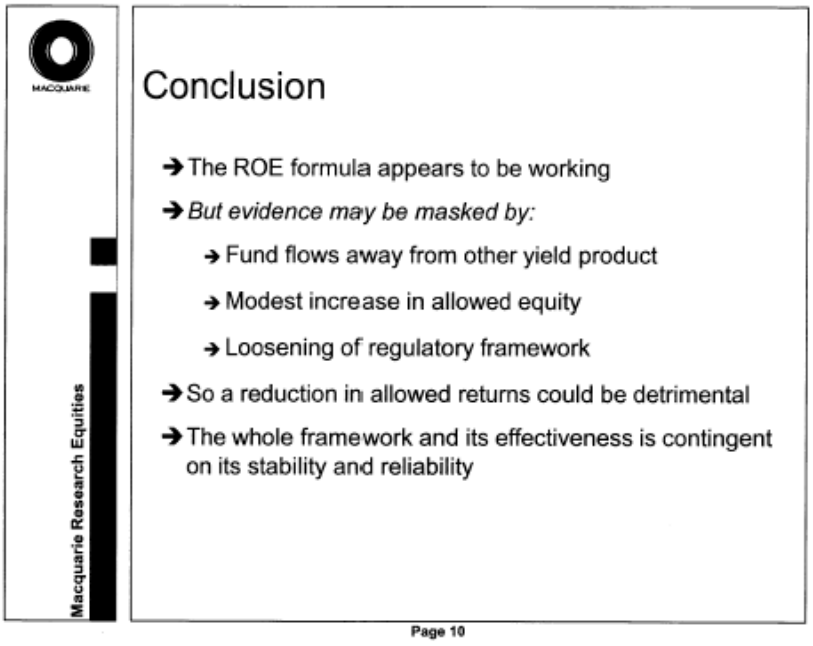
Similar statements were made by the Board of Commisioners of Newfoundland and Labrador (Order # PU43 (2009)) when in the decision (page 13) it was stated

> Newfoundland Power bears the burden of showing that it is appropriate to discontinue the use of the automatic adjustment formula, a well-established regulatory tool that was expected to be used to set rates for Newfoundland Power in 2010. The Board is not persuaded by the evidence of Ms. McShane as to the historical underperformance of the formula, especially given the evidence of both Ms. Perry and Mr. Ludlow that the automatic adjustment formula established appropriate rates of return on rate base for almost a decade until the extraordinary financial market conditions which developed late in 2008. (Transcript, Oct. 19, 2009, pgs. 114/21-25; 115/1-25; 116/1-8)

That it was the impact of the financial crisis that caused the OEB to review its ROE formula is also clear from an OEB letter to interveners of August 20, 2009 which stated

> The Board's consultation is prompted by the state of the financial markets. As indicated in the Board's June 18, 2009 letter, the Board is satisfied that further examination of its policy regarding the cost of capital is warranted to ensure that, on a going forward basis, changing economic and financial conditions are accommodated if required. [1]

Finally before CAMPUT in 2008 Matt Akman of MacQuarie provided the following slide in a presentation:



I was on the same panel as Mr. Akman and as is clear from this slide, he had no obvious problems with the ROE formulae at that time. Consequently, it is quite clear from the impact of the multiple ROE formula reviews and the statements of the regulators themselves, as well as analysts, that the ROE formulae with a 75% adjustment to changes in the forecast long Canada bond yield were generating fair and reasonable ROEs until the extraordinary events of 2008-2009.

Q. SO HOW WOULD YOU ENHANCE THE ADJUSTMENT MODELS SINCE SO MANY WERE SUSPENDED?

A. As explained in 2) above the key problem with the "old" ROE adjustment formulae was that they *only* linked the ROE to the forecast long Canada yield. As a result, during the financial crisis the ROE formula indicated declining ROEs while at the time the utility cost of debt was increasing. An enhanced ROE formula has to deal with this, which can be done by incorporating the credit market adjustment I have used in my direct ROE estimates.

To illustrate I can use the data for the period when the NEB RH-2-94 formula was judged to be providing fair and reasonable ROEs.[29] I use the NEB data simply because it has the longest data series and the NEB is still providing the results from using its formula.[30] In particular, the NEB examined its ROE formula in a TransCanada cost of capital hearing in 2001 and concluded (RH-4-2001, page 53):

> ***Views of the Board***
>
> Having carefully considered all of the evidence relating to rate of return on common equity, the Board has concluded that the RH-2-94 Formula continues to yield returns that are appropriate for the Mainline. In arriving at this conclusion, the Board gave primary weight to the evidence related to ERP analysis.

The Board then went on to use the 5.73% RH-2-94 formula forecast LTC bond yield and estimated a higher market risk premium of 5.50-6.0%. Further the Board noted that the resulting equity risk premium for the TransCanada Mainline that results from the RH-2-94 formula of 3.88% was well within the range of estimates provided by the company's witness, Dr. Vilbert.

I therefore use the data for 2000, ie., prior to the RH-4-2001 decision and a time when capital market conditions were "normal" as indicated by the credit spread of 0.94% which is close to the long run average prior to the financial crisis. The table set out below is based on data provided by Ms. McShane on behalf of Enbridge in a 2010 Line 9 hearing before the NEB, extended with the actual NEB formula ROE and my estimate of credit spreads using the Scotia Capital data.

[29] I would judge them to be at the top of a fair and reasonable range

[30] Although the NEB no longer uses its ROE formula the results are still being published as it is used by other regulated entities.

	LTC	Spread	NEB	Booth (2001)
1995	9.25	0.71	12.25	12.13
1996	8.03	0.42	11.25	11.07
1997	7.14	0.27	10.67	10.33
1998	6.53	0.28	10.21	9.88
1999	5.69	0.99	9.58	9.60
2000	6.12	0.94	9.9	9.90
2001	5.73	1.56	9.61	9.92
2002	5.63	1.31	9.53	9.72
2003	5.98	1.32	9.79	9.99
2004	5.68	0.97	9.56	9.59
2005	5.55	0.98	9.46	9.49
2006	4.78	0.96	8.88	8.91
2007	4.22	1.07	8.46	8.54
2008	4.55	1.18	8.71	8.84
2009	4.36	2.58	8.57	9.40
2010	4.3	1.88	8.52	9.01
2011	3.72	1.75	8.08	8.51
2012	3.06	1.62	7.58	7.95

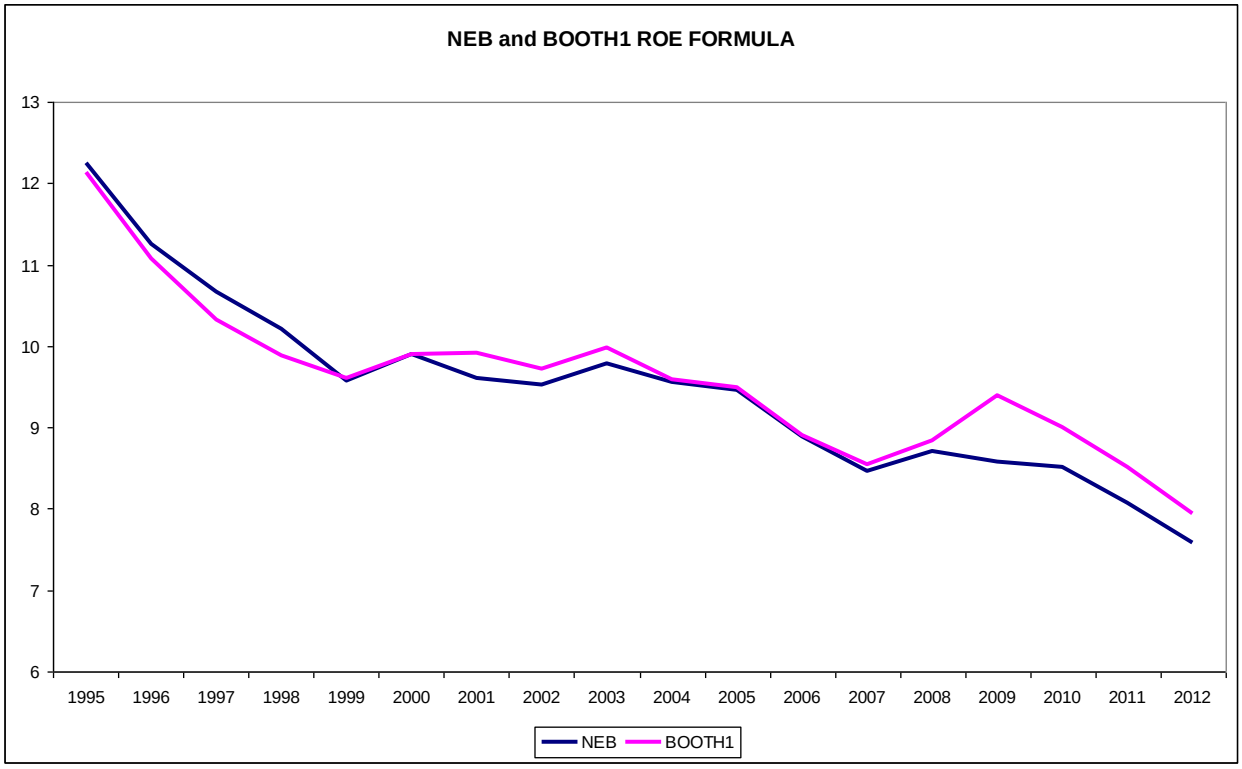
For 2000 the enhanced ROE formula is

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

This uses the data at a time when just about every board in Canada accepted an NEB style ROE adjustment formula as giving fair and reasonable ROEs. The 2000 date also has two advantages:

1. The yield spread of 0.94% was approximately normal. Since 1980 the A spread using Scotia Capital's index has averaged just over 100 bps, which is biased slightly high due to the unprecedented levels of the last few years.
2. As long as the Bank of Canada sticks to its 1.0-3.0% inflation forecast I would anticipate that the LTC yield will average close to 5.00%, not too far below the 6.12% forecast.

