FAIR RETURN FOR NEWFOUNDLAND POWER

EVIDENCE OF

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BEFORE THE

Newfoundland and Labrador Board of Commissioners of Public Utilities

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EXECUTIVE SUMMARY

The Consumer Advocate of the Province of Newfoundland and Labrador has asked me to review Newfoundland Power's (NP) rate application and associated evidence and to offer an opinion as to the fair rate of return on common equity (ROE) and appropriate capital structure for NP and whether the ROE adjustment mechanism continues to be appropriate.

My overall assessment is:

- My judgment is that the Canadian economy has bottomed out from a short but deep recession that started in 2008Q4. In contrast the US economy has been in recession for almost two years and has further to go in its deleveraging. The US recession was caused by a credit crunch resulting from disastrous losses incurred by banks in the sub-prime mortgage market. As major US and UK banks failed, the remainder reduced lending to shore up capital, while investors reacted by shedding risky securities to invest in the safe harbour of government securities. In response Treasury Bill yields collapsed, and even turned negative in 2008Q4 in the US, and liquidity in many areas of the bond market disappeared creating historically high spreads on even high grade credits. These US problems spread around the world as US capital was repatriated creating the world's first global economic recession.

- The US credit crunch exacerbated a normal cyclical recession and caused the biggest stock market crash for 70 years and fears of a Great Depression II. However Herculean efforts by the US Government and Treasury have restored investor faith in the US banking system. Further, capital injections from the TARP program have allowed US banks to return to their normal activities, so that liquidity has returned to the bond market and both yields and spreads on investment grade credits have fallen dramatically. In this respect it is important to note that the Company's evidence was prepared at a time when the recession and financial market conditions were at their worst. However most of this has now passed. The Canadian economy has now moved into recovery mode, dividend yields on the TSX have dropped by over 1.0% as the TSX has itself rebounded by over 40% since its March lows and spreads on "A" bonds over equivalent maturity LTC bonds have more than halved. If there ever was any case for changing the ROE adjustment mechanism that case has now collapsed.

- This stock market crash has been traumatic. However, the price performance of Canadian utility shares during 2008 into 2009 reinforces their low risk characteristics. It has to be emphasised that investors see utility shares as "defensive" and their share prices have been supported by the significant drop in interest rates that have occurred, since their rich dividend payouts become more attractive as interest rates drop. Consequently there is ***no*** indication that investors perceive Canadian utility stocks to be any riskier than my traditional beta range of 0.45-0.55; in fact the most recent estimates ending in 2008 indicate an average beta coefficient below this level.

- My Appendix G looks at the risk characteristics of US utilities. Here it is clear that US utilities, while they have higher allowed ROEs and less financial leverage than Canadian utilities, have inferior bond ratings and financial market access. The typical bond rating for a US utility is now "BBB," whereas it is "A" in Canada. The only explanation for this is that Canadian utilities have less regulatory risk due to the high degree of protection afforded them by Canadian regulatory bodies. Only by carefully screening the total population of US utilities is it possible to come up with a small *sample* of equivalent risk US utilities to that of the total *population* of Canadian utilities. This sample is not typical of US utilities and general conclusions can not be drawn from it except that it is possible to find low risk outliers even in the United States.

- Estimates of the market risk premium based on the average excess of equity market returns over bond market returns have dropped significantly in 2008 due to the very poor 2008 equity market performance. My Appendix F shows that the earned market risk premium for the period 1926-2008 is now 4.5% for Canada and 5.6% for the US using average arithmetic returns. This 1.0% difference between the US and Canada is partially explained by lower average long term US treasury bond yields due to the special role of the US as a reserve currency. The residual is due to the higher risk nature of the US equity market. The fact that the US market risk premium is about 1.0% higher than in Canada was confirmed by a recent survey of finance professors worldwide conducted during the current market meltdown. The median US market risk premium was 6.0% while that in Canada and Europe was 5.1% and 5.0% respectively. I have been using a market risk premium of 5.0% for sometime and am right in line with the consensus in Canada. In contrast Ms. McShane's estimated market risk premium is excessive and does not reflect professional judgement in Canada.

- There is no question that the globalisation of financial markets is continuing apace. The motivation for this is diversification or "decoupling" which is the idea that national economies do not move in tandem with the United States. This explains why it is a basic insight from financial theory that globalisation lowers risk and with it the market risk premium. My Appendix D discusses this but I am not aware of any financial theory that indicates that the Canadian market risk premium would increase as a consequence of increased globalisation, except if pathologically extreme values are used. Instead I prefer to think of the US market risk premium as simply another estimate to consider when forming my judgement as to the appropriate market risk premium. My best estimate is that the market risk premium is 5.0%, but consistent with the received judgement of my colleagues could be marginally higher.

- Overall I would estimate a fair ROE for NP to be 7.75% and lower than the 2009 allowed ROE of 8.95%. However, fairness has a variety of connotations, and I would recommend that the Board maintain their ROE formula indefinitely since like most such formulae in Canada it has done a remarkably good job of awarding ROEs that are within a zone of reasonableness, while minimising repetitive testimony. It is also broadly consistent with awarding allowed ROEs consistent with adjustment formulae used elsewhere in Canada.

- I do not see any increase in the relative riskiness of NP and regard business risk analysis to be of marginal importance in this hearing. This is particularly true given that Moody's

on August 3, 2009 upgraded NP's first mortgage bonds ***two notches*** from Baa1 to A2. Although much of this significant upgrade is due to technical factors more related to Moody's rating philosophy than NP's business risk, nonetheless it does signal NP's very strong credit background. For this reason I relegate a discussion of NP's business risk and financial health to Appendix H. However, it does point out that NP's common equity ratio of 45% significantly exceeds the Canadian norm for a low risk regulated utility. As more of the financial market uncertainty recedes I would recommend that this be reduced to bring NP more in line with practises in other Canadian jurisdictions.

- Finally while the memories of Enron, PG&E, WorldCom, Duke and other utility holding companies have started to fade, the enormous losses imposed on the world by the failures of US bank regulation will haunt investors for decades. The problems at Citigroup, Countrywide, NCC, Washington Mutual, Wachovia, Bank America, IndyMac, Fannie Mae and Freddie Mac, Bear Stearns, and most notably the policy mistakes made over the handling of Lehman Brothers show all too clearly that light-handed regulation in the US is a world apart from regulation in Canada. Just because US firms use the same technology as Canadian ones does ***not*** mean they are equivalent in risk as should by now be patently obvious. I would urge the Board to disregard recommendations based mainly on US evidence, and place primary weight on Canadian market experiences and policies that have worked rather than US policies that have not.

I INTRODUCTION

Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I am a professor of finance in the Rotman School of Management at the University of Toronto, where I hold the CIT Chair in Structured Finance. I have appeared before most of the major utility boards in Canada and a detailed resume is filed as Appendix A. Further information and copies of my working papers can be can be downloaded from my web site at the University of Toronto at http://www.rotman.utoronto.ca/~booth.

I have appeared before most of the major utility regulatory boards in Canada including the National Energy Board, the CRTC, the Ontario Energy Board (OEB), the Regie D'Energie and the Alberta Energy and Utility Board (AEUB). I have also filed testimony before the Ontario Securities Commission and in a variety of civil suits pertaining to financial matters.

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR TESTIMONY

A. The Consumer Advocate of the Province of Newfoundland and Labrador asked me to review Newfoundland Power's (NP) rate application and associated evidence and to offer an opinion as to the fair rate of return on common equity (ROE) and appropriate capital structure for NP and whether the ROE adjustment mechanism continues to be appropriate.

Q. HOW IS YOUR TESTIMONY STRUCTURED?

A. In its application NP is seeking a 6.1% increase in its revenue requirement for 2010. This is coming at a time when the Canadian economy as a whole is pulling out of a serious recession and the Newfoundland economy faces significant problems due to the maturing of the offshore oil fields and weaker commodity prices relative to 2008. Of this 6.1% requested rate increase 2% comes from a request to increase the allowed ROE from 8.95% to 11.0% with a further significant component coming from the associated income tax expense. NP is also requesting a change in accounting measures to recognise on an accrual basis expenses related to other post employment benefits (OPEB) and is proposing a pension expense variance deferral account: both of which will tend to lower its overall risk. With a muted forecast inflation rate for Canada as a whole and a weak provincial economy (Conference Board of Canada forecast, pre-filed

evidence), a 6.1% rate increase needs to be examined in detail. In this testimony I will focus on the fair ROE and appropriate capital structure.

In doing this I first look at the current economic and capital market conditions, since the fair ROE and capital structure stem from the ability of a utility to raise capital to finance operations and this varies with the economy and capital market conditions. In this respect I pay much more attention than is usual to current market conditions, since the US is suffering the after effects of the worst stock market crash since 1937 and we are just recovering from record high A bond spreads caused in part by a drastic drop in liquidity in the bond market. It is these market conditions that seem to be the reason for NP's request to discard the ROE adjustment formula and increase its allowed ROE. However, these reasons are rapidly receding as the financial markets recover.

Although the situation in Canada is nowhere near as bad as in the United States, it is still closing in on the serious recession of 1982 and may yet get as bad as the early 1990s "adjustment to free trade" recession. However, it is important to put things in perspective and realise that some of the things that we are observing are perfectly normal business cycle events that will pass as we pull out of recession, which could be as early as the latter part of 2009. As a result they do not constitute "game changing" events that should cause the ROE mechanism to be abandoned.

After discussing the current state of the economy and the capital markets I then discuss the relative riskiness of utilities in Canada and my estimate of the market risk premium. Of importance is that I provide new evidence on the validity of my market risk premium estimates, which are right inline with professional judgment in Canada. I do not see any increase in the relative riskiness of NP and regard business risk analysis to be of marginal importance in this hearing. This is particularly true given that Moody's on August 3, 2009 upgraded NP's first mortgage bonds ***two notches*** from Baa1 to A2. Although much of this significant upgrade is due to technical factors more related to Moody's rating philosophy than NP's business risk, nonetheless it does signal NP's very strong credit background. For this reason I relegate a discussion of NP's business risk and financial health to Appendix H.

Following my ROE recommendations I spend a considerable amount of time discussing why my estimates are reasonable and why the Board should ignore the recent behaviour of utility bond yields relative to allowed ROEs and long Canada bond yields. Statements that indicate the ROE formulae in use in Canada are broken because they lower allowed ROEs inline with lower long Canada bond yields, while utility bond yields have increased are simply wrong. A bond yields have increased for a variety of factors only some of which are related to the equity market and fair ROE. Moreover spreads are now returning to normal levels consistent with the state of the economy. I also judge it to be bad regulatory practise to link allowed ROEs with default risky corporate bond yields, since doing so injects considerable volatility into allowed ROEs that benefits nobody.

Most of the technical material to support my general testimony is contained in a series of stand alone appendices.

II. FINANCIAL AND ECONOMIC OUTLOOK

Q. WHAT ARE CAPITAL MARKET CONDITIONS AT PRESENT?

A. Basic macroeconomic data since 1987 is provided as background in Schedule 1. Economic conditions can change quite rapidly as the impact of hurricanes and oil price shocks are unpredictable. However, there is a rhythm to the economy, which reflects the momentum as shocks gradually work through the system; this is what is generally referred to as the business cycle. The basic economic variable here is the rate of economic growth. The trend line for economic growth is around 3.0%, while some believe that potential GDP can now grow slightly faster due to increases in total factor productivity, largely resulting from the application of information technology. So that periods with growth significantly below that level are periods of economic slowdown, whereas periods of growth significantly above that are expansionary periods. When economic growth becomes negative then we are in a recessionary period.

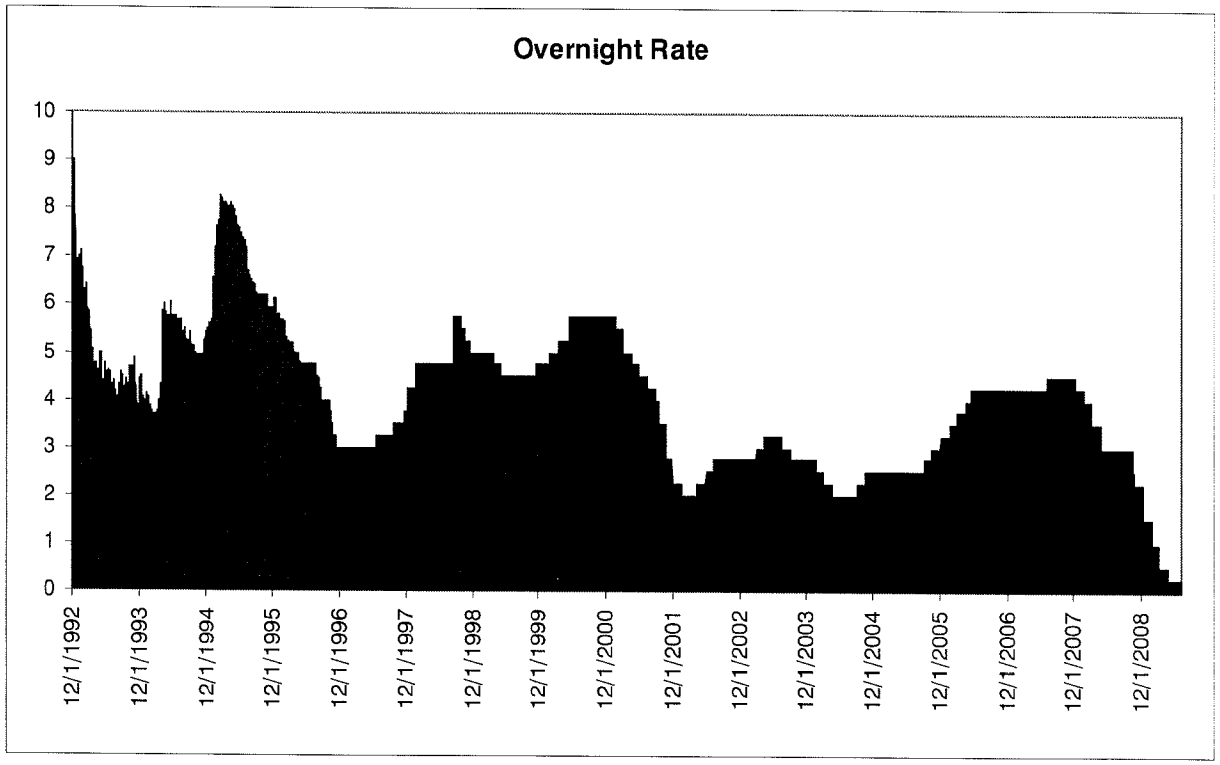
Looking back over the last twenty years indicates that from 1989 until 1993 Canada was mired in a deep recession in response to a normal cyclical slowdown as well as restructuring that accompanied the passage of the Free Trade Agreement (FTA). We can also see the strong economy of the mid 1980s and again the mid to late 1990s, when real economic growth was over 4.0% as the output gap caused by the recession was soaked up. We can then see the mild slowdown of the early 2000's as recession in the United States and the effects of the stock market crash in Canada weakened the economy. The recovery was then slowed in 2003 as Canada was hit by a "perfect storm" of a strengthening exchange rate, slowing growth in the United States, severe acute respiratory syndrome (SARS) and a single incident of BSE or mad cow disease. These effects were largely temporary as the Bank of Canada lowered interest rates in July 2003 and economic growth picked up to close to trend.

Most recently we have again had good economic growth as strong growth soaked up the remaining available labour and the unemployment rate was for a time 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, as well as record residential housing sales as housing starts exceeded 200,000 for the sixth year in a row. Further Business investment was strong with inventory rebuilding and an increase in business investment for

2008. This business investment was propelled by an increase in oilsands investment, which grew from $5.3 billion in 2003 to a projected $19.7 billion for 2008, eclipsing the 7% forecasted increase in manufacturing investment of $19.6 billion.