Using this data I can then backfill the allowed ROEs generated by the original NEB and my enhanced ROE formula (Booth1) as graphed below.



Several conclusions are immediate.

- First, the BOOTH1 ROE formula tracks the NEB's old ROE formula quite closely, except for the periods when the spread was significantly different from average. This is what we would expect. For example, in the late 1990s the spread was abnormally small and as a result the allowed ROE drops more with my formula than with the old NEB formula because credit conditions were so easy. In contrast, during the slowdown and/or recession years of 2000-2003 and again 2008-2010 the ROE with my formula exceeds the old NEB formula ROE, since it picks up the impact of these higher spreads.

- Second, as a result of the spread adjustment my model avoids the major complaint levelled at the old ROE formulae: that during these periods of crisis, the allowed ROE and utility borrowing costs move in opposite directions. In particular, the ROE was 49 basis points higher for 2010 with my new formula than the old NEB formula; an increase which approximates the "bonus" added by many regulators at that time.

- Finally the actual ROE for 2010 from the BOOTH1 formula of 9.01% was very similar to that allowed by the Régie, the AUC and others at that time.

I developed this NEB enhanced ROE formula in 2010 for an Enbridge Line 9 hearing before the NEB when the company requested an automatic ROE adjustment formula. Subsequently I also

recommended it to the Régie which accepted it in 2010 Gazifère hearing and in 2011 in a Gaz Métro hearing.[31]

However, despite being accepted in 2010 and 2011 this ROE formula starting predicting what some would judge to be unfair allowed ROEs for 2012 and I have subsequently been recommending another adjustment to account for the third problem with the existing HQT and HQD formula.

Q. WHAT OTHER ADJUSTMENT WOULD YOU MAKE?

A. To reiterate my previous remarks, until 2011 the general view was that Canada was well on the road to full economic recovery and markets were reverting to normal. In its June interest rate forecast (Financial Markets Monthly June 3, 2011) RBC was forecasting that the Bank of Canada would continue increasing its overnight rate in 2011 and that long Canada bond yields would be 4.55% by the end of 2012.

	10Q2	10Q3	10Q4	11Q1	11Q2	11Q3	11Q4	12Q1	12Q2	12Q3	12Q4
Canada											
Overnight	0.50	1.00	1.00	1.00	1.00	1.25	1.75	2.25	2.50	2.75	3.00
Three-month	0.50	0.88	0.97	1.10	1.20	1.70	2.15	2.40	2.65	2.90	3.15
Two-year	1.39	1.40	1.71	1.85	1.75	2.15	2.40	2.80	3.00	3.35	3.75
Five-year	2.32	2.04	2.46	2.65	2.50	3.00	3.30	3.50	3.65	3.85	4.05
10-year	3.08	2.75	3.16	3.25	3.25	3.50	3.80	3.95	4.05	4.15	4.15
30-year	3.65	3.34	3.55	3.80	3.75	4.00	4.30	4.45	4.50	4.50	4.55
United States											
Fed funds	0 to 0.25	0 to 0.25	0 to 0.25	0 to 0.25	0 to 0.25	0 to 0.25	0 to 0.25	0 to 0.25	0.50	1.00	1.50
Three-month	0.18	0.16	0.12	0.15	0.20	0.20	0.25	0.35	0.65	1.25	1.70
Two-year	0.61	0.44	0.61	0.70	0.80	0.90	1.10	1.25	1.60	2.00	2.50
Five-year	1.79	1.27	2.01	2.10	2.00	2.30	2.60	2.80	3.05	3.40	3.75
10-year	2.97	2.48	3.30	3.45	3.25	3.65	4.00	4.15	4.25	4.45	4.50
30-year	3.91	3.67	4.34	4.50	4.55	4.60	4.85	4.90	4.95	5.00	5.05
United Kingdom											

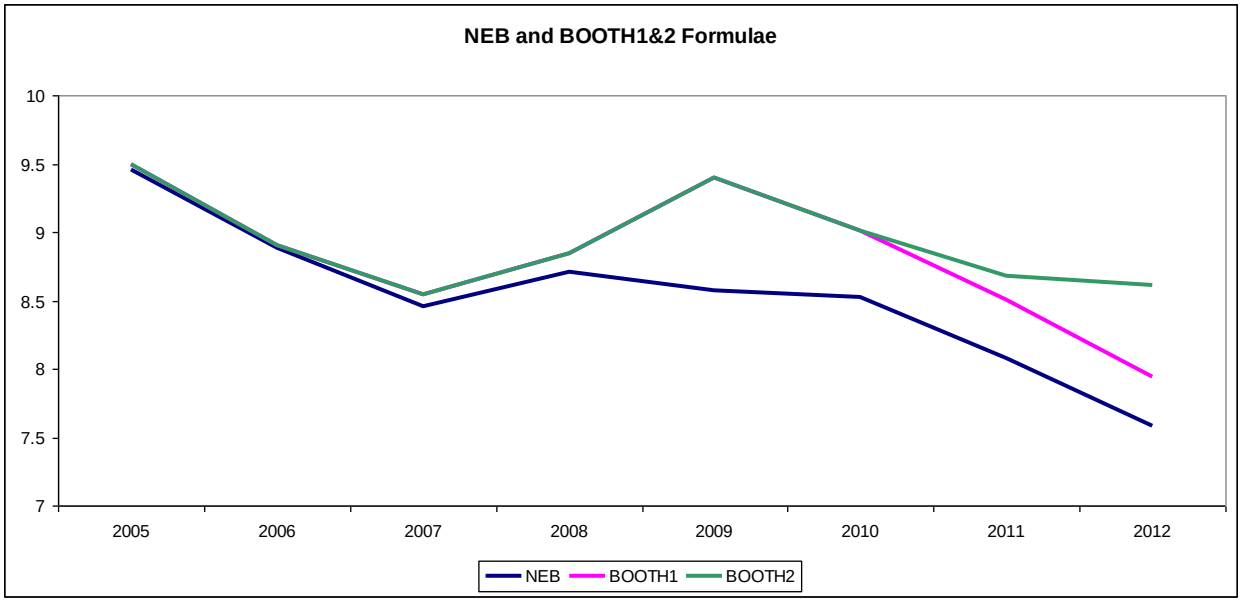
However, the rise of the sovereign debt crisis in Europe, the loss of the USA's AAA bond rating and the introduction of QE3 and Operation Twist in the US all conspired to push this full recovery off. This has caused the collapse in long term interest rates and forced me to put a "floor" for the long Canada interest rate in my ROE formula.

[31] D-2010-147, November 26, 2010 and D-2011-182, November 25, 2011.

As indicated in my direct ROE testimony at the time of my Intragaz testimony I was using a floor of 3.80% for the long Canada bond yield forecast comprising the actual forecast of 3.0% plus my 0.80% Operation Twist adjustment. Now the forecast long Canada bond yield has increased to 3.60% and my Operation Twist adjustment has dropped to 0.35%. However, the actual level of the Twist adjustment is imprecise as through most of September 2013 the adjustment has been about 0.20%, which again would result in an adjusted long Canada yield forecast of 3.80%. However to be consistent I will use an adjusted long Canada yield forecast of 3.95% as the floor, I would recommend the following as an enhanced NEB formula for the ROE.

ROE = 9.90 + 0.75*(max(Forecast LTC Yield, 3.95%) –6.12%) + 0.50*(Spread-0.94%)

This is simply my earlier formula with the 3.95% floor for the long Canada bond yield. The result is the following comparison with the original NEB formula.



The graph only covers the period since 2005 as this is where the main differences result. As before BOOTH1 and BOOTH2 both pick up the immediate effect of the financial crisis in 2009 and 2010. Further BOOTH2 by putting a floor under the forecast long Canada yield no longer underestimates the fair ROE due to the impact of Operation Twist. The predicted value from BOOTH2 of 8.61% was very close to the 8.75% set by the AUC, the 8.80% used by the Board of Commissioners of Newfoundland and Labrador and the 8.75% used by the BCUC for 2013.

Q. HAVE ANY OTHER BOARDS ACCEPTED THIS STYLE OF FORMULA?

A. Yes, apart from the Régie itself which adopted my recommended formula in 2010 and 2011 prior to Operation Twist, the Board of Commissioners of Newfoundland and Labrador accepted my analysis of the appropriate long Canada bond yield when they stated (Decision PUB2013-04-17, page 27)

> ***The Board accepts that the forecast long-term Canada bond yield is approximately 3,0%. The Board also accepts that this forecast is abnormally low and reflects the actions of global policymakers. Because the forecast may not accurately reflect the risk verses return trade-off by ordinary investors, the Board finds that an unadjusted forecast long-term Canada bond yield may not be a good proxy for the risk-free rate at this time. The Board accepts Dr. Booth's 80 basis point adjustment to the long-term Canada bond yield to reflect these unusual conditions.***
>
> ***The Board will accept a risk-free rate of 3.8%.***

The BCUC also came to a similar conclusion when they stated (BCUC-Decision G-20-12, page 60)

> ***In summary, the evidence presented seems consistent in stating that the current rates available on risk free government securities is between 2.6 percent and 3 percent. However, the Panel also agrees with the experts that current monetary policy is historically unusual and subsequently results in the possibility of a higher effective risk free rate. Therefore, the Panel determines that the estimate of 3.8 percent for the risk free rate is reasonable, corresponds to Dr. Booth's estimate, and is within the relatively narrow range of estimates presented by all experts.***

The BCUC went on to state (page 100)

> ***Given the advantages, the Commission Panel adopts a two variable model AAM to determine the benchmark ROE on an annual basis commencing in the 2014 calendar year. The AAM formula will operate until December 31, 2015. The implementation of the model is subject to conditions outlined in Section 6.3.3. The formula will initially utilize the 8.75 percent ROE as determined in Section 5.7 as the base ROE.***

The conditions that the BCUC referred to in Section 6.3.3 were

> ***To deal with this the Commission Panel directs that any change in ROE resulting from the AAM formula be subject to an actual long Canada bond yield of 3.8 percent being***

> ***met or exceeded. Accordingly, the AAM formula will not be operative as long as the long Canada bond yield is below 3.8 percent.***

The only differences between the formula adopted by the BCUC and the one I propose in this hearing is that the adjustment to the change in the long Canada bond yield is 50% and not 75% and the 3.80% floor applied to the operation of the formula not just as floor to the long Canada bond yield forecast. However, I regard these as minor differences as I testified before the BCUC I recommend a 0.75 adjustment but "could live with 0.50" as I don't regard it as a big adjustment in current market circumstances.

The OEB adopted a similar formula with a 50% adjustment to changes in the forecast long term Canada yield instead of my recommended 75%. The OEB also tied the credit spread to the Bloomberg utility yield. The AUC liked the idea of the ROE formula, but persisted with a fixed rate for the time being, but is reviewing this again in 2013. The AUC said (2011 Decision)

> ***164. All parties to this proceeding preferred a formula that considered both changes in Government bond yields, and changes in utility bond spreads. The Commission agrees that this type of formula will better reflect any fluctuations in financial market conditions and deal with the concerns about a single variable formula. Moreover, as Dr. Booth explained, such a formula would be counter-cyclical because allowed returns would increase in difficult economic times and decrease in strong economic times, but over the business cycle this will average out.[114] (footnote in original)***

Q. CAN YOU EXPLAIN WHY YOU DISAGREE WITH THE 0.50 ADJUSTMENT TO LONG CANADA BOND YIELDS?

A. Yes. My reason for using 0.75 is based on how the market and utility risk premia behave given my assessment of the relative risk of a benchmark utility. Suppose that the market risk premium is 5% at a forecast LTC yield of 6.0%, and that a utility has a beta coefficient of exactly 0.50. With this data, the market's required return is 11%; which is the long Canada yield of 6% plus the market risk premium of 5%. The utility's fair return is then 8.5%, which is the long Canada yield plus half the market risk premium. For simplicity I ignore any flotation cost allowance.

If the forecast LTC yield declines by 1.0% to 5% and the adjustment coefficient is 0.50, then the allowed utility ROE would decline by half the change in the LTC yield or 0.50% to 8.0%. Its risk premium would correspondingly increase by 50% of the change in the LTC yield or 0.50% to 3.0%. However, if the utility risk premium increases by 0.5% and the beta is 0.50, this means the market risk premium increases by 1.0% to 6.0%. As a result, the market's fair rate of return is unchanged at 11.0%. Consequently we get the strange result that if the adjustment coefficient is set at 0.5, the overall required return on the market is *independent* of the forecast LTC yield, which renders the whole notion of a risk premium over the LTC yield moot.

On the other hand, if the adjustment mechanism is set at 1.0 it also means that the riskiness of the long Canada bond relative to the equity market is constant. My Appendix B shows that this has not been the case, since a major factor driving LTC yields has been government debt financing and inflationary expectations, neither of which have been constant over long periods of time. Consequently, I judge the market risk premium to move inversely with long Canada bond yields, which means that an adjustment coefficient has to be between these two extremes of 0.50 and 1.0. As a result, I regard an adjustment coefficient of 0.75 of the utility ROE to forecast LTC yields to be reasonable and have always supported ROE adjustment mechanisms with a 75% adjustment to forecast changes in the LTC yield.

Q. WHAT IS YOUR RECOMMENDED ROE FORMULA?

A. In developing my ROE formula I only used the generic a bond yield to create my spreads since this is all that is available back to 1994. However, Bloomberg now creates a synthetic utility A yield as described below.

Bloomberg Fair Value Curves: The Bloomberg Fair Value Canada 30-Year A-rated Utility (C29530Y) curve is a yield curve based upon the yields and maturities of Canadian dollar-denominated fixed-rate bonds, issued by Canadian utility companies, with ratings of A+, A, A- from S&P, Moody's, Fitch and/or DBRS. The index is not comprised solely of 30-year bonds, but rather is "derived" using an optimization model that solves simultaneously for all yields and maturity points in constructing the term structure of Canadian A-rated utility bond Issuances to best fit the existing bond yield data. The bond yields and maturities listed below serve as inputs to the optimization model and cannot be traced directly to the curve, i.e. the specific points on the curve are derived from the optimization model and do not correspond to any specific bond yield. The yields are from the secondary market (not new issues), thereby eliminating the ability of an issuing company to skew results. The same group of bonds is used to derive the Canadian Utility A-rated bond index for each maturity category. As each of the bonds rolls down the curve, new longer maturities are added. The Bloomberg 30-Year Canadian Corporate A-rated curve is derived similarly (C28730Y).

I recommended that the Régie use this series in the Gazifère hearing and in its decision D2010-147 the Régie adopted both the Bloomberg series and the long Canada bond yield series (Cansim V39056) to estimate the expected long Canada bond yield and the credit spread. I would recommend that the Régie do exactly the same thing for HQD and HQT.

I therefore recommend that in the future both HQT and HQD have their allowed ROE adjusted from that set for 2014 by 75% of the change in the forecast long Canada bond yield subject to that rate exceeding 3.95% and 50% of the change in the credit spread both calculated according to the Régie's decision for Gazifère and the values established in this hearing.

For reference purposes the credit spread using the Bloomberg series and the long Canada series is generally lower than the generic spread I have used in illustrating my ROE formula. This is because the utility yield is generally lower than the generic A yield and the 30 year long Canada is a longer maturity and thus has a higher yield than the yield on the generic Scotia Capital index. Most recently this spread has been 1.40% instead of the generic spread of 1.66% and I recommend that this be used as the starting spread.

Q. IS AN ROE FORMULA NECESSARY WITH THE CURRENT LEVEL OF FORECAST LTC YIELDS?

A. In my judgment yes. It is almost impossible to think of a situation where objective market estimates of the fair ROE, such as long term corporate A bond yields, have dropped so much without a commensurate drop in the opportunity cost of investing in Canadian utilities. The dramatic increase in the PE ratios for utility stocks, relative to the market as a whole, simply confirms this statement. However, this process can quickly reverse causing the same utilities to be allowed sub-par ROEs. An automatic adjustment formula avoids this problem without the need for a new hearing.

With a minimum 3.95% forecast LTC yield in my enhanced ROE formula, unless the forecast LTC yield increases or the credit spread changes the ROE is constant. If on the other hand, forecast LTC yields increase from their current level of 3.6% to above 3.95%, which means that the current sovereign debt crisis in the Eurozone and the US has passed, the ROE will increase. However, if forecast LTC yields revert back to "normal" levels, the formula will automatically increase the ROE and award a fair ROE consistent with the performance of the ROE formula prior to the financial crisis. I would therefore regard the formula as having little downside risk of allowing an unfair ROE and yet capturing the upside as the government bond market reverts to normal.

Q. WHAT ALTERNATIVE TO YOUR ROE FORMULA WOULD YOU RECOMMEND?

A. The genesis of the ROE formulae were that they were introduced in 1993/4 when the level of LTC yields was much higher than currently. Further the Government of Canada was confronted with a huge fiscal deficit and scepticism that it would reduce this by increasing taxes and/or cutting spending, so it introduced real return bonds to indicate its commitment. Since that time the Government and the Bank of Canada have renewed their commitment to a 2.0% inflation target in a 1.0-3.0% range and I do not see a departure from this as likely in the foreseeable future. I would therefore regard a fixed ROE as a viable option.

Normally I would recommend a fixed rate based on current forecasts of the LTC yield. What should be clear is that I do not regard current forecast long Canada bond yields as being effective market rates in the sense that they are being determined solely by rational investors trading off expected return for increased risk. Instead, I regard them as being disequilibrium rates as a result

of the distortion introduced by global policy makers. Longer term all things must pass, as also will the intervention by the global policy maker. As the distortion passes I expect long Canada bond yields to revert to normal given the fact that the Bank of Canada is committed to the continuation of its 1%-3% range for expected inflation.

In June 2004 the BMO data indicates that long Canada bond yields were at 5.34% when credit spreads were about average for the business cycle. Similarly in June 2011 RBC forecast that long Canada bond yields would be at 4.55% by the end of 2013 before the tsunami of events in 2011 had an impact. I would judge the supply of long Canada bonds to slow down as the Government of Canada reduces its deficit to zero, so that rates might not reach the 5.34% level of June 2004. I would regard an equilibrium long Canada bond yield of about 5.00% as being reasonable. On this basis and without the need for an Operation Twist or credit market adjustment I would judge a benchmark fixed rate ROE to be approximately 8.25% or 0.75% more than my current recommended rate for 2014.