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 the Summer of 2008.This perception allied to the continuing strength of the current account surplus running at 1.0% of GDP, lead to 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 injecting into the economy.

As the following graph shows this tighter monetary policy continued throughout 2006 into December 2007, when the target overnight rate was cut from 4.5% to 4.25%.



The reason for the change in monetary policy was the financial problems stemming from the sub-prime mortgage crisis in the United States and its spill-over effects into Canada. The crisis actually started at the end of 2006 as US house prices peaked and started to fall, but it wasn't

until July 2007 with the failure of two hedge funds managed by Bear Stearns that investors realised that it was spreading beyond the mortgage markets. Faced with declining house prices, purchasers were increasingly drawn into mortgages by some or all of the following:

- Teaser low interest rates for short periods of time;
- No down payment;
- No verification of income

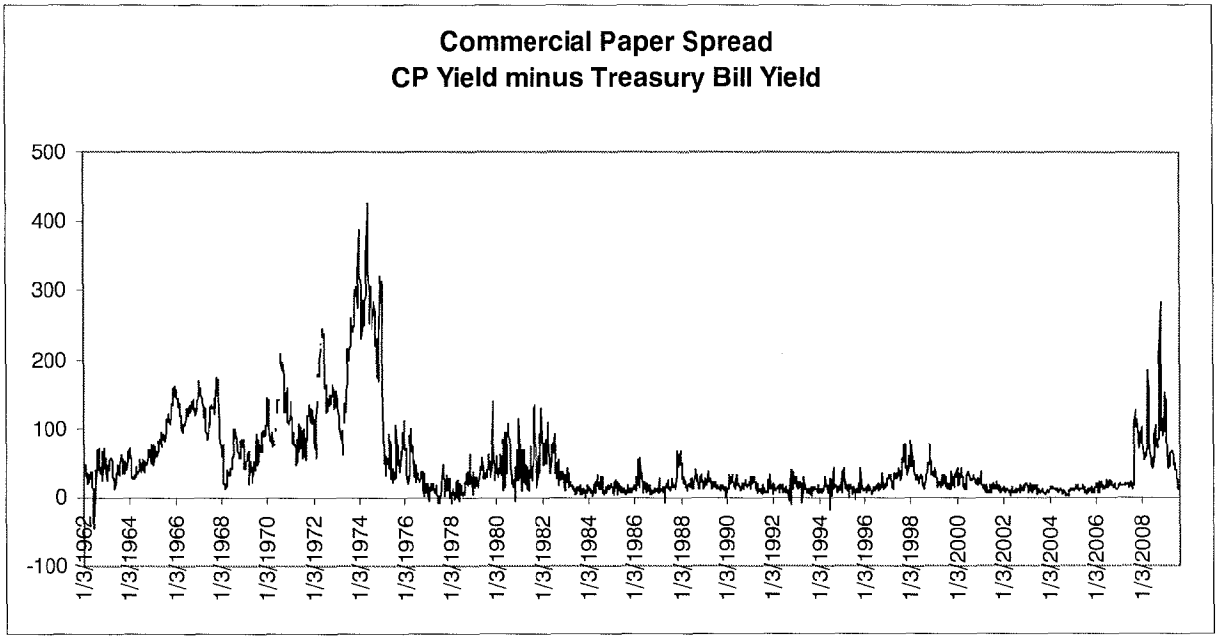
Many of the second mortgages made in the US were sub-prime ***Ninja*** mortgages: no income, no job and no assets. Amazingly many of these mortgages were repackaged into special investment vehicles (SIVs) and financed by issuing mortgaged backed securities with investment grade bond ratings. With these ratings the securities could then be sold to investors and backstopped by major banks like Citibank. In this way these sub prime mortgages were sold to institutional investors around the world and US problems became global problems.

However, the fact that often the mortgage originator did not keep the mortgage, but sold it off to others, primarily hedge funds and asset backed commercial paper issuers, meant that the normal checks in the lending process broke down and the quality of these "sub-prime" mortgages was far worse than anticipated. When the crisis really broke in August 2007 funds that had issued commercial paper to invest in mortgage related assets could not roll over the commercial paper and investors bolted from anything associated with sub-prime US mortgage debt. In Canada this lead to the Montreal Accord as about $32 billion in asset backed commercial paper was essentially frozen and turned into long term notes. However, in the US the real damage became apparent as Citigroup and Merril Lynch wrote off tens of billions of losses and sought emergency equity infusions from offshore sovereign wealth funds, and the Federal Reserve had to put together a "rescue package" on March 16, 2008 to get JP Morgan to buy Bear Stearns for $2 a share, when Bear Stearns was selling for $155 the previous summer.

The result in the US was fear of any sort of credit risk and a rush to quality as lenders belatedly increased credit standards. Further home owners were believed to be using credit cards and other forms of debt to stay in their houses and lenders braced for a rash of delinquencies on home equity loans and credit card loans as well as on mortgages. In response the Federal Reserve dramatically cut interest rates, bailed out Bear Stearns and made repurchase agreements more

widely available in the financial system in an attempt to stop the credit crisis from tipping the US into a full blown recession.

These US problems percolated into Canada directly through losses at CIBC and the National Bank on asset backed commercial paper and indirectly through heightened credit standards and the fear of a US recession. The following graph indicates the impact the credit squeeze had on lenders. It graphs the spread between the 91 day Treasury bill yield and that on 90 day commercial paper (CP). This spread represents what the market demands as a premium for investing in low risk paper issued by major corporations versus paper issued by the Government of Canada.



What has to be understood is that investors in CP are mainly "parking" their money, rather than investing, so 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 the CP of other issuers for fear of further losses. This is evident in the very large spreads in the early 1970s when investors were "spooked" by the collapse of Penn Central in the US and concerns about whether or not New York City would default.

The pattern for the commercial paper market is generally for stability punctuated by periods of extreme panic. For example for the last 20 years, the CP market was very quiet with spreads at 10-20 basis points. This changed in July 2007 with the US sub prime problems spilling over into Canada and got much worse in September 2008 as US banks failed and contagion hit the world's financial markets. The catalyst was the collapse of Lehman Brothers on September 14, 2008, when the US Treasury Secretary Henry Paulson refused to provide short term funding in the face of a classic bank run. Instead Paulson seemed to think that it was good for the markets to make Lehman "accountable"[1] without fully understanding that through the credit derivatives markets Lehman's collapse would infect banks around the world.

Paulson's actions in effect turned a US crisis into a global crisis. As the French Finance minister said the decision of the US Treasury Secretary Henry Paulson to let Lehman go bankrupt was "horrendous, for the equilibrium of the world financial system, this was a genuine error." Soon AIG, by market value at one time the world's biggest insurer, was taken over by the US government, and Merrill lynch sold itself to Bank of America. However, the fact that Lehman was allowed to fail had a domino effect on other banks. As the French Finance Minister went on to say "When we let one go, the risk is that others at that moment don't know who their counterparty is anymore and find themselves exposed. Once we let one domino fall, the rest risk collapsing."[2]

Very quickly the Lehman virus went airborne causing investors to withdraw money from banks: precipitating their collapse around the world. Although the US government quickly realised the mistake it had made, it could not be corrected quickly enough. The Treasury introduced the Troubled Asset Relief Program (TARP) but it initially failed to get through Congress causing the failure of first Washington Mutual and then Wachovia, as both faced classic bank runs as investors refused to roll over short term investments. All around the world institutional investors sold off short term money market investments in banks and when US money market funds

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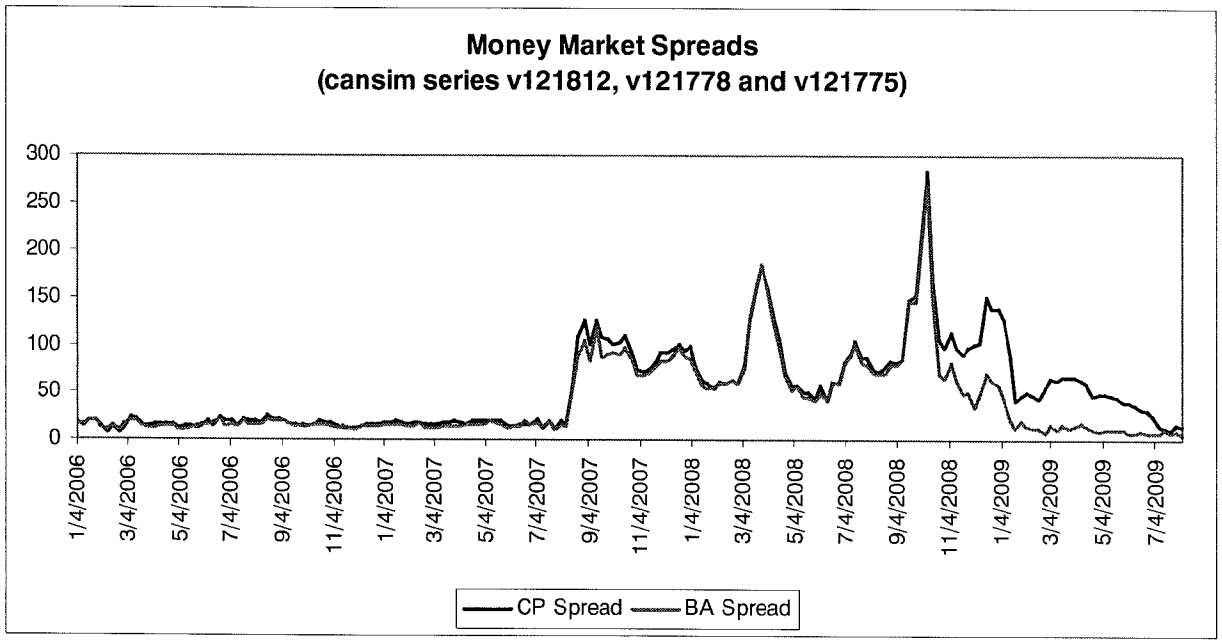
[1] The view was that there was a moral hazard problem in that banks took on more risk as they felt the Fed or US Treasury would bail them. This was the famous Greenspan Put. Paulson seemed to think that by letting Lehman fail the Greenspan Put would disappear and bankers would be more responsible. Obviously the moral hazard problem is now greater than ever.

[2] International Herald Tribune, October 10, 2008

"broke the buck" and dropped below $1 due to losses on Lehman Brothers' debt, the only safe refuge was US treasury Bills, where for a time yields went negative. In short order the financial markets were frozen as liquidity dried up and securities could not be sold at any reasonable price.

The following graph shows the spreads between CP and Bankers Acceptances (BAs) and Treasury Bills since the crisis broke in July 2007.



BAs are short term paper issued by the Canadian banks and quite astonishingly after the collapse of Lehman Brothers their spread over T Bills rocketed to peak at almost 300 basis points or 3.0%. By the middle of October banks were reluctant to lend to other banks, let alone corporate borrowers. As interbank lending dried up stock markets collapsed as the real economy can not function if the financial system is broken.

The following table shows the stock market losses as of October 24, 2008 at the peak of the financial crisis.[3] At that time from a US perspective year to date the best performing stock market was Japan's which was only down 35%, the worst among the majors was Hong Kong at 58%,

[3] These are from a US perspective and reflect the appreciation of the US$ as US hedge funds repatriated cash to meet possible margin calls.

not counting Russia's, which was off 75% before they closed the market. Globally about $14 trillion in wealth had disappeared in a few weeks.

Index or Exchange	Last Trade Date	1Day Change	1 Day %	1 Month %	6 Month %	YTD %	2006 $b Value
United States Composite (US Dollar)	**213.40** 10/24/2008	-7.52	-3.40%	-27.53%	-37.17%	-40.46%	18,039
Japan Composite (US Dollar)	**82.39** 10/24/2008	-2.74	-3.21%	-22.00%	-32.07%	-35.54%	4,422
United Kingdom Composite (US Dollar)	**149.79** 10/24/2008	-11.63	-7.21%	-35.44%	-48.66%	-52.51%	3,441
Canada Composite (US Dollar)	**278.25** 10/24/2008	-4.74	-1.67%	-40.46%	-48.15%	-49.61%	1,636
Germany Composite (US Dollar)	**218.89** 10/24/2008	-14.62	-6.26%	-39.40%	-51.88%	-56.28%	1,426
Hong Kong Composite (US Dollar)	**186.44** 10/24/2008	-10.10	-5.14%	-31.80%	-51.39%	-57.97%	1,361
Spain Composite (US Dollar)	**388.93** 10/24/2008	-26.01	-6.27%	-34.22%	-50.24%	-51.93%	1,146
Switzerland Composite (US Dollar)	**374.65** 10/24/2008	-10.44	-2.71%	-22.21%	-32.06%	-34.35%	1,111

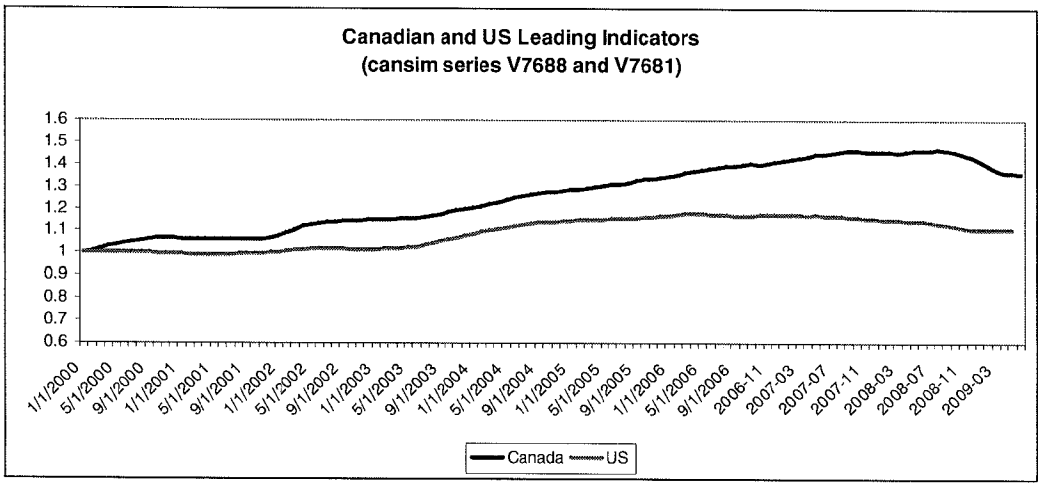
The combination of heightened credit standards and enormous destruction of wealth lead to the second stage of the crisis as the impact of the credit crunch swept into the real economy: consumers and businesses both took preventive measures to survive the crash by slowing spending and building up reserves. The result was the Keynesian "paradox of thrift:" that as individuals save, demand drops, firms cut production, workers get laid off and those with jobs save even more which inevitably precipitates a severe recession.

However, of importance is that the enormous measures taken by central banks to stabilise the financial system have worked. The BA spread, for example, peaked at almost 300 basis points in October 2008, but is now back to normal levels as confidence in the stability of the Canadian banking system has been restored. In fact at 5 basis points (bps) or 0.05% the BA spread is at its lowest level since October 2004. Canadian banks can now access funds in the paper market on normal terms and as their funding costs have come down, they can pass on these savings to consumers and business. The result has been lower consumer and mortgage rates and a pick up in real estate activity as sales and housing starts have both recovered. Similarly the equivalent

"Ted" spread[4] in the United States has fallen from almost 500 basis points in October to more reasonable levels and triggered significant mortgage refinancing. Both measures indicate that stability and confidence in the banking sector has been restored.