The discussion of the yield curve in Section II indicates that interest rates are expected to increase in Canada, so I expect the formula produced ROE to increase with these interest rates and average out to the fixed rate of 8.25% over the full business cycle. Consequently, I regard 8.25% as being a reasonable fixed rate ROE for a benchmark utility.

VII: US ESTIMATES

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

A. Utilities have invariably reverted to using US witnesses in Canada. I suspect that this is because allowed ROEs are generally higher in the US than in Canada and quite obviously the US and Canada (and the rest of the world for that matter) are more integrated today than even ten years ago. These witnesses then indicate that because there are certain economic statistics that are similar we can take US data, particularly ROE recommendations and apply them in Canada. without material adjustments. Dr. Coyne,[32] for example, states

> ***"Placing principal reliance on the DCF model with US electric utility proxy companies and selecting the lower end of the range for the lack of generation risk (even though we have not made offsetting adjustment for higher financial risk) the estimated cost of equity for HQT and HQD is 9.2.%."***

Dr. Coyne then refers to this as being supported by the estimates from other methods and Canadian utilities, but it is clear his recommendation is based on the DCF estimates for US electric utilities.

I generally regard US estimates as biased high when applied to Canadian utilities for two reasons. First, US financial markets exhibit more risk than Canadian markets and have generated higher risk premia in the past. Second, although the principles of regulation are the same between the US and Canada, as is widely recognised the implementation is different. As a result, estimates from US utilities can only be used in Canada if significant adjustments are made. In this respect it is important to note that I am not saying that US estimates are not informative, as they can be. However, what is important is that adjustments are required to make them useful in Canada and this has not been done by Dr. Coyne.

Q. WHY DO YOU REGARD THE US AS RISKIER THAN CANADA?

[32] I do not normally refer to other witnesses as I leave this to cross examination, but Dr. Coyne has a made a series of comments about my past testimony before the Régie. Note I recognise that the testimony is joint with Mr. Trogonski, but I will refer to Dr. Coyne for ease of reference.

A. Apart from the statistical evidence in Appendix B that the S&P500 index has exhibited more volatility than the TSX Composite, we have the fact that experts generally estimate the US market risk premium as higher than in Canada. Further the recent financial crisis highlights the on-going differences between the US and Canada. For example the US decision to let Lehman Brothers go into bankruptcy on September 14, 2008 triggered the financial melt-down and was a huge mistake. The result was frozen credit markets and a stock market collapse pushing the world into its first ever global crisis from which we have barely recovered even now over 5 years since it happened.

In all of this Canada was largely a bystander wondering how such disastrous and elementary mistakes could be made in the US. As Prime Minister Stephen Harper said at the G-20 summit[33]

> ***"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."***

With stronger regulation of its financial system Canada avoided the problems in the US. In contrast, the US allowed banks to fail, or took them over, at a significant cost to tax payers and is now trying to design a system where any future bailout costs are recouped from the banks and not tax payers. In other words it is a policy of allowing the banks to be "aggressive" but making sure the cost of any failures are paid through this quasi insurance fund. In contrast, Canada regulates its banks more closely and never had any banking problems during the financial crisis. This is very similar to the attitude towards public utilities, where the US has allowed 6 public utilities to fail, a situation that is in sharp contrast to the significant regulatory protection in Canada. These differences are symptomatic of basic cultural differences between the US and Canada.

These philosophical differences are now compounded by significant differences in macroeconomic financial conditions. Whereas the size of the Canadian deficit and the strength of the Canadian economy are much better than anticipated just a short while ago, the US continues to have problems and the size of its deficit raises significant long run inflationary concerns. This

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[33] Canwest news service, November 14, 2008

is reflected in higher long term US Treasury bond yields than their equivalents in Canada, higher borrowing costs and a strong C$. To repeat RBC's interest rate forecast for the US and Canada

Canada	**12Q3**	**13Q4**	**14Q1**	**14Q2**	**14Q3**	**14Q4**
Overnight	**1.00**	**1.00**	**1.00**	**1.00**	**1.25**	**1.50**
10 year	**2.55**	**2.75**	**2.90**	**3.15**	**3.30**	**3.75**
Long term	**3.07**	**3.25**	**3.40**	**3.55**	**3.65**	**3.75**
US						
Fed Funds	**0.13**	**0.13**	**0.13**	**0.13**	**0.13**	**0.13**
Ten year	**2.64**	**2.85**	**3.05**	**3.30**	**3.45**	**3.60**
Long Term	**3.69**	**3.90**	**4.10**	**4.20**	**4.30**	**4.35**

It is patently obvious that market interest rates differ between the US and Canada. Interest rates differ according to maturity since investors are investing for different periods of time. Short term interest rates, for example are higher than in the US, since the Canadian economy is not in the same desperate straights as is the US economy. Conversely long term interest rates are lower in Canada, since we do not have the same long run inflationary fears as in the US. It is obvious that if our short term rats are higher and our long term rates lower than in the US it is a matter of arithmetic that at some point they are the same and this is about the ten year mark. However, focussing on one interest rate to the exclusion of the whole maturity structure is simplistic and incorrect. The term structure indicates that Canada is further along the business cycle than the US as monetary policy is not as loose.

There are other obvious differences between the US and Canada and their impact on financial markets. Currently global observers are fixated on the bizarre happenings in Congress, where extreme conservative Republicans have prevented the passage of a new budget forcing the involuntary layoffs of government employees while they are threatening not to pass legislation to increase the US government's debt ceiling thereby precipitating a US default on its liabilities. It was just such pandemonium in 2011 that lead to S&P downgrading the US debt to AA. An actual default as threatened by Republicans in the House of Representatives would immediately lower

the US credit rating even further, possibly even to D, ie., default,[34] and create chaos around the world.

Jamie Dimmon, CEO of J.P. Morgan is quoted as saying about the US debt ceiling and a possible US government default

> ***"It would ripple through the global economy in a way you couldn't possibly understand [...] We need global growth … We are on the verge of getting it. Please let's not shoot ourselves in the foot."***

It stands to reason that a country that is even thinking about shooting itself in the foot is not one to compare with Canada. At a very minimum the difference in long term interest rates indicates that US estimates have to be reduced by 0.60% to reflect the higher interest rate environment in the US (4.35%-3.75%). Rather than the judgement of Dr. Coyne that the US and Canada can be compared without making any adjustments I prefer the judgement of the financial markets, our Prime Minister and Jamie Dimmon.

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

A. Yes. Moody's is one of the two major US bond rating agencies and in a major review of its rating methodology[35] it 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 sudden large rate increases;
- Attempting to achieve a balance between satisfying shareholders versus efficiency to hold down prices.

It then had a rating scale from 1-4 with 1 being the most supportive regulatory environment (SRE). Canada was rated 1 whereas the different US states were rated either 2 or 3. SRE1 was defined as "Regulatory framework is fully developed, has shown a long track record of being

[34] People are trying to put a gloss on a US default as a "technical default" but a default is a default.
[35] Rating methodology: global regulated electric utilities, Moody's March 2005.

highly predictable and stable and there is a very high expectation of timely recovery of costs and investments." SRE2 and SRE3 indicate less assurance of cost recovery and greater unpredictability or inconsistency in regulation.

Moody's reviewed this report and issued a new one in August 2009.[36] The new Moody's report refines their assessment into four major areas where in the following table 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%

Moody's states very clearly "for a regulated utility the predictability and supportiveness of the regulatory framework in which it operates is a key credit consideration and the one that differentiates the industry from most other corporate sectors." A quick glance at Moody's weights indicates that fully 50% of the weighting is based on the first two criteria which both reflect the supportiveness of the regulatory environment.

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

> "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

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

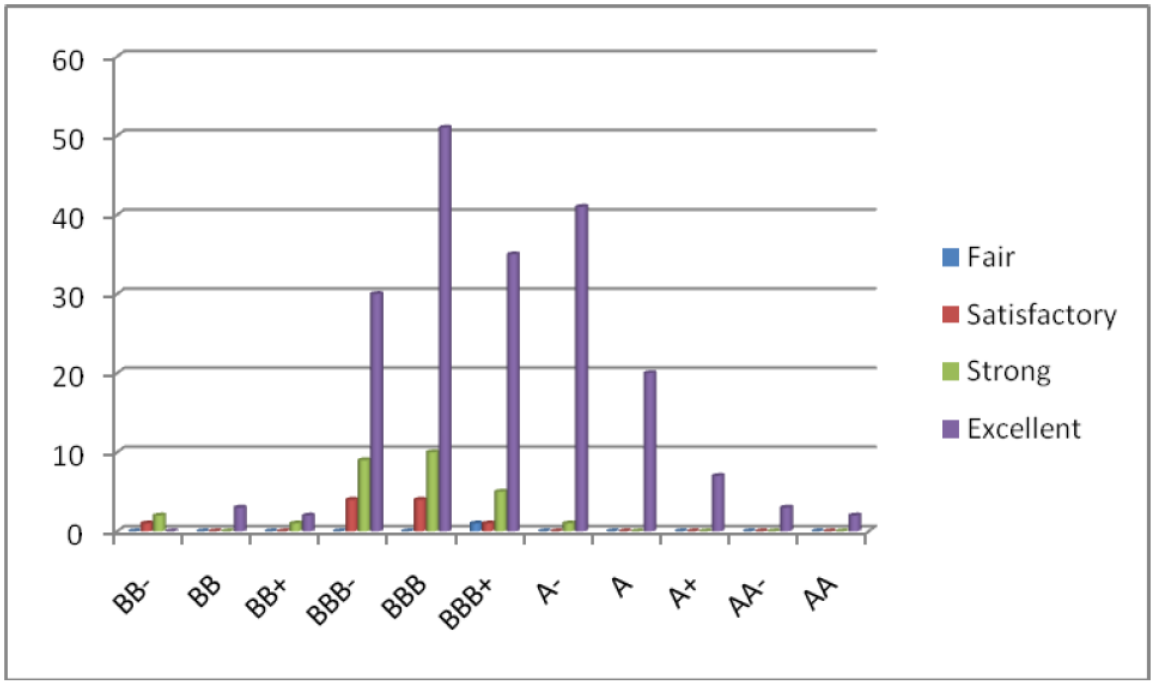
political scrutiny." I would emphasise here Moody's phrase "as is characteristic of the US" since this reflects a less protective regulatory environment than we have in Canada.