Of even more importance is that the Commercial paper spread is currently at 14 bps, which is back to where it was before the crisis broke. This means that large stable Canadian companies can access short term financing on similar terms to those prevailing on July 25, 2007 in terms of spreads over Treasury Bills. However, since T Bill yields have themselves dropped significantly from 4.57% to 0.26%, actual CP funding costs have similarly dropped from 4.70% to 0.40%. This collapse in short term interest costs has rippled through into bank lending costs, where Canadian prime has dropped from 6.25% to 2.25%. As a result all prime and BA based bank lending, such as revolving loan facilities and term loans, have seen a significant drop in their costs.

However, even though dramatic policy measures in the US have stabilised the initial causes of the current crisis, it will take time to reverse their impact on the real economy, since the "second shoe" has now dropped. This is the impact on the real economy as consumers and firms cut spending for fear of failure. This prognosis is confirmed by the trend in the leading indicators for both the US and Canada in the following graph.



[4] This is the three month Libor rate minus the US Treasury yield

Both indices are initialised to 1.0 in January 2000 so we can see the trend over time. As a result, we can clearly see that while the US leading indicator was gradually getting weaker since the middle of 2006 when their economy peaked, the Canadian leading indicator remained strong until the beginning of the Fall in 2008. It then fell dramatically along with weak global commodity prices as the rest of the world went into recession. However, the leading indicators in both the US and Canada have now stabalised and begun to turn up. Significantly the leading indicators remain much stronger for Canada than the United States reflecting the much worse economic conditions in the US and the stronger effect on the Canadian economy of a general global recovery.

Q. WHAT IS YOUR OUTLOOK FOR INFLATION?

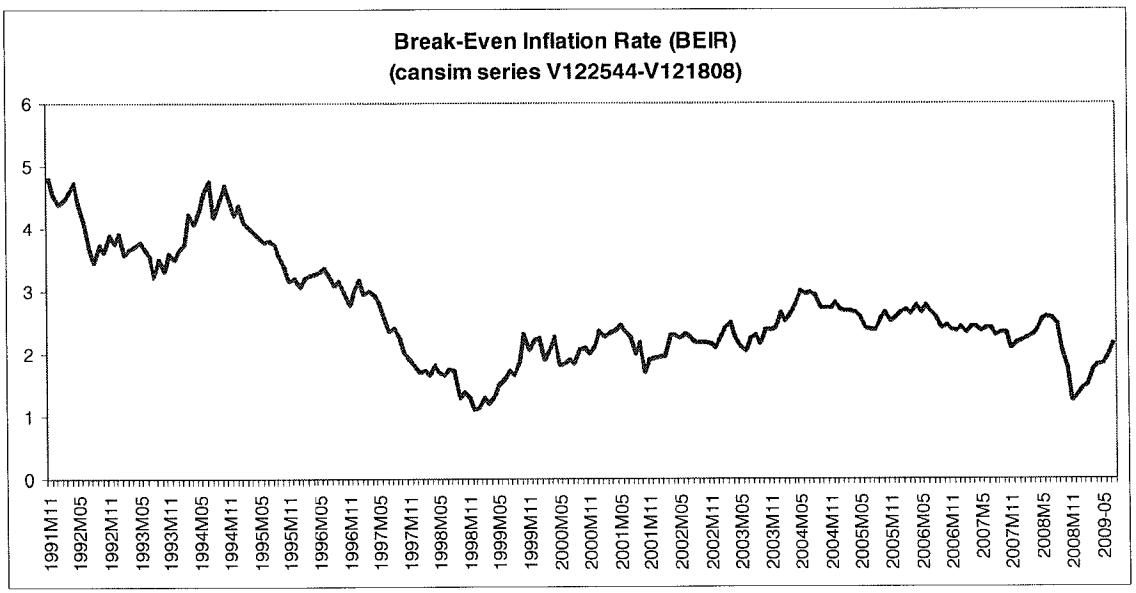
A. The Canadian economy has experienced low and stable inflation together with reasonably strong economic growth for the past several years. The graph in Schedule 2 shows the average CPI inflation rate since 1951. What is clear is the enormous run up in inflation from the early 1950's through to its peak in the early 1980s. Since then it dropped to plateau at the 4.0% level through the 1980s before the effects of the major slow down in the early 1990s caused it to drop to its cyclical low in 1994/5, where it almost touched price stability. Since that time changes in the consumer price index have remained close to the middle of the Governor of the Bank of Canada's 1-3% range.

Schedule 3 graphs the average annual inflation rate along with the average yield on long Canada bonds and Treasury Bills since 1961. The graph shows that prior to 1981, inflation was increasing steadily, until the Bank of Canada engineered a recession in 1982-3 to bring inflation under control. Similarly, in the late 1980's there was a gradual increase in inflation and wage settlements that peaked about 1991, as again, the Bank of Canada engineered a slowdown to bring down the rate of inflation. Although the absolute rate of inflation has been brought down considerably from these earlier periods, the same pattern of increasing inflation from 1994-2001 is evident as in the earlier periods of 1986-1990 and 1976-1982. In each case, interest rate increases slowed down the economy and with it the rate of inflation. We can also see the effects of the Bank of Canada's tightening through the end of 2007 as the 91 day Treasury Bill yield

increased. By the end of 2007, 91 day Treasury Bill yields were almost the same as the long Canada bond yield, producing the flat yield curve indicative of a slowdown.

This policy stance was moderated in December 2007 as the Bank of Canada's target rate was cut, but throughout 2008 there were fears of incipient inflation caused by high commodity prices. The start of the recession in 2008Q4 caused a quick reversal of these fears as concerns switched from inflation to deflation as investors fretted about a Great Depression II caused by the US financial crisis. Schedule 5 shows that on August 6, 2009 the long Canada real bond yielded 1.84% or 2.24% below the equivalent nominal bond yield of 4.08%. The real bond guarantees the investor protection from inflation, whereas the nominal bond has built into the yield compensation for both the expected rate of inflation and a real yield. As a result, the spread between the nominal and real rate, which is called the break-even inflation rate (BEIR), is often taken as a measure of the market's inflationary expectations.

The following graph is taken from Appendix F Schedule 6 and graphs the BEIR since 1991.



We can clearly see the collapse in inflationary expectations in October-November 2008 as fears of deflation caused the BEIR to fall 50% from the 2.5% level of the Summer to November. Since November as fears of a Great Depression II have receded the BEIR has recovered. The Bank of Canada (Monetary Policy Update, July 2009) indicates that the core inflation rate will "trough"

in the second half of 2009 before recovering to the 2.0% target level in 2011. The BEIR "long term" forecast confirms the Bank of Canada's forecast.

The graph in Schedule 4 shows the aggregate net lending of governments in Canada, where a negative number indicates government borrowing or a fiscal deficit. What is clear from Schedule 4 is the dramatic improvement in the fiscal position of all layers of government since the early 1990s and their return to balanced budgets. This in turn has reduced the supply of government bonds and the need for the Bank of Canada to follow accommodative monetary policy, which in turn has supported the drop in inflation. This is expected to change as the recession causes the "automatic stabilisers" to kick in: spending on relief and income support go up whereas tax revenues go down. The result is that a "ceteris paribus" budget would mean about a $13 billion Federal deficit, essentially the first for ten years. However in addition the government has indicated that counter cyclical spending will add another $20 billion to the deficit, while financial support for GM and Chrysler Canada will add another "one time only" $10 billion. However, given the very strong overall financial health of the government and the short term nature of the stimulus this is unlikely to affect either inflation or the level of interest rates in a material way.

My judgement is very similar to that of the Bank of Canada and private forecasters, like the Royal Bank of Canada. For 2009 the average inflation rate will drop from 2008's 2.4% to barely 0.50%, it will then recover in 2010 before getting back to the Bank of Canada's target level of 2.0% in 2011.

Q. WHAT IS YOUR INTEREST RATE FORECAST?

A. Schedule 5 provides data on the full range of interest rates across the broad maturity spectrum as of August 6, 2009. What is evident is that interest rates for long maturity instruments are now much higher than they are at the short end of the maturity spectrum; this is referred to as a 'normal' or positively sloped yield curve. Schedule 3 charts the history of short and long term interest rates together with inflation since 1961. It is clear that short term Treasury bill yields have continued their long decline from their peaks in 1981 as inflation has receded. This long run decline has been punctuated by periods when Treasury bill yields have increased to support the dollar (1996) or fight a too vigorous economy (late 1980's, late 1990's and mid 2000's). In

contrast, long-term rates have continued their gradual year over year decline without these peaks as inflation has gradually receded as a problem. This is because long-term bond investors look not just at the next 91 days, but far off into the future. As such, long-term bond yields reflect the *long*-term future of the Canadian economy, while T-Bill yields reflect *short*-term expectations.

Another way of looking at the impact of the Bank of Canada's monetary policy is to recognise that monetary policy works through both interest rates and the exchange rate: higher interest rates and a stronger dollar together slow down the economy by impacting interest sensitive and export industries. To examine both of these effects, the Bank of Canada created a "monetary conditions index" or MCI, which is reproduced in the graph in Schedule 6. Again, the dramatic changes since the early 1990's are evident, as the MCI decreased dramatically. We can also see the long run monetary loosening ending around 1998 with the levelling off of the MCI as the Bank of Canada started to worry about a too strong economy. This policy stance was reversed by the end of 2001 as the stock market crashed, and the effects of 9/11 exposed the economy to another shock, with further loosening helped by a weak dollar. It was the subsequent strength in the value of the Canadian dollar that largely produced the upturn in the MCI that lasted until November 2007.

The Bank of Canada has recently downplayed the MCI, probably because the strength of the C$ has not reflected internal monetary policy, so much as external commodity prices. However, the collapse of commodity prices from the August 2008 highs has in turn caused the C$ to depreciate quite dramatically. This decline combined with successive cuts in the overnight rate caused the MCI to decrease quite dramatically indicating stimulus to the economy. Noticeably the Bank of Canada and the Federal Government both pointed to the weakness in the C$ in 2009Q1 as grounds for optimism that the economy would have a short sharp recession and quick recovery and not face the protracted recession facing the US. It was the subsequent recovery in the value of the C$ that caused the Bank of Canada to revise this judgement as the C$ moved from US$0.77 to US$0.93 and caused the MCI to pick up and slow some of the stimulus to the economy.

In aggressively cutting the overnight rate the Bank of Canada has brought down the whole short end of the yield curve to stimulate the economy and prevent it from following the US lead into a

serious protracted recession. This combined with the fundamental strength of the Canadian financial system and the overall better condition of personal, corporate and government finances leads me to believe they will be successful. However, I don't expect much movement in the 91 day Treasury bill yield from its current 0.26% level for at least the next six months as the Bank of Canada is committed to keeping the over night rate at 0.25% until the end of 2010Q2. After then I expect it to gradually trend back to the 3% level consistent with the Bank of Canada's target inflation band of 1.0-3.0%. The speed of adjustment will depend on how quickly the economy recovers.

In contrast the over ten year long Canada bond yield is not so affected by current short term rates or current monetary policy. The yield on the long term bond stayed at about 4.0% until November-December 2008 when it dropped by 0.50%, as the market began to understand the severity of the recession and its implication for inflation. However, as these fears receded in response to the massive stimulus injected into the economy the long term bond yield recovered to 4.19% by the end of May 2009 as the market again switched to fears of inflation.

Over the last two months it has become very apparent that the value of the C$ and the yield on the long Canada bond are currently both tied to economic recovery and commodity prices. As the value of oil reached its recent peak of US$72 the Canadian equity market reached its post crash peak, the value of the C$ went above $US0.93 and long term bond yields went over 4.0%. As this optimism (relief) receded somewhat, oil prices fell back to US$60, the C$ to US0.86 and long term bond yields to marginally under 4.0%. I expect this see saw in oil prices, the value of the C$ and LTC yields to continue until the market is convinced that we are into a growth economy.

I have been arguing that Canada will recover in the second half of 2009 for the last five months since I filed testimony in the Alberta generic hearing. This was a difficult stance to take at the time since many company witnesses were forecasting that the "sky is falling." However, in my judgement the foundations for a strong recovery are in place and this is now being more generally recognised both by experts and the stock market. Noticeably the Bank of Canada in its July 2009 monetary policy update said much the same thing with the following table summarising their assessment.

Summary of the base-case projection[a]

	2008	2009				2010				2011			
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Real GDP (quarter-over-quarter percentage change)	-3.7 *(-3.4)*	-5.4 *(-7.3)*	-3.5 *(-3.5)*	1.3 *(-1.0)*	3.0 *(2.4)*	4.0 *(3.4)*	4.0 *(3.6)*	3.8 *(4.4)*	3.8 *(4.8)*	3.8 *(5.0)*	3.3 *(5.0)*	2.8 *(4.7)*	2.8 *(4.3)*
Real GDP (year-over-year percentage change)	-1.0 *(-0.7)*	-2.1 *(-2.4)*	-3.1 *(-3.4)*	-2.9 *(-3.8)*	-1.2 *(-2.4)*	1.2 *(0.3)*	3.1 *(2.1)*	3.7 *(3.4)*	3.9 *(4.0)*	3.8 *(4.4)*	3.7 *(4.8)*	3.4 *(4.9)*	3.2 *(4.7)*
Core inflation (year-over-year percentage change)	2.2 *(2.2)*	2.0 *(1.9)*	1.9 *(1.6)*	1.6 *(1.3)*	1.4 *(0.9)*	1.4 *(1.0)*	1.6 *(1.1)*	1.6 *(1.3)*	1.7 *(1.5)*	1.9 *(1.7)*	2.0 *(1.9)*	2.0 *(2.0)*	2.0 *(2.0)*
Total CPI (year-over-year percentage change)	2.0 *(2.0)*	1.2 *(1.2)*	0.1 *(-0.1)*	-0.7 *(-0.8)*	1.2 *(1.0)*	1.4 *(1.6)*	1.4 *(1.6)*	1.3 *(1.6)*	1.7 *(1.7)*	1.8 *(1.8)*	2.0 *(1.9)*	2.0 *(2.0)*	2.0 *(2.0)*
WTI[b] (level)	58 *(58)*	43 *(43)*	62 *(51)*	62 *(57)*	64 *(60)*	67 *(62)*	68 *(64)*	69 *(66)*	70 *(67)*	71 *(68)*	72 *(69)*	73 *(70)*	74 *(71)*

a. Figures in parentheses are from the base-case projection in the April *Monetary Policy Report*.
b. Assumptions for the price of West Texas Intermediate crude oil (US$ per barrel), based on an average of futures contracts over the two weeks ending 17 July 2009.

As inflation returns to the Bank of Canada's 2.0% target level in 2011 and the economy returns to normal growth I see the yield on the long Canada bond returning to the 4.50-4.75% level of 2007. For 2010 I base my recommendations on a 4.50% long term Canada (LTC) bond yield. This is consistent with the recent behaviour of the LTC yield and the Royal Bank of Canada's forecast that also sees it increasing to 4.75% by the end of next year.

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

A. A major player in the capital market is government, both federal and provincial. Their importance, however, has been receding. Overall government "lending," representing the aggregate of all levels of government, was running at the rate of over minus $60 billion during 1992 and 1993 or at its peak over 9.0% of GDP. Government net lending subsequently declined almost year by year as the economy recovered and governments finally got their spending under control. Schedule 4 graphs the government's net lending as a percentage of GDP.

The disastrous consequences of government fiscal policy starting in the early 1970s is obvious in Schedule 4, as governments started to run persistent deficits (net lending was negative indicating net borrowing). By the early 1990s interest payments were eating up over 30% of federal government revenues and government spending at over 50% of GDP was unsustainable. Since then it is clear that all layers of government have made serious efforts to restore some sanity to their finances. By 1997 lending had become genuine lending and governments in aggregate were in surplus for the first time in twenty-three years. In 2000 all layers of government in aggregate ran a surplus of $32 billion as tax revenues soared and expenditures on welfare, unemployment, etc., declined along with the unemployment rate. This amounted to over 3.0% of GDP, the biggest surplus since 1951, when governments were still actively paying down the war debt. Although the fluctuations in the economy have eroded the aggregate surplus since then, it is remarkable that the weakening economy of the early 2000's did not impose more pressure on government finances.

The overall decline in government "lending" has opened up room for private sector borrowing as corporations have returned to the equity and bond markets, following the strengthening of their balance sheets. Fuelled by healthy consumer spending, corporate profits have rebounded from the extreme cyclical lows of 1992-1994. Schedule 7 graphs the level of pre-tax profits to GDP, which shows their steady increase to the current highs of just under 14% of GDP. Only in the last quarter of 2008 have corporate profits begun to weaken as oil and gas companies report lower profits resulting from the collapse in oil prices. In 2008Q4 pre-tax profits dropped to 11.6% of GDP and further declined to 9.1% in 2009Q1.

This profit data is mirrored in the capacity utilisation data in Schedule 8, where we can see the drop in utilisation in 2001 through the middle of 2004 as the economy slowed, the rebound since then with high utilisation rates levelling off in response to the Bank of Canada's interest rate increases through 2007 and the strong value of the Canadian dollar. The recent precipitous decline reflects the fact that Canada's manufacturing base in central Canada has been hard hit by the strong value of the C$ as activity moved to western Canada. It also reflects the problems in the Ontario automobile sector, where GM and Chrysler Canada have had extended layoffs that have also affected the parts manufacturers. 2009Q1 capacity utilisation at 65.9% represents an almost 8.0% drop from 2008Q4. However, the emergence of both Chrysler and GM from

bankruptcy in the US should restore capacity utilisation to the normal levels typical of this stage in the business cycle.

The profit and capacity utilisation data provide the same signals as the inflation and interest rate data: this cycle's peak was in mid 2007. At this time the combination of relatively low inflation and interest rates, and booming corporate profits lead to strong equity prices and a strengthening value of the Canadian dollar. Schedule 9 graphs the C$ in terms of its US dollar value initialised to 1.0 in January 1995 when it was worth US0.71. We can then clearly see its steady decline as it was heading for a sub 60 cent US level. This decline was reversed in the Fall of 2002, after which it increased by over 50% to a peak at of over 110 cents US.

There is no doubt that this strengthening value for the C$ has been due to better terms of trade and in particular stronger natural resource prices. Under the value of the C$ in Schedule 9 is the commodity price index also initialised to 1.0 in January 1995. Commodity prices started to increase at the end of 2002 and subsequently increased by 130% dragging up the value of the C$ as Canadian exporters got higher prices for most of their natural resource exports. It was the collapse in commodity prices since their July 2008 peak that caused the C$ to depreciate back to under $US0.80 in the second half of 2008. Since then commodity prices have recovered and with them the value of the C$.

This change in the value of the C$ and commodity prices was mirrored in the performance of the TSX/S&P Composite graphed in Schedule 10, which rebounded from its lows in 2002 with each subsequent year showing strong equity market performance. The TSX Composite hit an all time high in June 2008 as commodity prices peaked and since then collapsed to a low of under 8,000 as the global credit crisis struck home. More recently the TSX Composite has recovered strongly to hit over 11,000 in July 2009 before catching its breath to await the next leg of the recovery. With the dramatic recovery of the stock market since its March lows, there is no doubt that the "markets" feel that we are through the worst and recovery is already being priced in.

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

A. Schedule 7 graphs the level of pre-tax corporate profits as a percentage of GDP. These profits are taken directly from corporate tax returns and so avoid all the one time only accounting

losses that rocked Nortel, JDS Uniphase and others. Consequently, they are a more accurate measure of corporate operating profits than normal accounting profits. The graph shows that profits through 2008 were running at all time highs at just under 14% of GDP.

Another way of assessing corporate profitability is to look at the aggregate data maintained by Statistics Canada (*Quarterly Financial Statistics for Enterprises*). Statistics Canada started reporting quarterly return on equity data in 1980 based on Standard Industrial Classifications (SIC) and then moved to North American Industrial Classifications (NAICs) in 1999. Schedule 11 graphs this average annual ROE against the spread between the yield on BBB debt and long Canada bonds from Scotia Capital's Handbook of Canadian Debt market Indices.

Schedule 11 shows that as of 1980 the average ROE was 15.05% and the yield spread, which rewards investors for holding BBB rated debt instead of default free Canada bonds, was very low at just over 50 basis points. "Corporate Canada's ROE" then declined during the 1982 recession and investor fears over the recovery of their bond investments caused the yield spread to widen. The ROE then hovered around the 10% level during the growth oriented 1980's with a stable yield spread. As ROEs fell from 1989 onwards and the economy went into recession, investors again grew concerned about credit risk and the yield spread increased dramatically to almost 350 basis points in 1993. The profit recovery during the mid 1990s then caused the yield spread to contract only to widen in the early 2000s as ROEs weakened. Finally we can see the high ROEs of the last few years reflected in very low credit spreads with the recent increase as profitability has again come under pressure.

The graph indicates the way in which the business cycle affects firms. During expansions, profitability increases and credit risk is lessened, causing investors to buy corporate bonds on narrower spreads over similar Canada bonds. During recessions the reverse happens: as profitability is reduced credit risk tends to increase causing spreads to widen as investors flee credit risky bonds and buy government bonds. This "flight to quality" is a regular part of the business cycle Profitability in this sense affects the market access of cyclical firms since interest has to be paid out of economic profits.

Schedule 12 shows spreads using the A and BBB spread data from the Scotia Capital long bond indexes. The advantage is that this data is over much finer time periods that the data in Schedule

11. The cyclical behaviour of spreads is again clearly visible. The BBB in particular widened and reached very large spreads of 450 basis points over equivalent maturity long Canada bonds in the serious recession of the early 1990s. Similarly during the recession/slowdowns in the early 2000s the BBB spread again reached very high levels of 300 basis points, although the fact that the recession was not as serious meant that it did not reach the highs of the early 1990s. Since then we can clearly see the impact of the credit crunch as falling long Canada bond yields have been offset by wider spreads and the BBB spread again reached the levels of the 1990s recession at the end of 2008 and the beginning of 2009. Since then spreads have retreated significantly as the economy works its way out of recession.

However, two factors are important. Sometimes the spread is affected by financial factors independent of economic activity. We can see this in the spike in spreads in 1998 as the "Asian crisis" that started in the Summer of 1997 introduced a flight to quality independent of the state of the North American economies. Second and more important is the fact that what is unique during the current period is the dramatic increase in spreads experienced by A rated companies. During previous recessions and crises A spreads reached 150 basis points, whereas in this crisis they reached 370 basis points before their recent precipitous decline. There are a number of reasons for the recent anomalous behaviour of A spreads starting with the credibility of the ratings themselves.

Q. WHY IS THE CREDIBILITY OF THE RATING AGENCIES UNDER ATTACK?

A. Unfortunately the fact is that much of the current crisis is due to serious errors committed by the major US credit rating agencies, in particular S&P. The sub-prime disaster in the US only occurred because sub-prime mortgages could be packaged into mortgage backed securities with investment grade bond ratings and sold to major institutions that were unaware of the risk involved. Without those ratings no-one would have purchased them without charging a yield that would have made the whole process uneconomic.

For example in Spring 2006 Goldman Sachs took a package of $493 million California second mortgages and fully disclosed that these mortgages had average equity of 0.71% and 58% involved little or no documentation. However, somehow S&P managed to rate 93% of the

mortgage backed securities issued against these toxic mortgages as investment grade.[5] Within a year 18% were in default versus the predicted 1% and probably by now it is closer to 50% if not higher. These mortgage backed securities were largely sold to institutional investors, but were often backstopped by lines of credit from the major US banks to ensure their liquidity. As the sub prime crisis broke the CEO of Citigroup wanted to know the bank's exposure and was told it was $43 billion, but apparently was also told "Citi would never lose a penny" and that the securities owned by Citibank were "viewed by the rating agencies to have an extremely low probability of default (0.01%)."[6]

Subsequently Citigroup's stock price collapsed as it wrote off $65 billion and was forced to seek $63 billion in bailout funds from the US government under the TARP program. As a result its stock market value dropped from $270 billion to under $20 billion despite billions of dollars of new equity financing. It seems that the largest bank in the US largely relied on external credit ratings by S&P when directly and indirectly creating its exposure to US sub-prime mortgage debt. John Dugan, head of the Office of the Comptroller of the Currency, the main US bank regulator, must have had Citi in mind when he said "There is really no excuse for institutions that specialize in credit risk assessment, like commercial banks, to rely solely on credit ratings in assessing credit risk."

Citigroup's reliance on credit ratings, that in retrospect were incredibly deficient, was not an isolated case. In fact almost all purchasers of mortgaged backed securities, just like regular money market instruments, are essentially "parking" cash; in normal times yield is almost an after thought, the most important consideration is the security offered a "AAA" rating. Now faced with such massive losses caused by serious errors in establishing credit ratings and the seriousness of the current credit crunch it seems that the capital markets simply did not believe the credit ratings attached to A rated borrowers and were unwilling to do the due diligence to sift through good "A"s and bad "A"s. Further it may take some time before the credit rating agencies win back the trust that their sub-prime AAA ratings have destroyed. One indication of the lack of

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[5] A Sloan, Fortune, October 29, 2007.
[6] Eric Dash and Judi Creswell, "Citigroup pays for a rush to risk," The Reckoning.

trust is a recent survey of CEOs reported by Reuters (November 11, 2008) where of the suggested changes 75% agreed that more regulation of credit rating agencies was needed.

Q. WHERE ARE WE IN THE BUSINESS CYCLE?

A. The current business cycle reached a peak in 2006-7, started to go into recession in 2008Q4 and are now starting the recovery stage. In my judgment what makes the current situation unique is that we are exiting the second of two distinct recessions. The first slowdown in the US started in 2006 as the US housing market slowed and with it construction activity and new housing starts. I thought the US hit bottom with the bailout of Bear Stearns in March 2008 and as the Federal Reserve dropped interest rates and started dramatic measures to increase credit in the US financial system. Many of the US banks had already raised new private equity financing by then and things seemed to be getting better. In fact, in Canada although the Bank of Canada had started monetary easing in December 2007 inflationary pressures were still high as commodity prices and the equity market peaked. Consequently this would have been regarded as a normal recession in the US and slowdown in Canada similar to 2000-2001. However, then came the events of September 2008.

The seeds for the second recession started in August 2008 as the banks that relied on the wholesale money market found it increasingly more difficult to roll over short term funding as sub prime fears become more evident. The decision to let Lehman Brothers go into bankruptcy on September 14, 2008 caused the second and far more serious recession as for the first time investors realised that the US government was willing for ideological reasons to let its banking system collapse. The fact that no developed economic system can survive without a functioning financial system meant that the prospect of a "Great Depression II" suddenly became a reality. Even though the US government quickly realised it had made a disastrous mistake, the failure to get TARP through Congress on the first attempt simply confirmed the lack of leadership in the US. The result was frozen credit markets and a stock market collapse causing the US to go from a mild to a serious recession and pushing the world into its first ever global crisis.

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

"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 that currently bedevil the US. The Office for Superintendent of Financial Institutions (OSFI), for example requires 7% common equity and 10% total capital for the Canadian banks, whereas the Bank for International Settlements requirements, commonly known as Basel, are for a minimum of 4% and 8% respectively. Further, the Canadian banks significantly exceed these minimums with the Royal Bank of Canada, for example, recently at just under 10% for common equity and 13% for total capital.[7] OSFI has also enforced the latest Basel 2 standards that use more refined risk weights for different banking assets. In contrast, the US has yet to adopt Basel 2 for all its banks and generally its banks operate with far less capital, which is partly why they have experienced such disastrous results,

Symptomatic of basic cultural differences between the US and Canada, the Canadian banks and the overall financial system is much more tightly regulated than that of the US in the same way that Canadian utilities are much more tightly regulated even though their basic functions and technology are the same. However, Canada can not avoid the turmoil resulting from events in the US and like every other country in the world has suffered as a result. The collapse in the price of oil from $144US down to $40, the collapse in US demand for cars and light trucks, the collapse in US housing starts (and need for Canadian softwood lumber) as well as the credit crunch have all had a direct effect in a precipitous drop in economic activity in Canada.

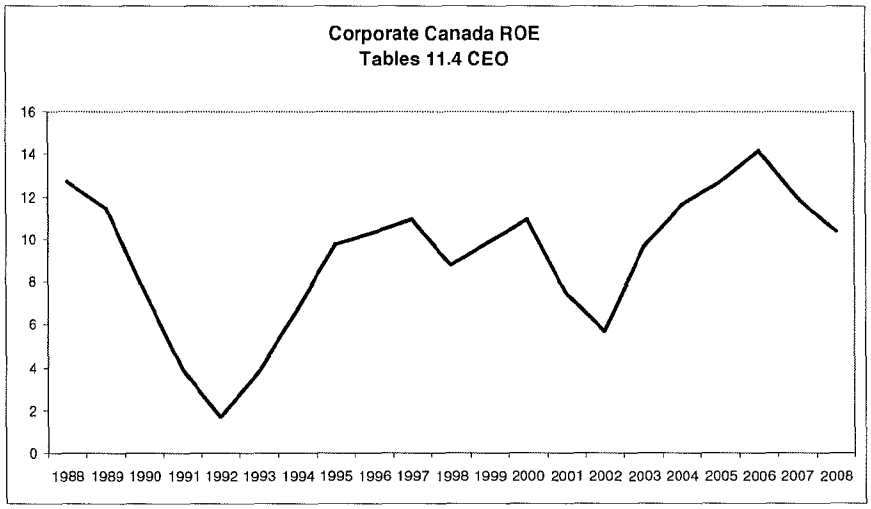
In 2008Q4 Canadian GDP contracted by 3.7% as consumers and firms responded very quickly to changing market conditions. The first quarter of 2009 was even worse as GDP declined by 5.4%, with a marginal improvement in the second quarter as GDP declined by 3.5%. The Bank of Canada in its July 2009 monetary update expects a 1.3% recovery in the third quarter increasing to 3.0% for the fourth as recovery gets seriously under way. It has become increasingly clear that the economy bottomed out in Q2 and that we are now at the start of the recovery stage of the

[7] I refer to tier 1 capital as common equity but it also included non-cumulative perpetual preferred shares.

business cycle. Like the Bank of Canada I expect a more significant recovery in the second half of 2009.

Q. DOES YOUR PROFITABILITY DATA HAVE ANY IMPLICATIONS FOR THE FAIR ROE?

A. Yes. The stage in the business cycle affects the level of corporate profits as Schedule 7 clearly indicated. However, expressing profits as percentage of GDP isn't useful for indicating what firms typically earn as ROEs. Below I graph the Statistics Canada ROE estimate for all firms from 1988. We can clearly see the effects of the recessions in the early 1990s, and 2000s; the increasing ROE in the recovery periods after then and the recent boom in 2004-2008 as higher resource prices have propelled ROEs to levels not seen since the last period of high resource prices, which ended in the early 1980s.