It is well recognized that the typical US utility has both a higher allowed ROE and more common equity than their Canadian counterpart. All else constant with these better financial parameters, if they have the same business risk they would have better bond ratings. However, this is not the case. In answer to an information request in the 2010 Line 9 hearing before the National Energy Board (IOL information request #197d) Ms. McShane provided the following histogram of US bond ratings and their respective business risk scores. The histogram provides the total number of US utilities in each rating class broken out according to their business risk ranking from Fair to Excellent. Two observations are apparent. First, many of the lower rated companies are also rated "excellent" in terms of business risk (even some with junk bond ratings, i.e., rated BB+ or lower) so this is not a main determinant of their bond rating. Second, and more important, the typical (modal or median) bond rating in the US is "BBB", whereas for Canadian utilities where the mode and median is "A" and all would be A except for considerations of size and poorly rated parent holding companies.[37]

What is clear is that despite their poorer financial ratios, Canadian utilities have higher bond ratings, which simply reflects the importance placed by the rating agencies on the differing regulatory approaches in the US and Canada.[38] I understand that Moody's is reviewing this policy and it may be re-rating US utilities that are in jurisdictions that are more like Canada, but the historic record will reflect the historic risk.

[37] I use A and BBB generically without modifiers. S&P will not rate a sub higher than its parent unless it is ring fenced, that is, insulated from a raid by its poorly rated parent. Enron raided its subs to the tune of $2 billion when the parent ran into trouble.

[38] In answer to CA-NP-367 before the Board of Commissioners of Newfoundland and Labrador Ms. McShane provided the bond ratings of US electric companies and confirmed that the overwhelming majority have some form of BBB bond rating.



Q. IS THERE ANY OTHER SUPPORT FOR MOODY'S OBSERVATION?

A. Yes. In Schedule 5 I list the utilities covered by AUS in its monthly Utility Report (September 2013). In particular I report the ROE where the range for the pure electric companies is from 2.3% for First Energy to 14.0% for PPL Corporation. For reference purposes First Energy is not a small company its market capitalisation (value) is over $15 billion US and it is in the S&P500 index. For the combination Gas and Electric companies the ROE range is from 0.4% for MDU (an NYSE listed company) to CMS Energy at 13.6%, while for the gas companies the range is from 7.2% for EQT to 19.6%. for Questar. I am not suggesting for one minute that these companies are comparable to any Canadian companies but these are what are regarded as utilities in the US and it is their risk profile that affects the valuation of utilities; not those of a small group of companies that *for the moment* are low risk.

We know all too well that today's low risk company can be tomorrow's bankrupt company due to competition. The fact that we can create a small group of currently low risk companies does not mean to say that they are regarded as low risk, since the markets are only too aware that circumstances change; Kodak, Xerox and RIM were recently giants in their markets but all have run into serious problems. What is important in a risk assessment is how the overall industry is

perceived which is what the data in Schedule 6 indicates. For this reason I have delved further into the data for AUS Electric companies.

Schedule 6 reports the actual ROEs for most of the AUS pure electric companies, where the median electric revenues are 95%. Some do not have complete data but I found ROE data from S&P's analyst reports for 2002-2011 and updated this with more recent data from Reuters. I also matched this data with that for Newfoundland Power (NP) and for Nova Scotia Power Inc (NSPI) since NSPI is the major subsidiary of Emera and NP is the corner stone of Fortis. Schedule 6 then reports the standard deviation of their annual ROEs as well as the average ROE.

NP (NP) is a pure distribution utility since it distributes electricity for Newfoundland and Labrador Hydro, whereas NSPI is a fully integrated electric utility since it generates, transmits and distributes electricity in Nova Scotia. The standard deviation of NP's ROE is 0.54%, whereas that for NSPI is 0.64%. In contrast, the lowest risk US electric companies using the standard deviation of its ROE as the metric are NextEra at 1.26% and Southern at 1.42%. However the volatility of their ROEs are 2-3X those for the Canadian utilities. Further I have highlighted all ROEs less than 8.0% in red, since I am confident that none of these US companies have allowed ROEs less than 8.0%. Only NextEra and Southern do not have any ROEs less than 8.0%, whereas the other 12 US pure electrics all do. In contrast, neither NP nor NSPI have any ROEs less than 8.0%.

I would judge both HQD and HQT to be at least as low risk as NP and NSPI, since both have extensive use of deferral accounts that lowers the downside risk to their ROE variability. I am aware that their earned ROEs have been low since the allowed ROE has been low and except for HQT in 2007 they have both exceeded their allowed ROE.[39] I therefore would not accept data from these US companies as being of any value unless adjusted for obvious risk differences. In particular I note that Dr. Coyne's sample of six US utilities includes Edison[40], Nextera and Southern which AUS classifies as Electrics and Xcel Energy, NorthEast Utilities and Wisconsin Energy which AUS classifies as combination electric and gas companies. However, what is clear

[39] I have reviewed the answers to the Régie's Q13 and am that HQT in 2007 seemed to underestimate its cost of debt and deprecation at that time

[40] AUS uses Edison International whereas Dr. Coyne uses Consolidated Edison

from this ROE data is that US electric utilities have much more income or ROE volatility than does NP, which explains their greater stock market risk. It is extremely rare for a Canadian utility to lose money or get ROEs in the low numbers reported by some US electric utilities.

Q. HAVE OTHER REGULATORS ACCEPTED THAT THESE DCF ESTIMATES CAN BE BIASED HIGH?

A. Yes. The Board of Commissioners of Newfoundland and Labrador stated

> ***In addition, the Board shares the concern expressed by the Consumer Advocate in relation to the use of analysts' forecasts which are intended to reflect expected growth over a three to five-year period to determine long-run growth expectations. The Board notes the results are significantly higher when analysts' forecasts are used in the constant growth method. The Board observes that Dr. Booth is skeptical as to the use of these forecasts and suggests that these forecasts should be used in two-stage models. The Board also notes the evidence of Mr. MacDonald that, over the long run, growth likely reverts to market average. The Board believes that a multi-stage model best reflects the available information and how it was intended to be used. The sustainable model used by Ms. McShane may also be informative***

Noticeably the Board rejected the constant growth DCF estimates but found the sustainable growth DCF estimates useful. For these US companies the average sustainable DCF estimates for the large sample of US electric companies is 7.06% (6.89%) essentially the same as for Dr. Coyne's sub sample.

The BCUC also noted in its determination \

> ***The Commission Panel finds that the constant growth DCF models presented have growth assumptions that render the estimates questionable given the discussion above. Therefore, we place little weight on the submitted estimates that are based on the constant growth DCF. The estimates that the Panel found most helpful are Ms. McShane's multi-stage estimates in the range of 8.6 percent to 9.2 percent and Dr. Safir's estimates of 8.86 percent to 8.99 percent (two-stage). (Appendix F) Applying the appropriate judgment required, the Commission Panel accepts an 8.9 percent DCF based estimate of the opportunity cost of equity***.

At that time I did not present these types of DCF estimates. However, these observations support my standing recommendation, which is to use caution in interpreting data from the US.

Q. ARE THERE OTHER FACTORS DEPRESSING BOND RATINGS IN THE US?

A. Yes. S&P has been concerned for some time that US regulators have not protected US bond holders from corporate M&A activity and raids by poorly rated parent or holding companies. This was a feature of the late 1990s when many local telephone companies either took over or were taken over by Internet companies and were subsequently downgraded. In response, S&P implemented a policy that the credit rating of a regulated telecom cannot be higher than the credit rating of its parent. For non-telecom utilities S&P states that it[41]

> "rarely view(s) the default risk of an unregulated subsidiary as being substantially different from the credit quality of the consolidated entity. Regulated subsidiaries can be treated as exceptions to this rule – if the specific regulators involved are expected to create barriers that insulate a subsidiary from its parent."

In other words there is a cross subsidy from the regulated to the unregulated entity *unless* the regulated entity is "ring fenced" so that any problems on the non-regulated side do not impact the regulated side. S&P refers to this as "structural insulation techniques" which may involve:

- separate incorporation of the sub
- independent directors
- minority ownership stakes
- regulatory oversight to insulate the subsidiary
- Restrictions on holding company cash management programs

S&P is very forthright in that the onus lies on the regulators. It states

> "the bar has been raised with respect to factoring in expectations that regulators would interfere with transactions that would impair credit quality. To achieve a rating differential for the subsidiary requires a higher standard of evidence that such intervention would be forthcoming."

My reading of these remarks is that having been "burned" with these US telecoms and the lack of reaction from US public service commissions, S&P is now taking a tougher line on all utilities.