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, 1988-2008 the average Statistics Canada ROE for Corporate Canada was 9.1% and the median 9.88%.*** What this means is that the average firm in Canada does not earn the level of ROE requested by NP of 11.0%; yet as the

chart shows there is considerable year to year volatility in the overall earned ROE that is not faced by shareholders in NP.[8]

One yardstick of a fair ROE often suggested by company witnesses is the rate of return earned by other companies, usually called "comparable earnings." It is not supported by either economic reasoning or legal precedents in Canada. However, the Statistics Canada ROE data indicates that the typical firm earns an ROE of less than 10% and is subject to much more risk than NP. In Appendix B I discuss "comparable earnings" testimony at length and provide a listing of the annual ROEs earned by every Canadian firm with "full coverage" by the Financial Post. This is the total population of firms that is then "screened" to produce the comparable earnings results of Ms. McShane. I provide this to assess the reasonableness of Ms. McShane's estimates and to indicate that the Statistics Canada data is representative of "Corporate Canada."

[8] Note the volatility of the average ROE for Corporate Canada is reduced by the automatic diversification across all companies in Canada.

III FAIR ROE ESTIMATES

Q. HOW DO YOU ASSESS THE RISK OF A REGULATED UTILITY RELATIVE TO THE MARKET AS A WHOLE?

A. In Appendix H I look at the risk rankings of Canadian utilities based on the standard deviation of their ROE relative to that of Corporate Canada, which indicates they are about 40% as risky as the Statistics Canada average ROE. However, this analysis misses a very important fact. This is that the performance of the UHCs tends to occur at different stages of the business cycle than that of Corporate Canada as a whole. Note that from the Statistics Canada data there were serious recessions/slowdowns in the early 1990s and 2000s when Corporate Canada earned sub par ROEs. However, the earnings of the UHCs scarcely skipped a beat and some like CUL and GMI had record high ROEs. What this indicates is that we need to take into account when the high and low ROEs occur. This is because UHCs are widely regarded as defensive stocks that do just as well in a recession and thus act as a "safe harbour." To measure this I estimate their ROE beta, which is the sensitivity of their ROE to that of Corporate Canada. This ROE beta is estimated in the same way as for their stock market betas which I discuss shortly. This is the last row in Schedule 3 of Appendix H, which indicates that for the purest regulated utilities their ROE betas are negative whereas for the more diversified utility holding companies they are positive!

The negative ROE beta means that when the rest of Corporate Canada is doing relatively well typically UHCs are not and vice versa. Note in this respect that increasing a utility's ROE during a severe recession, such as the current, simply confirms this negative ROE beta result, and the low risk status of the utility. To have risk a utility has to behave similar to Corporate Canada and see its ROE reduced during a recession. Regardless the low ROE betas confirm the popular wisdom that UHCs are low risk and "defensive" stocks despite the variability in their ROEs.

The weakness of these risk assessments is that they are based on the firm's accounting earnings, or total income risk, that is their ROE. What investors are interested in is the risk involved in the stock market value of the securities they hold. This risk includes investment risk, independent of income risk, as what is important is how the stock market reacts to changed economic circumstances in re-pricing a firm's securities. Moreover, since investors rarely hold single

investments, they are interested in how the risk of their overall portfolio changes as a result of holding a particular security. This measure of risk is called the security's ***beta*** coefficient.

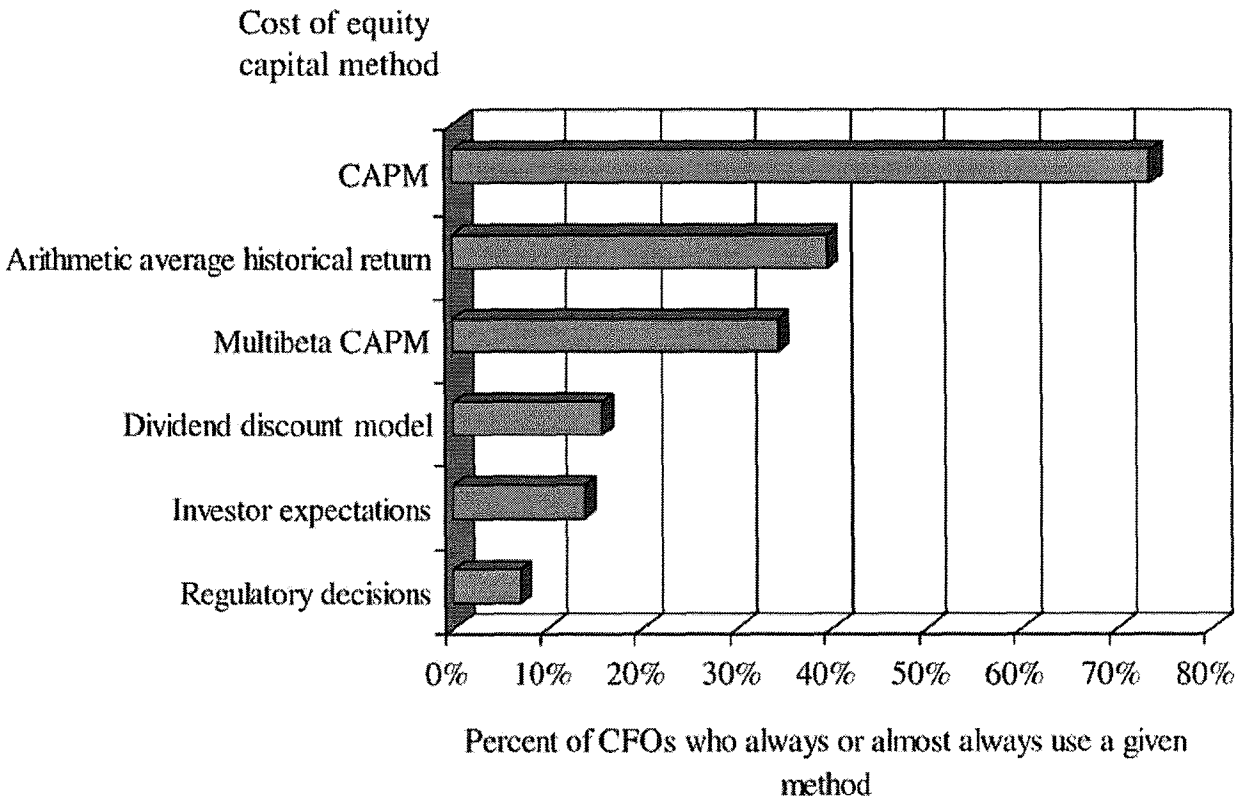
The most common risk premium model is the capital asset pricing model (CAPM), which says,

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

that the investor's required or fair rate of return (K) is equal to the risk free rate (R_F) plus a risk premium, which is the market risk premium (MRP) times the security's beta coefficient (β).

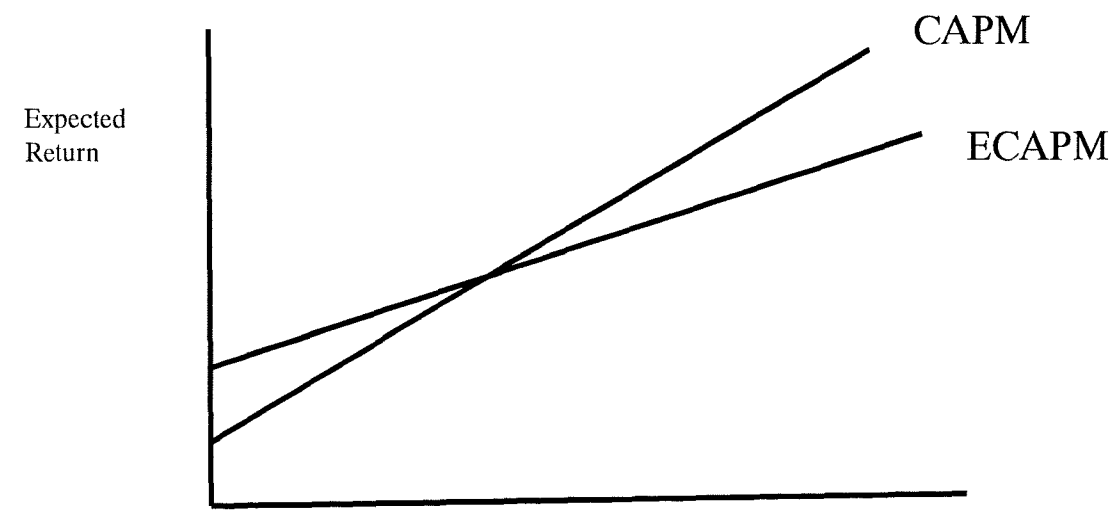
Why the CAPM is so widely used is because it is intuitively correct. It captures two of the major "laws' of finance: the ***time value*** of money and the ***risk value*** of money. I will discuss the third law of finance the ***tax value*** of money later, but the time value of money is captured in 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 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.

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 will discuss later.

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 experts use an empirical CAPM or ECAPM where the risk free rate is increased and the market risk premium should be flattened as in the above graph. However the ECAPM is based on tests that use the 30 day return on the 90 day Treasury bill yield as the risk free rate, which is only appropriate for very short horizon (30 days) investments. In regulatory hearings it is customary to use the CAPM with the long Canada bond yield, since equities have longer time horizons than even the longest maturity long Canada bond. This use of the CAPM with a long Canada yield will be referred to as the "classic" CAPM, even though this is not the way that it is discussed in finance textbooks or tested. To the extent that long Canada bonds earn a maturity premium of at least 1.0% over the average Treasury bill yield, this classic CAPM automatically increases the risk free rate and lowers the slope of the CAPM in the same way as the ECAPM. In this way it adjusts for the bias noted in these early tests of the CAPM.

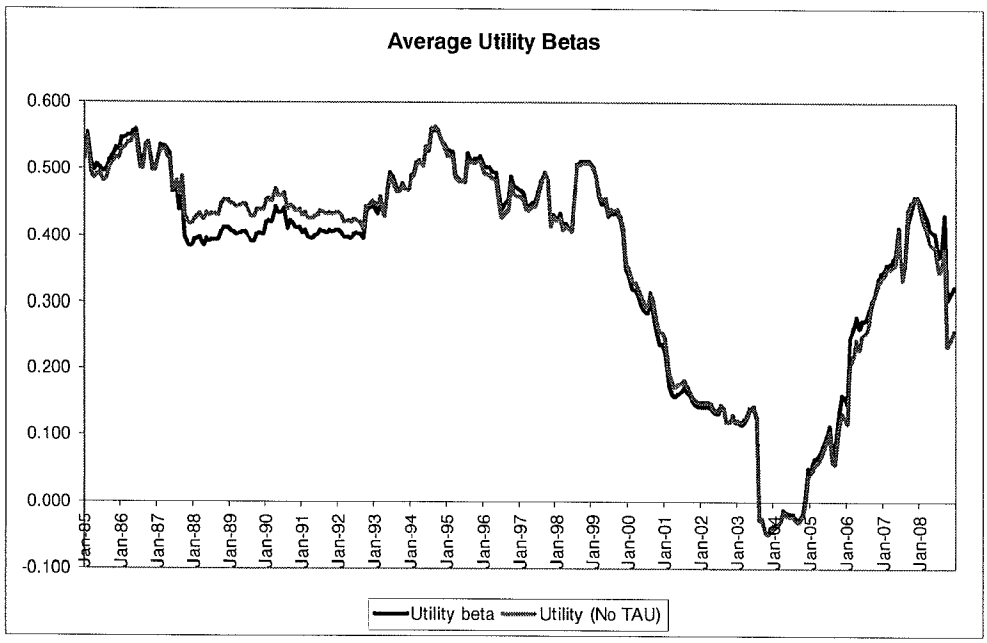
The second problem is that these tests used actual betas and were simply mechanical: whatever was the beta over the previous five year period was used in the test as a forecast beta. As we will see this is not how betas have ever been used in a regulatory context, where more judgment based or adjusted betas are used. Note that using a long Canada bond yield and judgment adjusted betas automatically corrects for the two basic problems in using the CAPM and removes the need to use some form of ECAPM

To illustrate, the betas for the major Canadian UHCs as well as the average (utility beta) for each of the 5-year periods ending 1985 through 2008 are as follows:

	CUL	EMERA	Enbridge	Fortis	GMI	PNG	Terasen	TRP	Ft Chicago	TransAlta	Utility beta
12/31/1985	0.60			0.66	0.29	0.55	0.21	0.79		0.62	0.51
12/31/1986	0.61			0.52		0.38	0.14	0.85		0.53	0.50
12/31/1987	0.32			0.25		0.46	0.47	0.59		0.22	0.42
12/30/1988	0.36			0.30		0.45	0.52	0.63		0.20	0.45
12/29/1989	0.36			0.25		0.42	0.56	0.60		0.22	0.44
12/31/1990	0.37			0.21		0.47	0.56	0.59		0.27	0.44
12/31/1991	0.38			0.25		0.46	0.54	0.54		0.28	0.43
12/31/1992	0.50			0.38		0.35	0.47	0.55		0.40	0.45
12/31/1993	0.58		0.39	0.37		0.56	0.47	0.45		0.47	0.47
12/30/1994	0.61	0.54	0.54	0.45		0.45	0.60	0.58		0.56	0.54
12/29/1995	0.49	0.54	0.48	0.51	0.47	0.45	0.63	0.53		0.58	0.51
12/31/1996	0.49	0.51	0.50	0.38	0.48	0.29	0.57	0.48		0.57	0.46
12/31/1997	0.61	0.40	0.44	0.31	0.38	0.44	0.48	0.34		0.46	0.43
12/31/1998	0.57	0.56	0.47	0.49	0.37	0.59	0.46	0.56		0.53	0.51
12/31/1999	0.54	0.43	0.25	0.34	0.20	0.52	0.33	0.25		0.27	0.36
12/29/2000	0.38	0.29	0.07	0.24	0.18	0.49	0.23	0.18	0.24	0.07	0.26
12/31/2001	0.28	0.22	-0.10	0.16	0.11	0.45	0.16	-0.05	0.14	0.08	0.15
12/31/2002	0.24	0.17	-0.18	0.15	0.08	0.47	0.10	-0.07	0.12	0.10	0.12
12/31/2003	0.14	-0.05	-0.40	-0.04	0.01	0.36	0.01	-0.42	-0.04	-0.06	-0.05
12/31/2004	0.13	-0.01	-0.31	0.03	0.15	0.46		-0.21	0.05	0.14	0.04
12/30/2005	0.23	0.06	-0.18	0.22	0.19	0.48		-0.18	0.16	0.41	0.12
12/29/2006	0.34	0.08	0.21	0.48	0.43	0.51		0.29	0.34	0.41	0.33
12/31/2007	0.45	0.21	0.53	0.62	0.78	0.24		0.47	0.34	0.48	0.45
12/31/2008	0.06	0.11	0.30	0.17	0.45	0.20		0.34	0.42	0.86	0.26

For the market as a whole the beta is 1.0, so these beta estimates indicate that these utilities and utility holding companies (UHCs) are lower risk than the typical stock, which is what we would expect given their ability to earn their allowed ROE and the associated income certainty.

We can also group firms into industries and examine their betas over time. In this way the random behaviour of one firm is reduced in importance. The last column in the prior table gives the average for these UHCs, which can be regarded as an "industry" beta. This average beta is then graphed below. The average is both with and without TransAlta, since TAU is becoming less and less a regulated utility even though many still regard it as such. However, since the average is a simple average it makes very little difference to the estimates.



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2 The data shows that for the five-year period ending in 1985 the average beta was 0.53[9]. The
3 average then drops through to 1992 before increasing back to the same level for the period 1990-
4 1994. The average beta then drops from the 0.50 level in the late 1990s to negative for 2003
5 before increasing back to average 0.24 for the most recent five year period ending in 2008. Over
6 this long period the average beta for these utilities has been 0.36 in a range from a negative
7 number to 0.55. The top of this risk assessment is higher than that obtained by examining the
8 variability of accounting ROEs for the pure regulated utilities alone, reflecting the fact that some
9 of the risk is investment risk, independent of the income risk. The bottom of the range reflects
10 some unique factors from the stock market bubble of the late 1990s.

11 Another way of looking at the data is to look at the betas of the relevant TSX/S&P Composite
12 sub-indexes. These are graphed in Schedule 13. The great advantage of the sub-index betas is
13 that they include more companies than the individual estimates and the data is more readily
14 available.[10] This is particularly important due to the fact that a large number of regulated firms,
15 like Consumers Gas, Maritime Electric, Terasen Gas etc., have disappeared through corporate

[9] Betas are estimated over five year periods of monthly data so the 1985 estimate covers the period 1980-1985.

10 Index data is available at the end of the month, whereas company data is only available in May-June of the following year. The TSX sub index data ends in May 2002. The Telcos were removed from the utility sub index as part of this reorganisation.

reorganisation. Although, this means that their individual company betas have also disappeared, it does not mean that their economic impact has disappeared. Consumers Gas now shows up as part of Enbridge, Terasen Gas as Fortis etc., so their economic impact continues to show up in the sub index betas. However, there are two disadvantages: the first is that the largest regulated utility in Canada traditionally was Bell Canada and its parent BCE was classified as a utility. This was despite the impact of BCE's non regulated operations on the sub index betas. The second is that the sub indexes are weighted according to the TSE weights for each company. Consequently, these are not simple averages but market value weighted averages, so that big companies like BCE have a disproportionate weight.

The Telco, Gas and Electric, Pipeline and utility sub-index betas up to the end of 2002 when the TSE sub indexes were changed are as follows:

	Gas/Electri	Telco	Pipes	Utility
DEC/96	0.52	0.60	0.54	0.60
DEC/97	0.47	0.61	0.44	0.59
DEC/98	0.53	0.80	0.42	0.83
DEC/99	0.37	0.96	0.18	0.96
DEC/00	0.21	0.82	0.06	0.80
DEC/01	0.17	0.87	-0.14	0.83
DEC/02	0.14	0.85	-0.18	0.80

The sub-index betas largely tell the same story: Telco risk undoubtedly increased as competition was introduced, particularly in long distance and then progressively into the local loop. This was why the Telcos were subsequently removed from ROE regulation and the utility index. However, this caused the betas for both the Telcos and the utility sub-index to increase, since BCE was such a large part of the utility index. This effect was exaggerated by the fact that the sub indexes are based on market value weights so that BCE had a huge influence on both the Telco and the utility sub-indexes. However, the behaviour of the Gas and Electric and Pipeline sub-indices require explanation.

It is important to remember that betas are simply a statistical estimate of the extent to which a stock moves with the general market over a particular period of time. By convention, betas are estimated over a five-year period. This means that if a critical event happens during the estimation period, then the beta estimate will pick it up. However, once the event "passes out" of

the five-year estimation window, the impact of the event will disappear from the beta estimate. For example, the graph in Schedule 13 shows that beta estimates were trending to a common average until 1987, after which the pipeline beta increased and the others decreased. This lasted for five years until they again came together.

If I had estimated betas during the period ending say in 1990, I would have estimated that gas and electric betas had dropped and pipeline betas increased. However, is it reasonable to say that gas and electric risk dropped during this period? The answer is no. What happened was that there was a large stock market crash in October 1987 (-22.0%) and this was such a significant factor that whatever happened in that one month affected all the beta estimates for the next five years until October 1992, when the October 1987 results were no longer in the sample period.

Professional judgement would indicate that it is unreasonable to just use the statistical estimate without recognising the underlying events that caused it, and then to make appropriate adjustments. It is my judgement that betas tend to revert to their long run average levels: for the market as a whole this is 1.0, but for regulated firms from Schedule 13, this is about 0.45-0.55.[11] There is no indication from Schedule 13 that the non-Telco betas were reverting to 1.0.[12] Consequently it is illogical to weight them with 1.0, as an "adjusted beta", since there is no expectation that their risk is increasing to that of an average firm. So what explains the current betas?

The answer is Nortel and the Internet bubble. During the late 1990s, the technology and internet boom were driving North American markets. Nortel was controlled by BCE, so that BCE's stock price was being driven by Nortel and the internet boom. In fact, this was driving the entire Canadian stock market as Nortel and JDS Uniphase became an increasing part of the market and at one point made up almost 35% of the value of the TSE300. As the prices of Nortel and JDS Uniphase increased, so did the Telco and Utility indices and the TSE300. When this boom turned into a crash and Nortel declined from $1,240 to under $10,[13] Nortel took the Canadian market

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[11] This is also accepted in the literature. Gombola and Kahl, "Time series properties of utility Betas," Financial Management, 1990, come to the same conclusion.

12 The Telcos have been reclassified out of utilities, since they are no longer ROE regulated.

13 Nortel has now filed for bankruptcy protection, the prices are adjusted for a 1:10 reverse split.

and the Telco and utility indices down with it. This is what caused the high beta estimates for the Telco and utility indexes in both 2000 and 2001.

In contrast, the gas and electric and pipeline betas declined. The reason for this was that as the market went on a technology driven boom and bust, these stocks were largely ignored. In the case of the Pipeline sub index, the collapsing share price of TransCanada Pipelines during 1999 and its recovery during 2000 was against a strong equity market in 1999 and a weak one in 2000. This movement of TransCanada's share price against the general market movement induced a negative correlation and the low beta estimate for the pipeline sub index.[14]

Q. HAVE THESE INDEX BETA ESTIMATES CONTINUED TO BE AT LOW LEVELS?

A. Yes. The tables of individual beta estimates go to the end of 2008 and show that betas are still at relatively low levels. In addition although the TSE discontinued the most useful sub indexes in 2002, the new S&P/TSX indexes do have a utility index. There are problems in the coverage of the new S&P/TSX sub indexes since they reflect S&P's world wide view of what constitutes a utility sub index as both Enbridge and TransCanada are classified in energy rather than as utilities. However, Schedule 14 shows that the betas of the new utility subindex continued to decline through 2003 before trending upwards towards a more normal beta estimate in recent years to finish 2008 at 0.43

For further information on the effect of the stock market bubble on betas I have graphed the betas of all the major TSX sub indexes from 1992 until the end of 2006 in Schedule 15. We can see the dramatic impact of the information and technology (think Nortel and JDS Uniphase) sub index beta, which increased dramatically from about 1.5 to over 3 before dropping in 2006. As this beta increased, by construction other betas had to decrease, since they have to sum to 1.0. The important point is that low utility betas in the early-mid 2000's are not an anomaly; they reflect the fact that during this period the market was IT driven and utilities and other low risk sectors of the market were not affected by the same factor. Consequently, they offered diversification benefits to investors holding information technology stocks.

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14 This stock market reaction was due to the poor performance of TransCanada's non-regulated operations in 1999 and the programme of retrenching and selling them off in 2000.

In Schedule 16 are the betas of the major sub indexes of the new S&P/TSX indexes. What is immediately apparent is that the commodity price increases discussed earlier in corporate profits and its impact on the C$ exchange rate are also evident in the sub index betas. Note for example, that the energy and materials sub index betas were low until the period 2002-2006, this was because until 2002 commodity prices were quite low. As indicated in Schedule 9 starting in 2002 commodity prices started to increase propelling the stock prices of commodity stocks up and with them the value of the TSX Composite. Consequently their betas increased, as like IT in the earlier tech boom, resource stocks drove the market. For the period 2004-2008 the beta of the energy sub index was 1.42, not quite a repeat of Nortel and JDS Uniphase but the same effect regardless. Noticeably the beta of the utility sub index at 0.43 at the end of 2008 is higher than that of the average of the individual UHCs reported earlier, since it does not include TransCanada or Enbridge, but does include lots of independent power producers (IPPs).

The recent story of the impact of resource stocks, like the earlier story of Nortel, simply indicates that statistics like betas tell the truth: to understand them you have to understand the financial and economic environment that generated them.

Q. WHAT ADDITIONAL EVIDENCE HAVE YOU LOOKED AT?

A. One of the most important investment characteristics of utilities is their high dividend payouts. This is why they appeal to Canadian investors who can use the dividend tax credit and why their shares are generally held by Canadian and not foreign investors. This means that utility share prices are driven by interest rates as well as common market factors and suggests a two-factor risk premium model, where there are two risk premiums: the market risk premium and a term spread risk premium that reflects exposure to interest rate risk. Interest rate risk is the risk of investing in long Canada bonds, instead of treasury bills. As interest rates increase returns from long Canada bonds go down and vice versa. This exposure to interest rate risk also characterises utility stocks since there dividend rich returns makes them "interest sensitive."

I therefore estimated a two factor model for utilities where their returns were driven by the common market factor, the TSX Composite return, as well as the return on the long Canada bond. The beta from this two-factor model (beta2) along with the conventional beta estimate (beta1) is graphed in Schedule 17. As can be seen the one and two factor beta estimates for the

gas and electric and pipeline sub-indexes show essentially the same behaviour over time. Given the measurement error involved in any statistical estimation and the sensitivity of the estimates to economic conditions, I regard them as being the same.

Q. OVERALL WHAT IS YOUR RISK ASSESSMENT OF A BENCHMARK UTILITY?

A. My assessment can be summarised as follows:

Relative standard deviations of ROEs:	40% of the risk of Corporate Canada
Relative ROE betas:	negative risk premia!
Recent standard beta estimates from UHCs:	0.30-0.40
Recent beta estimates from utility sub indexes:	0.00-0.43
Two factor Beta estimates:	0.00-0.45

Overall it is difficult to see any statistical evidence that the risk of Canadian UHCs for the last ten years has consistently been within their "normal" range of 0.40-0.60 experienced in the mid to late 1990s. At the time of the 2003 Alberta generic I discounted recent beta estimates due to the Nortel effect that pushed utility betas into negative territory. Similarly at the current point in time the resource boom since 2003 and bust since July 2008 has had a similar effect. In normal times I would expect Canadian UHCs to have betas in their traditional range of 0.40-0.60; however, normal market conditions are becoming unusual as capital markets seem to be jumping from one bubble to another.[15]

Overall I rely on my judgment and the tendency of betas to revert to their long run average and continue to use my normal beta range of 0.45-0.55 even though the recent statistical evidence is for lower betas. I see nothing in the recent risk measures to indicate that this risk ranking has changed in any substantial way, in fact the impact of the recent resource boom on the Canadian market reinforces the lesson of Nortel's impact: in a world of bubbles and volatility the UHCs are a beacon of stability.

[15] Alternatively they can be viewed as changing rapidly to new economic circumstances.

Q. HAVE THE UHCS BEEN A "BEACON" OF STABILITY DURING THE CURRENT MARKET CRASH?

A. Yes. On December 9, 2008 a story in the Calgary Herald[16] discussed the implications of the price of oil dropping from $144US to $50 and what it meant for oil and gas companies and pipelines. Hal Kvisle, CEO of TransCanada, noted that although it was more difficult to raise money TransCanada had just raised $1.16 billion in an issue that was over subscribed. Kvisle indicated that it underscored the attractiveness of infrastructure investments in troubled times. The article also noted that Enbridge had increased its dividend by 12 per cent and upped its 2009 earnings guidance by about 20 per cent. Enbridge's CEO Pat Daniel said he's confident "the company can maintain 10 per cent earnings per share growth for at least the next five years, a testament to the ***low-risk business model*** (emphasis added) of pipelines in general." The article went on to state that "Enbridge has been one of the top performers on the TSX, losing only 1.7 per cent year-over-year compared to more than 41 per cent for the TSX main board and a whopping 56 per cent for the TSX's capped energy index since June." It further quoted Daniel as saying "I think that speaks to the low risk, steady predictable nature of our business, ...***People don't really realize it until you get into tough times like this.***" (emphasis added) The article went on to note that "Enbridge shares gained $1.32, or three per cent, on the Toronto Stock Exchange on Monday to finish at $39.50 while Trans-Canada added 60 cents to close at $33.90."

To see how Canadian utilities have performed during the last year I tracked their stock price performance against that of the TSX/S&P index using data from Yahoo.ca, since similar data is not available yet in standard data bases. The following two graphs are for Emera and Fortis that are both close to being pure regulated utilities.

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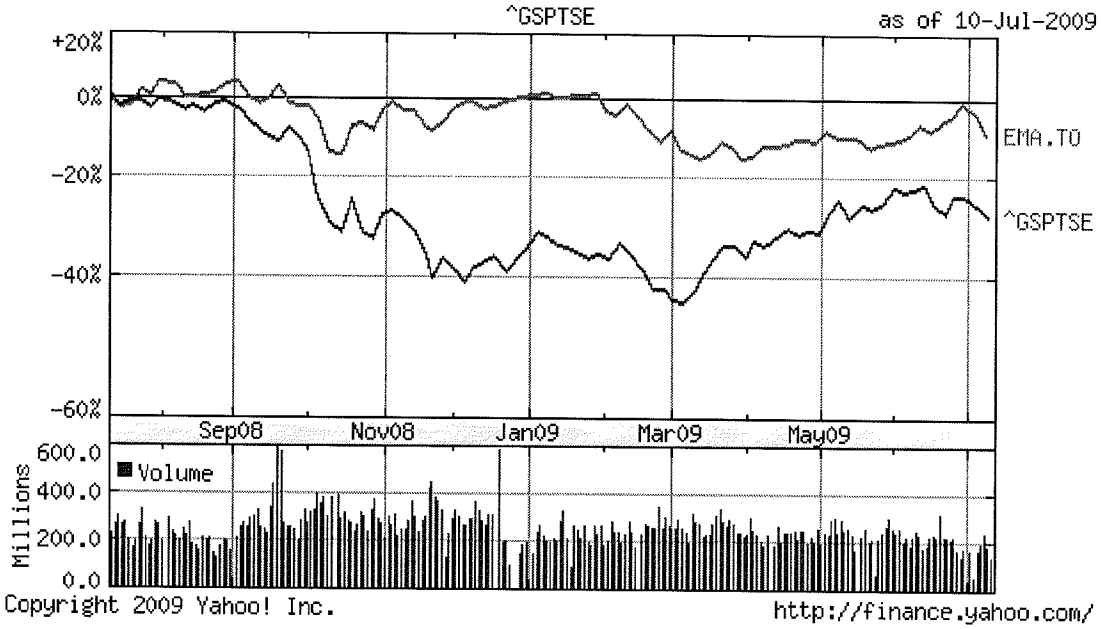
[16] Shaun Polczer, "Pipeline companies weather darkest hour; Executives say crisis worst in oil patch history" Calgary Herald, December 9, 2008.