This policy was reinforced by the problems surrounding Enron, where FERC was less forthcoming than expected in reining in the financial policies of US pipelines. After Enron

[41] S&P, Corporate Ratings Criteria, 2003, pages 44-45.

siphoned off $1.5 billion from its two natural gas pipelines, the FERC instituted a review of inter-affiliate transfers. Many expected FERC to impose minimum equity ratios of 30% and requirements such as maintaining an investment grade bond rating before the parent could manage the subsidiary's cash. However, when the FERC announcement was made in November 2003 it fell far short of S&P's expectations. As S&P noted

> "the degree of oversight by the FERC has traditionally been less than sufficient to justify insulation. That the FERC took almost two years to respond to the Enron pipeline situation indicates that timely intervention that would protect bondholder interests is not likely when a regulated utility's parent is experiencing financial problems. It seems clear to Standard and Poors that the new rule falls far short of providing the requisite insulation to justify any ratings separation for utilities regulated primarily by FERC"

It is clear from this comment from S&P that the business risk of a utility is only one factor in the bond rating. Further the combination of weak US regulatory oversight and ownership of a utility within a diversified holding company with a weak bond rating dooms the utility to also have a weak bond rating ***regardless*** how strong its common equity ratio and how high its allowed ROE.

The upshot is that even US utilities with an excellent business risk profile, similar to that of Canadian utilities, will have poorer financial market access unless they are in a regulatory jurisdiction that mimics the degree of protection Canadian utilities experience and are structurally insulated or "ring fenced" from their aggressive parents.

Q. HAVE CANADIAN REGULATORS CONFIRMED THIS?

A. Yes. The Board of Commissioners of Newfoundland and Labrador commented on Ms. McShane use of US "comparables" in 2009 and stated (decision page 17)

> 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)

As the Board decision clearly states, it is not enough that US utilities be used simply because there are not enough Canadian ones available: comparables have to be the same to be used without any adjustment. Here the Board found "overwhelming" evidence that Ms. McShane's sample of US utilities were riskier on almost every measure than NP, which it regarded as an average risk Canadian utility. Further the Board noted Moody's view of the regulatory environment in Newfoundland as being "relatively more supportive than those of other international jurisdictions such as the United States."

In a 2012 Decision the Board went further and stated (PU13(2013) 2013-04-17)

> ***The Board finds that the evidence demonstrates that Canadian utility data is inadequate to complete a discounted cash flow analysis and that, in the particular circumstances, it may be informative to look to data from the United States. As to how this data is to be used the Board accepts the evidence of both Dr. Booth and Mr, MacDonald that there are differences in the United States and Canadian experience that justify an adjustment to the discounted cash flow results. Dr. Booth suggests an adjustment of 100 basis points. Mr. MacDonald makes a 72 basis point adjustment, The British Columbia Utilities Commission has found that the United States data should be adjusted by between 50 and 100 basis points. The Board finds that an adjustment of 50 to 100 basis points is appropriate at this time.***

The BCUC referred to is their 2009 decision (decision page 52) where they commented on Ms. McShane's use of US comparables in 2009 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.

In its 2009 Gaz Métro decision the Régie concluded (paragraph 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."

The decision of the Board of Commisioners of Newfoundland and Labrador as well as the BCUC and the Régie iself indicate that a sample of US "comparables" cannot be used as a benchmark for a Canadian utility's fair ROE without either significant evidence that the regulatory, institutional, economic and financial are the same or making significant adjustment.

Q. WHY DID YOU JUDGE US UTILITIES AS WARRANTING A 90-100 BPS HIGHER ROE IN 2009?

A. If the US market risk premium is 1.0% higher than in Canada, and US and Canadian utilities had equal relative risk coefficients of 0.50 then that would warrant a 0.50% difference in their ROEs. When this is added to a 0.50% higher forecasted long Treasury yield (compared to LTC Canada yield) then you have a 1.0% difference in the fair rate of return. If in addition the relative risk coefficient of a typical US utility is higher than the 0.50 mid-point I am using for a Canadian benchmark, then the difference in the fair ROE between Canadian and US utilities would be significantly greater than 1.0%. On the other hand if the market risk premium is now

approximately the same in the US and Canada then the difference is only about 0.50%, so a 0.50-1.0% range seems reasonable.

Q. WHAT ARE YOUR CONCERNS WITH US DCF ESTIMATES?

A.. In Schedule 7 is basic financial data for the US Electrics in Schedule 7 plus the four other companies used by Dr. Coyne. Several observations are apparent:

1) The average (median) Yahoo beta for these US Electrics using the yahoo beta is 0.33 (0.14), while that for Dr. Coyne's sample is even less at 0.19 (0.15)
2) The average market capitalisation of these companies is $11.16 billion, but the median is a lot less, indicating some very big companies that are in the S&P500.
3) The average (median) dividend yield is 4.0% (3.9%) slightly less than the ending 2012 dividend yield for electric companies in my Appendix D;
4) The average (median) analyst 5 year growth forecast from First Call is 3.56% (5.10%) indicating some serious negative future growth prospects for example for Great Plains Energy
5) The average (median) DCF cost of equity (K(growth)) assuming that this 5 year growth is a constant growth is 7.69% (9.41%)
6) The average (median) retention rate (earnings not paid out as a dividend) is 36% (41%) again broadly confirming the median in Appendix D of 32.5%.
7) As explained in my Appendix D, analyst growth expectations tend to be biased high. One way of checking this is to work out the required ROE needed to achieve this growth rate. We can do this by using the standard sustainable growth formula (g= b*ROE) with the retention rate and 5 year growth forecast. For each firm this required ROE is then divided by the actual reported ROE to get "ratio". The average (median) value for ratio is 1.59 (1.70) which means that these firms typically have to double their ROE to achieve the growth rate forecast by analyst.
8) The average (median) DCF equity cost assuming sustainable growth is 7.44% (7.01%).

In assessing the usefulness of this data it is important to note that the mechanics of my estimation procedure is essentially the same as that used by Dr. Coyne, except for the final ratio check to see if the analyst growth forecasts are reasonable. To state again if the median firm has a 43% retention rate then with the median ROE this means a sustainable growth rate of 3.12% versus the median analyst growth rate of 5.10%. To get this higher growth means that the current ROE is inadequate and the analysts must implicitly be forecasting higher future profitability (ROE) of the order of +60%. This is what is commonly referred to as analyst optimism, which is also documented in Appendix D in the recent McKinsey study.

Q PLEASE SUMMARISE YOUR RECOMMENDATIONS.

A. I judge a benchmark ROE for 2014 to be 7.50% in current market conditions. I would then recommend an ROE adjustment model that adjusts by 50% of the change in utility credit spreads and 75% of the change in forecast LTC yields subject to a minimum forecast LTC yield of 3.95%. In implementing this model I would recommend the Régie follow the same procedures it used in its Gazifère decision. If the Board does not accept an ROE adjustment model I would recommend a fixed rate ROE of 8.25% that would remain indefinitely. This would reflect my expectation that I expect long term bond yields to increase. I agree with HQ that the common equity ratio of HQT should remain 30% and that of HQD 35%.

Q. DO YOU HAVE ANY FINAL COMMENTS?

A. Yes, I do not normally comment on the testimony of other witnesses. However, in this case Dr. Coyne has made a number of statements about my testimony in Intragaz, many of which I repeat here, that are incorrect. I would therefore like to set the record straight. The following only deals with what I would regard as the most egregious errors and the fact I do not mention others does not mean that they are true, just that they are not material.

First, Dr. Coyne claims that I place "sole reliance on the traditional CAPM analysis" (page 80). This is clearly not true as even a superficial familiarity with my testimony illustrates. Note here that what is important is that ***any*** recommendation can be expressed as a risk premium over a forecast long bond yield, as mine is. What is important is the determination of the parameters that go into a risk premium analysis, since what is needed are forward looking or expected values, not backward looking historic values. This is also why Dr. Coyne relies so heavily on analyst forecasts, for example, rather than historic growth rates[42] A casual reading of my testimony would reveal that Appendix D contains an exhaustive analysis of DCF estimates and Section IV of my main testimony includes my direct DCF estimates. My market risk premium and ROE recommendations are then directly informed by this DCF analysis.

[42] Even though he provides no diagnostic tests to see whether those values are reasonable or not such as, for example comparing them with historic achieved values.

Second Dr. Coyne objects to the values I use in my risk premium estimates specifically my Operation Twist and credit market adjustments. There are thee points here:

a) Both these adjustments have been accepted by regulators as I indicate by the references in the appropriate sections of my testimony. Further they are both grounded in objective empirical analysis, which Dr. Coyne has not attempted to refute.

b) What is critical is the appropriate risk free rate embodied in the risk –return trade-off. Here as is clear from the increase in rates since May 2013 that the current government long term interest rates are not being determined by the market, but by the actions of what RBC calls the global policy maker. This is what my Operation Twist adjustment adjusts for.

c) My risk free rate is rooted in the Consensus Economics forecast of the long Canada yield interest rate and that of RBC. Dr. Coyne's instead uses the Consensus Forecast of the long Canada bond yield out to ***2018*** (page 69). While I have no problems with this forecast, it says nothing about the fair ROE for the test year of 2014 which is the subject of the hearing.

Third, Dr. Coyne claims that my use of the survey data from Professor Fernandez is "problematic because studies based on surveys do not reflect the views of actual market participants." This is categorically incorrect as Professor Fernandez surveys not just professors of finance but financial analysts working for non-financial as well as financial firms; these are the people that use equity cost estimates routinely in their daily work. Further I also base my estimates on the historic record in both the US and Canada and the estimates of unbiased professionals such as those at RBC and TD Economics.

Fourth, Dr. Coyne takes issue with my beta estimates in several ways;

a) He criticises my beta estimates as not being supported by "publicly available beta coefficient estimates" (page 80) and yet mine are based in part on those provided by RBC to clients and those that are freely available on Yahoo and Google. Dr. Coyne's beta estimates instead are based on privately available services such as Value Line, which is only available by subscription.

b) Dr. Coyne criticises my citing the Gombola and Kahl paper (page 81) and implies that I have miss quoted it. For information purposes I provide the summary conclusions of the paper (page 92)

"A reasonable estimate of the underlying mean may be obtained by OLS if applied to a very long time period. The prior estimate of the adjustment rate toward the mean can be obtained by considering the positive relationship between the adjustment rate and beta variability."

The underlying mean from a "very long time period" is by definition the grand mean of the utility. Further, while it is true that the Gombola and Kahl paper is 20 years old, the Blume paper is 40 years old and as far as utilities are concerned has been superceded by the Gombola and Kahl analysis, which as far as I am aware no-one has subsequently challenged.

c) Dr. Coyne quotes the BCUC's 2009 decision which correctly indicates that beta estimates have to accord with common sense. Surprisingly, he did not quote the BCUC's 2012 decision from a hearing that he was involved with (Decision G20-12, page 64) where the BCUC stated

"An adjustment of beta to the market average of one seems inconsistent with the lower risk in the industry, while realized return seems to indicate a beta that exceeds the industry average. The Panel finds that none of the positions fully explain the beta value and therefore accepts an intermediate beta estimate of 0.6 representing the range of reasonable estimates presented."

Fifth, Dr. Coyne questions my assumption that the most important thing is to use the right estimation technique (page 83) and quotes the OEB's use of several analytic techniques. I assume that even Dr, Coyne does not think it appropriate to use "wrong" techniques. Further a review of the recent BCUC decision (G-20-12, pages 55-80) will indicate that they rejected a variety of techniques put forward by company witnesses, since they were not well grounded in financial theory or using my words "right".

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

SCHEDULE 1

	Unemployment Rate	Real Growth	CPI Inflation	T Bill Yield	Canada Yield	FX Rate US$	Average ROE
1987	8.81	4.25	4.42	8.17	9.93	0.75	11.19
1988	7.77	4.97	3.94	9.42	10.23	0.81	12.97
1989	7.58	2.62	5.06	12.02	9.92	0.84	11.79
1990	8.16	0.19	4.81	12.81	10.81	0.86	7.48
1991	10.32	-2.09	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	2.34	1.90	4.93	7.88	0.78	3.69
1994	10.43	4.80	0.12	5.42	8.58	0.73	6.57
1995	9.54	2.81	2.22	6.98	8.35	0.73	9.55
1996	9.73	1.62	1.48	4.31	7.54	0.73	10.29
1997	9.16	4.23	1.69	3.21	6.47	0.72	10.86
1998	8.35	4.10	1.00	4.74	5.45	0.67	8.83
1999	7.58	5.53	1.75	4.70	5.68	0.67	9.82
2000	6.85	5.23	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	2.92	2.25	2.57	5.67	0.65	5.68
2003	7.61	1.88	2.80	2.87	5.29	0.72	9.64
2004	7.18	3.12	1.85	2.27	5.08	0.77	11.62
2005	6.77	2.85	2.21	2.71	4.41	0.83	12.70
2006	6.32	2.53	2.00	4.02	4.29	0.88	13.96
2007	6.03	2.50	2.14	4.17	4.32	0.94	12.86
2008	6.15	0.52	2.37	2.62	4.06	0.94	9.44
2009	8.23	-2.46	0.30	0.40	3.85	0.88	8.06
2010	7.99	3.05	1.78	0.50	3.71	0.97	9.90
2011	7.46	2.46	2.91	0.94	3.22	1.01	9.60
2012	7.31	1.70	1.52	0.96	2.35	1.00	10.28
Cansim	V13682111	v1992067	v41690973	V122484	V122501	V37426	V634672/V634628

SCHEDULE 2

CANADA BOND YIELDS

Overnight money market rates		1.00
Benchmark bonds		
Canada	91 day Treasury Bill yield	0.97
Canada	Six month Treasury Bills	1.01
Canada	One year Treasury Bills	1.03
Canada	Two year	1.21
Canada	Three year	1.41
Canada	Five year	1.91
Canada	Seven year	2.20
Canada	Ten year	2.59
Canada	Long term (30 year)	3.15
Canada	Real return bonds	1.14
Marketable Bond Average yields		
Canada	1-3 year	1.20
Canada	3-5 year	1.74
Canada	5-10	2.32
Canada	Over tens	3.03

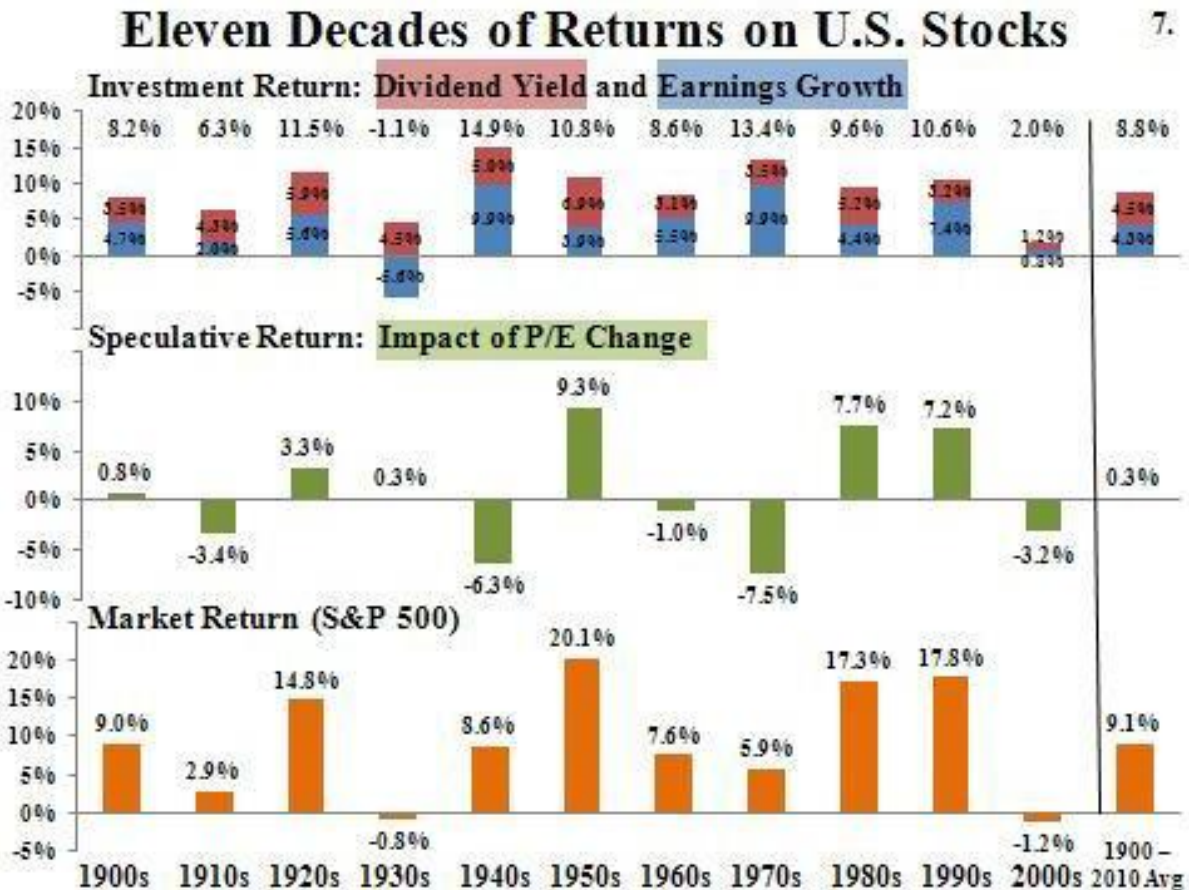
Source: Bank of Canada's web site at http://bankofcanada.ca/en/securities.htm, for October 11, 2013.

Schedule 3

Investment and Speculative TSX Returns back to 1987

	ROE	Spec	TSX
1987	11.19	-5.31	5.88
1988	12.97	-1.89	11.08
1989	11.79	9.58	21.37
1990	7.48	-22.28	-14.80
1991	3.53	8.48	12.02
1992	1.56	-2.99	-1.43
1993	3.69	28.86	32.55
1994	6.57	-6.75	-0.18
1995	9.55	4.98	14.53
1996	10.29	18.06	28.35
1997	10.86	4.12	14.98
1998	8.83	-10.42	-1.58
1999	9.82	21.90	31.71
2000	10.92	-3.51	7.41
2001	7.41	-19.98	-12.57
2002	5.68	-18.12	-12.44
2003	9.64	17.08	26.72
2004	11.62	2.86	14.48
2005	12.70	11.43	24.13
2006	13.96	3.30	17.26
2007	12.86	-3.03	9.83
2008	9.44	-42.44	-33.00
2009	8.06	26.99	35.05
2010	9.90	7.71	17.61
2011	9.60	-18.31	-8.71
2012	10.28	-3.09	7.19
Average	9.24	0.28	9.52
volatility	3.07	16.32	16.68