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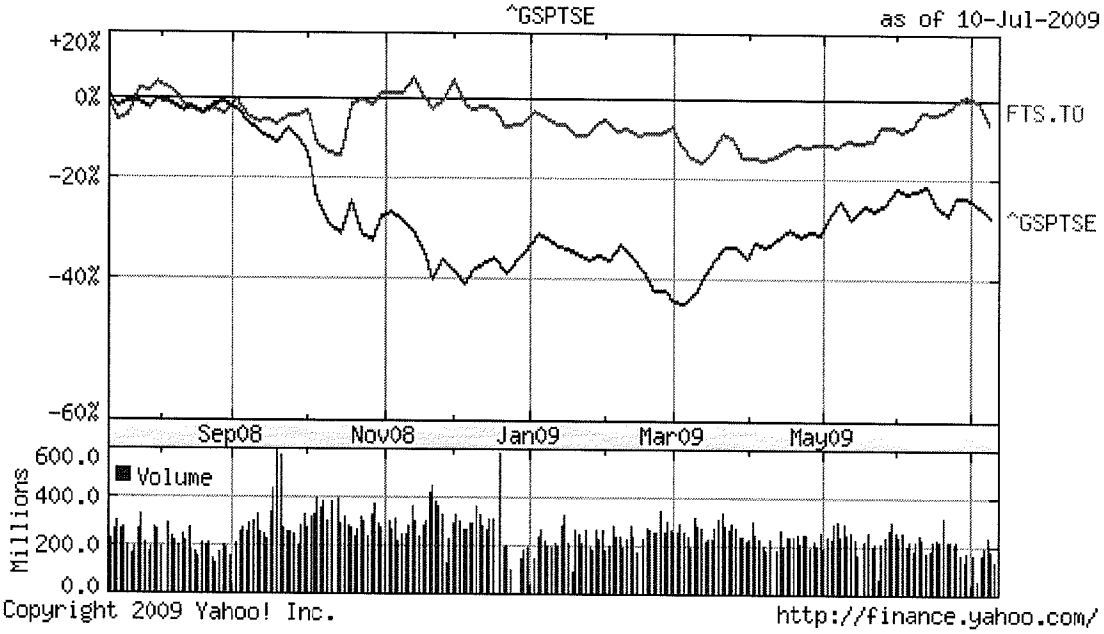

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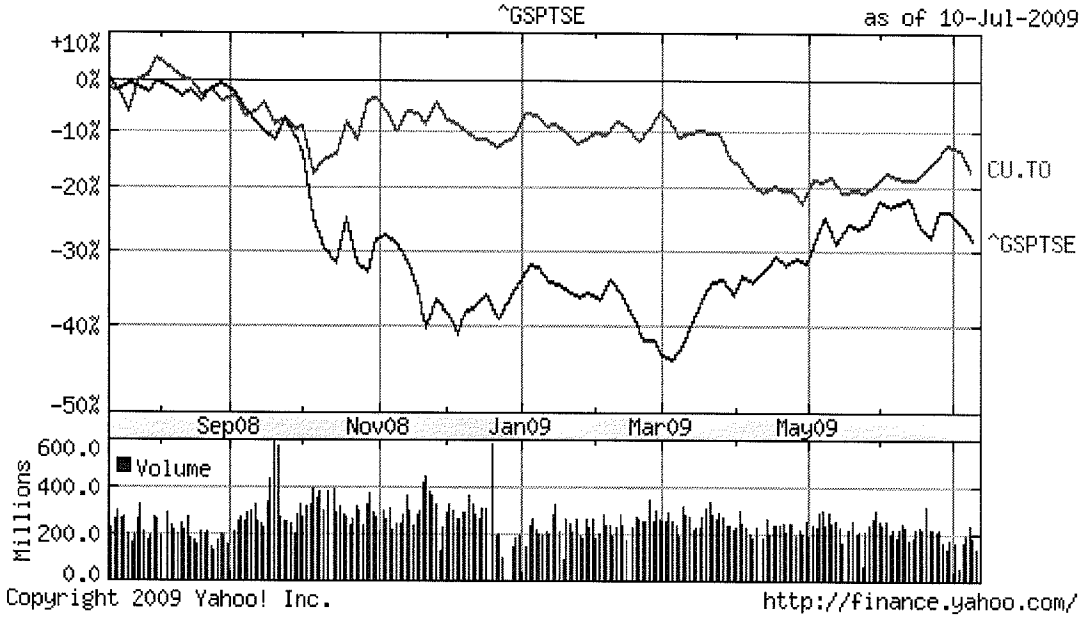
3 Note that starting a year ago neither Fortis not Emera suffered the huge drops that affected the
4 TSX and until the start of July both were trading about where they were a year ago compared to
5 the TSX which is about 30% off.

6 The following charts are for Canadian Utilities and Gaz Metro



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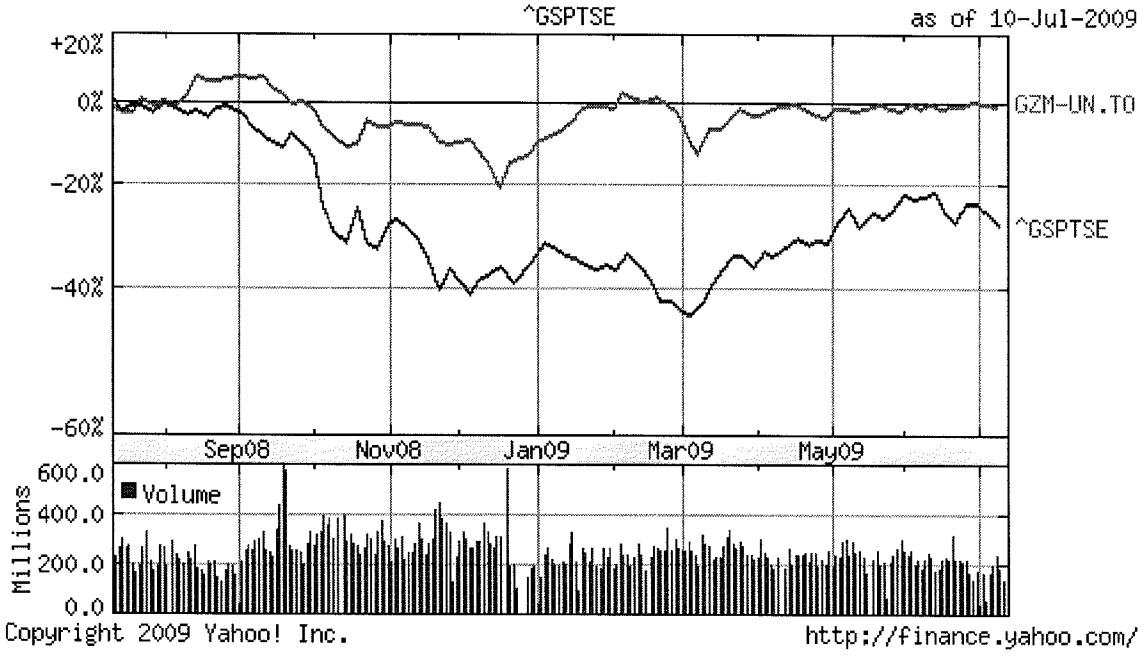

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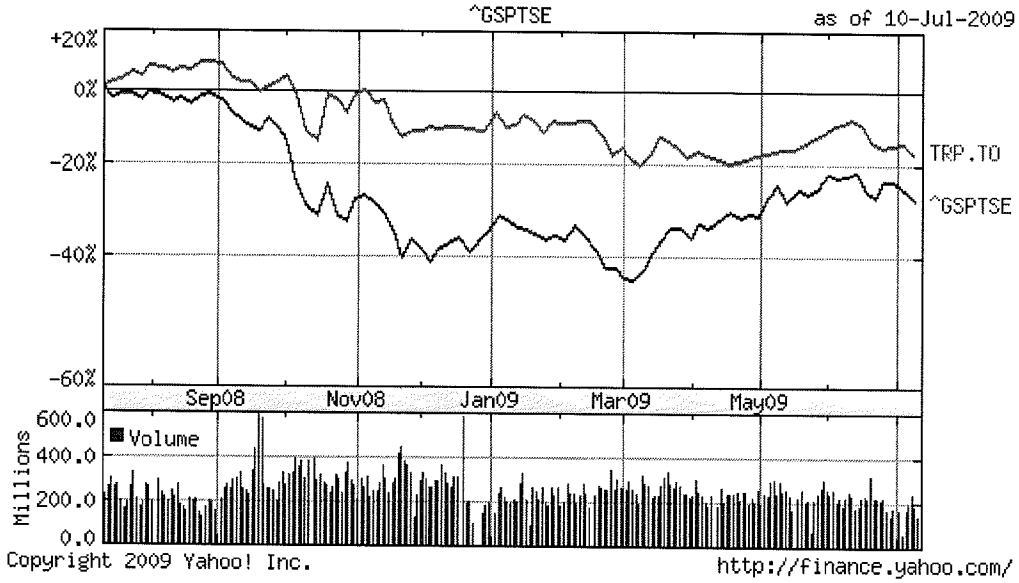
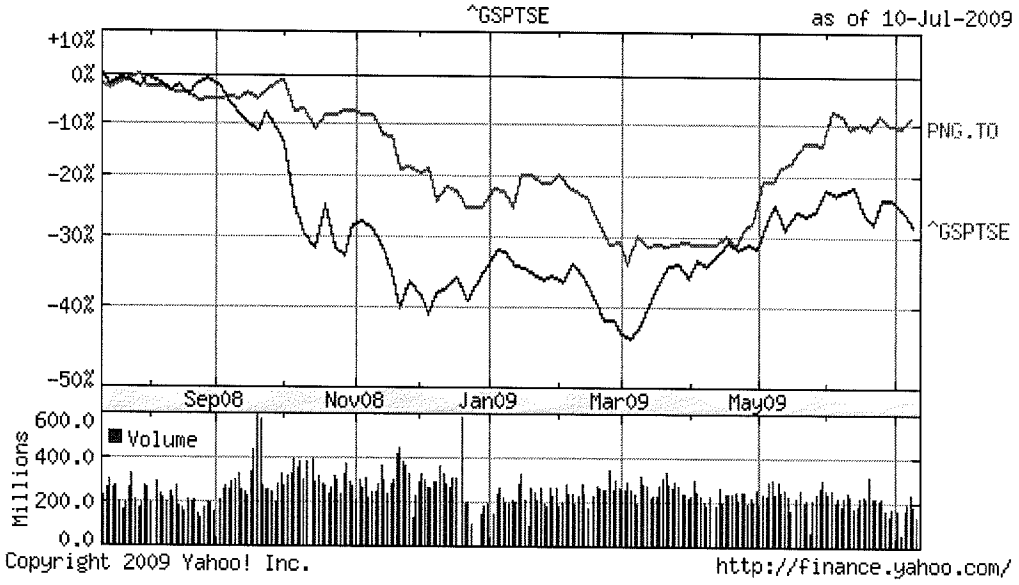
3 Again the same general pattern is obvious, particularly for GMLP in that they have not moved
4 with the general market during these turbulent times. In fact GMLP has barely moved at all and
5 seems the least risky of all these four utilities.

6

The final two charts are for the largest most diversified utility holding company TransCanada and what I regard as the riskiest Canadian utility, Pacific Northern Gas,





Both of these companies are clearly more risky in that they both followed the market more closely than the other companies. This is particularly true of Pacific Northern Gas. I don't put a great deal of faith in these graphs but what is clear is that these utility holding companies have confirmed their low risk status. Even in a market crisis the likes of which we have not seen for over 70 years they have remained a beacon of relative stability. This does not mean that they are risk-free; if they were I would not use a beta or relative risk assessment of 0.45-0.55. What they

illustrate is that Canadian utilities have market risk, but they remain low risk. Further there is no evidence that investors are dumping them or that they remain anything other than very attractive low risk investments.

Q. DON'T THEIR HIGHER STOCK MARKET RETURNS MEAN THAT THESE UTILITIES ARE RISKIER?

A. No, of course not. We can only make assessments of stock market earned versus expected returns over very long time horizons, since what is expected usually is not what is actually experienced over a short time period. Obviously in this case no-one would have invested in the TSX and held their investment for two years if they had expected to lose over 30%! Even more obviously selling out and investing in cash would have had a price performance that outperformed either the utility portfolio or the TSX Composite. However it is difficult to make the argument that holding cash is riskier than investing in the stock market.

Q. WHAT IS YOUR RISK PREMIUM OVER BONDS ESTIMATE?

A. From Appendix E the Canadian market risk premium of equities over long-term bonds since 1956 has been in a range 1.69-2.16% based on annual holding periods. If I extend the data back to 1924 the range increases to 4.70-4.76%. Conditions in the bond market prior to 1956 were substantially different from what they have been since and most of the decline in the market risk premium has been caused not by a decline in equity returns but an increase in bond market returns, commensurate with their increased risk. My Appendix F shows that similar changes have occurred in the US, where the US market risk premium since 1956 has similarly been in a range 3.19-3.35%, which is a substantial drop from the estimates from 1926.

My assessment is that much of the drop in the market risk premium has been caused by an increase in the risk of investing in long government bonds. The twin problems of government deficits and inflation drove up market yields in the 1970s and 1980s and caused the risk of investing in government bonds to approach that of investing in equities. One way of looking at this is to chart the yield on the real return bonds, which is in Schedule 18. Of note is that from 1991 through the end of 1996 the yield on the real return bond was around the 4.50% level. This is the period when the government deficit and borrowing was approaching 10% of GDP. This crowding out in the bond market created a significant risk that the government would inflate

itself out of its deficit problems causing bond investors to demand higher yields to protect themselves. Significantly, as the government deficit began to fall so too did the yield on the real return bond. Notably since government moved into surplus the yield on the real return bond was well under 2.0% until the advent of the recent crisis.

The impact of government financing problems has primarily been in the government bond market where this inflation risk has been most obvious. In Appendix F Schedule 5, I graph government bond betas from 1926-35 until the end of 2007. From this data it is clear that bond betas increased dramatically until the mid 1990s when they peaked at over 0.50. Since deficits have been tamed (at least in Canada) government bond betas have decreased accordingly and this reduction in risk has lead to commensurate declines in real and nominal government bond yields. At a bond beta of 0.50, at their peak, government bonds had at least a 200 basis point risk premium embedded in them, a level similar to that of low risk utilities. This is why at that time I was recommending very low risk premiums. This risk premium has now largely been removed from government bond yields, as the yield on real return bonds has declined by a similar amount.

I currently estimate the market risk premium at 5.0%. This is significantly higher than the experienced market risk premium earned in Canada over almost any time period, but takes into account the unexpected performance of the bond market, due to declining long Canada bond yields, and the reduction in risk in the bond market compared to a few years ago. From the previous discussion of the risk of a typical regulated utility, I would place a reasonable beta estimate at 0.50. This would imply a risk premium of 2.5%. Adding this risk premium to the long Canada yield forecast of 4.50% produces an estimate of the required rate of return for investing in a typical utility stock at approximately 7.00%.

Q. THIS SEEMS LOW COMPARED TO Ms. McSHANE'S USE OF A MARKET RISK PREMIUM 6.75% CAN YOU EXPLAIN THIS?

A. Yes. Ms. McShane estimates the Canadian market risk premium at 4.6% and the US market risk premium at 5.6% (Evidence page 47). These estimates are based on the same historic evidence as mine and are very similar to mine. The main difference is that she uses a specific time period 1947-2008 whereas I use the full time period. However, our differences here are de minimus. Where we seem to disagree is that she looks at the nominal equity returns in the US

and Canada from 1924, which she estimates at 11.3% for Canada and 11.7% for the US. Again there is little dispute as to the estimates since I estimated them to be 11.1 and 11.66% respectively in my Appendix F. However she subtracts her current short and long run LTC yield forecasts of 4.25% and 5.25% from these long run average equity returns to get her market risk premium estimate of approximately 6.75%.

It is not immediately obvious where Ms. McShane's 6.75% comes from, but the more important question is the procedure itself. I don't believe you can subtract the current LTC yield from a long run average equity return since it mismatches the underlying inflationary environments. The current LTC yield reflects the current inflationary forecast of 2.0% and the current operating procedures of the Bank of Canada. In contrast the average return of 11.3% in Canada reflects the entire inflationary period from 1924. My appendix E shows that inflation averaged not 2.0% but over 3.0% during this period, so her procedures may over estimate the market risk premium by at least 1.0%.

What is also important is that Ms. McShane's market risk premium estimate is at the top end of professional judgment in Canada and also to a lesser extent in the United States. At the height of the financial crisis Professor Fernandez [17] surveyed finance professors around the world to find out what they used for the market risk premium. A key result is his table 2 reproduced below.