Jack Bogle's Investment and Speculative Returns in the US back to 1900



SCHEDULE 5

RETURN ON BOOK VALUE OF COMMON EQUITY

ELECTRIC COMPANIES

HIGH		LOW	
PPL Corporation (NYSE-PPL)	14.0	FirstEnergy Corporation (ASE-FE)	2.3
OGE Energy Corp. (NYSE-OGE)	12.5	Otter Tail Corporation (NDQ-OTTR)	5.1
El Paso Electric Company (NYSE-EE)	11.5	Portland General Electric Company (NYSE-POR)	5.4
Pinnacle West Capital Corp. (NYSE-PNW)	10.8	PNM Resources, Inc. (NYSE-PNM)	6.5
IDACORP, Inc. (NYSE-IDA)	10.7	Great Plains Energy Incorporated (NYSE-GXP)	7.2
Nextera Energy (NYSE-NEE)	10.7	American Electric Power Co. (NYSE-AEP)	7.9
Westar Energy, Inc. (NYSE-WR)	10.6	Hawaiian Electric Industries, Inc. (NYSE-HE)	8.5
Cleco Corporation (NYSE-CNL)	10.4	ALLETE, Inc. (NYSE-ALE)	8.8
Southern Company (NYSE-SO)	9.2	Southern Company (NYSE-SO)	9.2
ALLETE, Inc. (NYSE-ALE)	8.8	Cleco Corporation (NYSE-CNL)	10.4

COMBINATION ELECTRIC & GAS COMPANIES

HIGH		LOW	
CMS Energy Corporation (NYSE-CMS)	13.6	MDU Resources Group, Inc. (NYSE-MDU)	0.4
Wisconsin Energy Corporation (NYSE-WEC)	13.2	Dominion Resources, Inc. (NYSE-D)	2.2
Chesapeake Utilities Corporation (NYSE-CPK)	12.4	CenterPoint Energy (NYSE-CNP)	4.5
MGE Energy, Inc. (NYSE-MGEE)	12.2	Exelon Corporation (NYSE-EXC)	5.3
NorthWestern Corporation (NYSE-NWE)	11.3	Duke Energy Corporation (NYSE-DUK)	6.4
Public Service Enterprise Group (NYSE-PEG)	11.3	PG&E Corporation (NYSE-PCG)	6.9
Black Hills Corporation (NYSE-BKH)	11.2	Avista Corporation (NYSE-AVA)	7.1
SCANA Corporation (NYSE-SCG)	10.9	Unitil Corporation (ASE-UTL)	7.9
Xcel Energy Inc. (NYSE-XEL)	10.9	TECO Energy, Inc. (NYSE-TE)	7.9
Alliant Energy Corporation (NYSE-LNT)	10.9	Empire District Electric Co. (NYSE-EDE)	8.3

NATURAL GAS COMPANIES

HIGH		LOW	
Questar Corporation (NYSE-STR)	19.6	EQT Corporation (NYSE-EQT)	7.2
New Jersey Resources Corp. (NYSE-NJR)	14.6	Gas Natural, Inc. (NDQ-EGAS)	7.2
ONEOK, Inc. (NYSE-OKE)	13.9	Laclede Group, Inc. (NYSE-LG)	7.3
National Fuel Gas Company (NYSE-NFG)	12.6	Energen Corporation (NYSE-EGN)	7.5
Piedmont Natural Gas Co., Inc. (NYSE-PNY)	11.8	Northwest Natural Gas Co. (NYSE-NWN)	7.8
UGI Corporation (NYSE-UGI)	11.5	RGC Resources, Inc. (NDQ-RGCO)	8.5
Southwest Gas Corporation (NYSE-SWX)	11.2	AGL Resources Inc. (NYSE-GAS)	8.9
Delta Natural Gas Company (NDQ-DGAS)	10.8	Atmos Energy Corporation (NYSE-ATO)	9.7
WGL Holdings, Inc. (NYSE-WGL)	10.6	South Jersey Industries, Inc. (NYSE-SJI)	9.8
South Jersey Industries, Inc. (NYSE-SJI)	9.8	WGL Holdings, Inc. (NYSE-WGL)	10.6

SCHEDULE 6

US ELECTRICS ROEs

	Reuters			Annual ROEs								
	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	STDEV	Average RO
Allettte	8.5	9.1	7.8	6.9	10.5	12.4	12.2	2.9	3.6	10.6	10	3.13	8.59
AEP	8.4	10.7	9.1	11.4	13.2	11.7	10.7	11.7	13.8	7	0.3	3.73	9.82
Cleco	11.2	14.3	21	9.8	9.9	16.1	9.6	29.5	12.5	0	13.3	7.42	13.38
Edison	15.4	10.09	12.3	8.8	13.5	13.6	15.1	17.1	3.8	15.9	29.4	6.35	14.09
First Enrgy	5.8	8.1	9.2	12	15.6	14.5	13.8	9.8	10.4	5.5	9.5	3.33	10.39
IDA Corp	9.9	10.5	9.7	9.2	7.8	7.1	9.3	6.3	7.8	5.4	7	1.64	8.18
NextEra	12.3	13.1	14.3	13.1	14.6	12.7	13.9	11	12	13.4	10.7	1.26	12.83
PNM Resources	6.6	11	-2.84	3.1	0	3.5	8.2	5.7	7.1	5	6.4	3.85	4.89
Southern	13.1	13	12.7	11.7	13.6	14.6	14.3	15.2	15.4	16.1	15.8	1.42	14.14
Westar	9.6	8.9	9	6.4	8.9	10	11.1	9.6	8.2	16.4	0	3.86	8.92
Portland	8.3	9	8	6.6	6.5	11.4	5.9	5.2	7.5	2.7	5.8	2.26	6.99
PNW	9.9	8.8	10	2.4	6.1	8.6	9.2	7	8.1	8.4	8.3	2.15	7.89
Hawaian	8.9	9.2	7.8	5.9	6.8	7.2	9.3	10.5	9.4	11.1	12	1.87	8.92
Great Plains	6.3	5.9	7.5	5.7	5.8	10.8	9.8	13.7	16.4	16	14.8	4.32	10.25
US Average	***9.60***	***10.12***	***9.68***	***8.07***	***9.49***	***11.01***	***10.89***	***11.09***	***9.71***	***9.54***	***10.24***		
NSPI		**9.6**	**9.6**	**9.2**	**9.7**	**9.2**	**9.6**	**8.7**	**10**	**10.5**	**10.3**	**0.54**	**9.64**
NP		***9***	***9.21***	***8.96***	***9.13***	***8.66***	***9.46***	***9.6***	***10.12***	***10.22***	***10.65***	***0.64***	***9.50***

0 indicates losses S&P does not report negative ROEs
Data for El Paso not available

US ELECTRICS

			FIRST CALL	YAHOO	LATEST	TTM	MRQ				
		CAP	Future 5	yield	beta	ROE	EPS	DPS	RETENTION	RATIO	K(growth)	K(br)
ALLETE	ALE	1.924	0.7	3.9	0.82	8.85	2.71	0.47	0.31	0.26	4.63	6.72
American Electric Power	AEP	21.091	-2.4	4.51	0.26	7.92	2.49	0.49	0.21	-1.42	2.00	6.27
Cleco Corporation	CNL	2.675	12.6	3.22	0.47	10.45	2.57	0.34	0.47	2.56	16.23	8.30
Edison International	EIX	14.928	-4.2	2.9	0.38	14.01	4.07	0.34	0.67	-0.45	-1.42	12.50
FirstEnergy Corporation	FE	15.536	-8.2	5.84	0.05	2.35	0.74	0	1.00	-3.49	-2.84	8.33
Great Plains Energy	GXP	3.378	-9.4	3.85	0.57	7.22	1.56	0.22	0.44	-2.99	-5.91	7.12
Hawaiian Electric Industries	HE	2.469	8.5	4.89	0.24	8.49	1.38	0.31	0.10	9.87	13.81	5.79
IDACORP	IDA	2.409	NA	3.4	0.58	10.73	3.75	0.38	0.59			
Nextera Energy	NEE	33.739	4.4	3.33	0.4	9.49	3.63	0.66	0.27	1.70	7.88	6.00
Pinnacle West Capital	PNW	5.992	-10.1	3.91	0.35	10.94	3.86	1.09	0.44	-2.12	-6.58	8.86
PNM Resources	PNM	1.769	8	2.84	0.32	6.52	1.31	0.17	0.48	2.55	11.07	6.06
Portland General Electric	POR	2.186	6.1	3.8	0.44	5.38	1.23	0.28	0.09	12.68	10.13	4.30
Southern Company	SO	35.444	1.4	4.95	0.03	9.61	1.98	0.51	-0.03	-4.81	6.42	4.64
Westar Energy Inc	WR	4.08	20.6	4.4	0.3	10.58	2.38	0.34	0.43	4.54	25.91	9.13
Wisconsin Energy	WEC	9.44	14.5	3.7	0.14	13.3	2.38	0.34	0.43	2.54	18.74	9.61
Xcel Energy	NU	14.07	5.2	4	0.16	10.87	1.98	0.28	0.43	1.10	9.41	8.91
NorthEast Utilities	NU	13.27	7.8	3.5	0.45	8.46	2.47	0.37	0.40	2.30	11.57	7.01
Consolidated Edison	ED	16.5	5.1	4.4	-0.03	8.62	3.43	0.62	0.28	2.14	9.72	6.89
Average		11.16	3.56	3.96	0.33	9.10	2.44	0.40	0.39	1.59	7.69	7.44
Median		7.72	5.10	3.88	0.34	9.17	2.43	0.34	0.43	1.70	9.41	7.01

Market Cap is in US Billions
TTM is trailing 12 month
MRQ is most recent quarter where the annual dividend is this amount times 4
Retention is the EPS minus the annual DPS divided by the EPS
RATIO is the implied ROE (5 year growth divided by retention) divided by the ROE
K is the equity cost using the current yield and analyst 5 year growth forecast