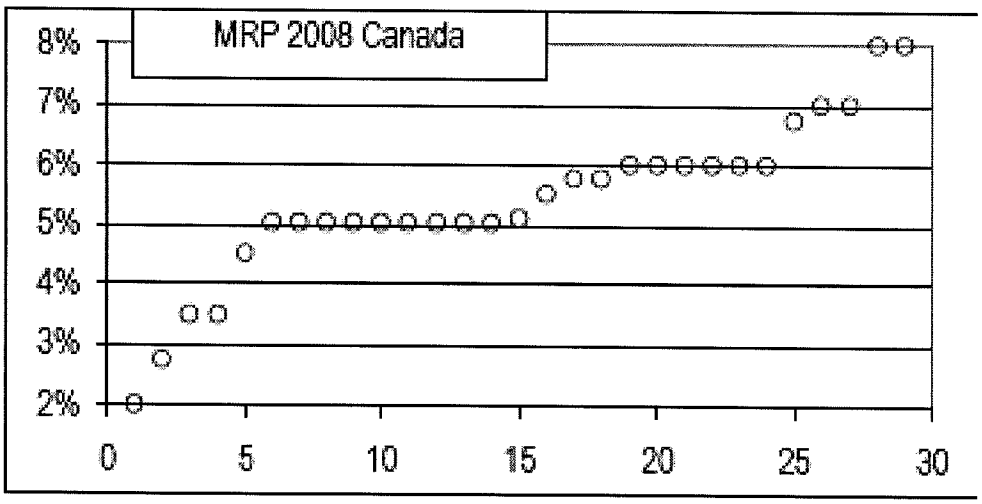
Table 2. Market Risk Premium used in 2008 by 884 finance professors

		USA	Euro	UK	Canada	Australia	Other	Sum
MRP used in 2008	Average	6.3%	5.3%	5.5%	5.4%	5.9%	7.9%	
	St. dev.	2.2%	1.5%	1.9%	1.3%	1.4%	3.9%	
	MAX	19.0%	10.0%	10.0%	8.0%	7.5%	27.0%	
	Q3	7.2%	6.0%	7.0%	6.0%	7.0%	10.0%	
	Median	6.0%	5.0%	5.0%	5.1%	6.0%	7.0%	
	Q1	5.0%	4.1%	4.0%	5.0%	6.0%	5.5%	
	min	0.8%	1.0%	3.0%	2.0%	2.0%	2.0%	
	Number	487	224	54	29	23	67	884

[17] Market risk premium used in 2008 by professors: a survey with 1,400 answers," April 2009.

This table confirms the results in my Appendixes E & F and Ms. McShane's estimates. The US market risk premium has averaged about 1.0% more than in Canada. Interestingly the median or middle guy in the US thinks the market risk premium is 6.0%, in Europe 5.0% and in Canada 5.1%. Ms. McShane's use of 6.75% in Canada would exceed the typical Canadian finance professor's estimate by 1.65% and that of a typical US finance professor by 0.75%.

To see how far off Ms. McShane is the following repeats Professor Fernandez's table to show the actual distribution of the market risk premium estimates of the 29 Canadian faculty who completed the survey (including me).



As is clear most finance faculty in Canada think the market risk premium is either 5.0% or 6.0%. There are a few down at 2% or 3% and even two people up at 8.0%, higher than Ms. McShane. However what is absolutely clear is that my 5.0% estimate is typical of Canadian estimates and is not a "low" estimate, whereas Ms. McShane's estimate would only be supported by the 20% or so of Canadian finance professors and rejected by the remaining 80% or so.

However given that most estimates are for either 5.0% or 6.0% I would concede that my estimate may be very marginally low, even though I have published scholarly work in this area whereas most of my colleagues have not. I would therefore place the "margin of error" in my estimate at 0.50%, that is, a 1.0% market risk premium times a beta of 0.50.

Q. HAVE YOU ESTIMATED ANOTHER RISK PREMIUM MODEL?

A. Yes. The CAPM is a single factor model, where all that matters is the risk of holding securities in a diversified portfolio. However, the two-factor model indicates that the CAPM does not capture all of the risks that affect securities. It has been known for some time that the CAPM, when used with Treasury Bill yields as the risk-free rate, tends to give low estimates for certain types of securities, which is partly why for regulatory reasons it is normally used with the long Canada bond yield.[18] However, this practice caused many of the problems in regulatory awards in the mid 1990s when the long Canada bond yield was so high due to inflation concerns, government deficits and the large risk premium embedded in government bond yields, which did not have a counterpart in the equity market.

The exposure of utility returns to this interest rate factor I call "gamma" to contrast it with the beta which is the exposure to the market risk. Schedule 19 graphs the gammas of the gas and electric and pipeline sub indexes up until 2002. These gammas are more stable than the equivalent beta estimates and show that on average gammas are about 0.50. As a result I judge utility stocks to have about half the exposure to the equity market as the average stock and half the exposure to the bond market as the long Canada bond. In this respect Ms. McShane and I agree since she estimates (page 52) that Canadian utilities have 42% market risk and 53% interest rate risk. However I don't believe that the estimation procedures are that accurate and use 0.50 exposure to both.

The two-factor model partly adjusts for the known estimation problems of the CAPM by directly incorporating the risk of the long Canada bond through a term or interest rate risk premium. For example, the data indicate that utilities have about half as much interest rate risk as the long Canada bond and half as much risk as the stock market. If yields on long Canada bonds increase and the return on the long Canada bond is only 2.0% while the stock market increases by 10%, then the return from holding the utility stock will be 6% over the risk-free rate: 5% due to exposure to the market factor and 1% from exposure to the interest rate factor. In Schedule 20 is

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18 This is also why the market risk premium is normally estimated over the long Canada bond return, rather than over Treasury Bills returns.

a graph of the utility interest sensitivity or gamma using the new TSX utility subindex. The main message is that gamma is still at the 0.50 level that I estimated earlier.

However, incorporating interest rate risk into the risk premium model means that other adjustments are necessary as well. In particular, since the interest rate or term premium is the premium over Treasury Bill yields, the market risk premium must be estimated in the same way. In Appendix E (Schedule E1) I show that the realised return difference between long Canada bonds and Treasury Bills was about 1.38% using arithmetic returns over the period 1957-2008, which is also approximately the average yield difference. The market risk premium over Treasury bills would therefore be on average about 1.38% higher than over long Canada bonds. Consequently the 5.00% that I am using for the market risk premium over long Canada bonds should be increased to about 6.38% as a risk premium over normal Treasury Bill yields. The utility risk premium would therefore be 0.5*6.38% or 3.19% for the equity market risk premium plus 0.5*1.38% or 0.69% for the interest rate risk premium. The overall risk premium would then be 3.88% over the long run "normal" Treasury Bill yield.

The long run Treasury Bill yield is simply the rate that is expected to be earned from rolling over treasury bills yields for thirty years, equivalent to the long Canada bond maturity. The best estimate for this is simply the forecast long Canada bond yield minus this 1.38% interest rate risk premium. Consistent with the 4.50% forecast I estimate this at 3.12% which is close to what we would expect for the average Treasury Bill yield given the 2.0% mid point of the Bank of Canada's inflation band. When these risk premia are combined we get an overall two factor required return estimate of 7.0%, which is the same as for the classic CAPM estimate.

The reason for the same estimate is simply the use of 0.50 for the Canadian utility beta and also 0.50 for the interest rate exposure. If Instead I had used 0.40 for market risk (beta) and 0.60 for interest rate risk (gamma) the two factor estimate would have been 3.12% + 0.4* 6.38% + 0.6* 1.38% = 6.224%. This would indicate that as utilities have less market and more interest rate risk their required rate of return goes down, which makes sense.

Q. PLEASE SUMMARISE YOUR ESTIMATES.

A. The risk premium testimony is based on two models: a 'classic' CAPM risk premium model and a two-factor model. The 'classic' CAPM estimate is based on an historic average market risk premium "adjusted" for the changing risk profile of the long Canada bond. The two-factor model takes into account the interest rate sensitivity of utility stocks. Both models have been estimated over individual firm data as well as sub-index data and over extensive periods of time. As more estimation procedures and larger data sets are used, there are of course more estimates. However, by examining the impact of different economic conditions, as well as the risk return relationship in the US and Canada, I can be confident that the current fair return is about 7.0% The methods provided the following fair return estimates:

Classic CAPM estimate:	**7.0%**
Two-factor model estimate:	**7.0%**

I put equal weight on both estimates[19] and judge that the required rate of return is 7.00%, which means a real return of about 5.00% with the breakeven inflation forecast of 2.0% consistent with the middle of the Bank of Canada's operating band. This 5.00% represents a real return only slightly less than that earned by the TSX Composite index as a whole since 1956. Note that in my Appendix E, Schedule 1, I estimate the real return on the TSE300 since 1956 at 10.14% minus inflation of 4.09% (arithmetic return estimates) or a real return of 6.15%, so awarding a slightly lower amount for a low risk utility seems reasonable.

Q. WHY HAVE YOU NOT ADJUSTED YOUR BETA ESTIMATES OR TAKEN INTO ACCOUNT THE HIGHER MARKET RISK PREMIUM IN THE US?

A. In terms of betas what matters is the forecast beta and as I showed earlier historic betas are affected by the underlying financial market conditions during the period in which they were estimated. These betas are also affected simply by measurement error, which was analysed by Marshall Blume.[20] Blume showed that since the average of all betas is 1.0 if we observe an

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[19] The fact that the estimates are the same stems from my estimates of 0.50 for market risk and 0.50 for interest rate risk. Different estimates would cause the two fair return estimates to differ.

[20] Marshall Blume "Betas and their regression tendencies," Journal of Finance, June 1975.

actual beta of say 0.50 for a randomly chosen stock in all likelihood it is low due to measurement error. As a result it is better to "squash" or average the actual beta with 1.0 to get a forecast beta, since it will "regress" or revert to its average value of 1.0. This is the basis of the beta adjustment formula used by people like Bloomberg, Merrill Lynch and others. However, this does not hold for utilities for the simple reason that they are not randomly chosen stocks whose beta is assumed to be 1.0. Instead we know that they are low risk with an average beta of about 0.50. As a result their regression tendency is that their beta will revert to their mean of 0.50. This is what Gombola and Kahl showed in the paper referenced in footnote 11. Consequently I prefer to look at the long run tendency of utility betas to see if there is any "regression" tendency and if so to where? I then prefer to use my judgement to assess a reasonable beta range.

In this respect it is important to note that Ms. McShane was asked to provide any citations to Canadian regulatory decisions that indicated reliance on adjusted betas. Her answer to CA-NP-16 was:

> (h) Ms. McShane is not aware of any Canadian decisions which have specifically relied on the adjustment methodology. It is widely accepted by U. S. regulators. As she indicated in her testimony, the methodology is a standard method for adjusting betas; it is consistent with the empirical evidence which shows that low (high) beta stocks have achieved higher (lower) returns than the simple CAPM model posits.

She could have pointed to the recent National Energy Board's TQM decision where they stated that they were not convinced that TQM had demonstrated that utility betas revert to 1.0, "an assumption on which adjusted betas rely." Since there is no empirical or theoretical evidence that utility betas revert to 1.0 and they have never been accepted by a Canadian regulator I fail to see why the Board should accept "adjusted betas"

In terms of the market risk premium I have already shown that the median estimate of the market risk premium by finance professors in Canada and the United States is 5.0% and 6.0% respectively. Moreover I show in Appendix D that integrating the Canadian with the US market should cause the market risk premium to decline rather than increase. As a result I look at the US experience simply as another estimate to judge the reasonableness of my estimate. However, it is worth pointing out two things:

- First, Ms McShane accepts the fact that US Treasuries are issued by the world's major reserve currency and are lower as a result, which logically means all else constant a higher US market risk premium since this is the equity return measured over those same bond returns. In answer to CA-NP-14 she states:

> (c) The U.S. Treasury yield may understate the "true" U.S. risk-free rate inasmuch as the U.S. dollar is the reserve currency and Treasuries are valued for their liquidity. Factors such as a flight to quality or a Treasury buy back of securities may increase the price investors are willing to pay (lowering the yield) for the liquidity value of U.S. Treasuries.

- Further what has to be remembered is that if we ignore Canada and treat the relevant market as the US, then risk has to be measured relative to that market, which means betas should be measured relative to the US market. In answer to CA-NP-23 Ms. McShane provided the following Canadian betas relative to the US market both with and without exchange rate adjustments:

Company	"Raw" Beta As Shown on Table 8 of Testimony	"Raw" Beta Vs. S&P 500	"Raw" Beta Vs. S&P 500 Adjusted For Exchange Rate
Canadian Utilities	0.41	0.27	0.25
Emera	0.38	0.31	0.22
Enbridge	0.56	0.49	0.40
Fortis	0.49	0.40	0.32
TransCanada	0.47	0.44	0.30
Median	**0.47**	**0.40**	**0.30**

The takeaway from this discussion is that it is inappropriate to rely on adjusted betas or use US market risk premium estimates without adjustments. If the US is believed to be a relevant proxy then US market risk premium estimates have to be lowered to apply in a Canadian context since they are estimated over the world's reserve currency, which Canada is not! Further if the US is used as the base then betas have to be measured relative to this base. If this is done Canadian betas fall from a median value of 0.47 (according to Ms. McShane) to 0.40 if we ignore currency fluctuations and 0.30 once we consider them.

I don't think it makes sense to do these adjustments since the application of lower betas (0.30) than my own recommended values (0.45-0.55) against a market risk premium estimate not much greater than my own results in a recommended fair return which I regard as being too low.

However, it is important not to "cherry pick" and instead be consistent in the application of finance principles.

Q. IS 7% YOUR RECOMMENDED ALLOWED RETURN?

A. No, regulated firms should be allowed to recover their issue costs in the allowed return in the same way that issue costs attached to debt are included in the embedded debt cost. The equity issue costs are made up of a number of components including in house costs, which are passed on as general administrative costs plus the costs paid the investment banker. These costs are made up of two kinds: the out of pocket reimbursement of expenses plus the under pricing of a new issue to ensure a successful offering. Overall these costs run up to 5.0% for a normal issue, although they can be smaller for larger issues since there are economies of scale.

The conventional way of working out the extra return that is required is to use the constant growth model and recognise that because of these costs the firm has to earn a higher return on its net proceeds than the nominal amount of stock that it has sold. For example, assuming a stock with a 4% expected dividend yield and 4% growth, the cost of equity is 8.0%, that is

$$K = \frac{d}{P} + g = 4.0\% + 4.0\%$$

However, if the firm only receives a net of 90% of the current stock price, that is, 10% issue costs then the equity cost is

$$K = \frac{d}{P} + g = \frac{4.0}{0.90}\% + 4.0\% = 8.44$$

which is 8.44% or 44 basis points more.

In the example, if the investor wants a fair return of 8%, the firm has to be allowed an 8.44% return on the net proceeds of 90% of the issue size. In this way 8.44% on 90% of the proceeds

provides the 8.0% return on the amount paid by the investor. Clearly, the higher the dividend yield component and the less growth, the higher the impact of the new issue costs. For example if the dividend payout is 100%, then the flotation cost allowance would be 88 basis points. This is because the firm, by definition, is being forced into more new issues than a firm that reinvests more.[21]

Once the tax deductibility of some of these costs is considered, a true "flotation or issue cost" allowance of less than 44 basis points is reasonable plus the out of pocket expenses. However, I normally add 50 basis points as a cushion to the direct estimates in line with this practice of many regulators. This is mainly to ensure that there is no dilution and stock prices are more variable than a 10% floatation cost allowance would indicate. Adding 0.50% to my estimates produces a fair ROE estimate of 7.50% for a 300 basis point utility risk premium over my 4.50% forecast long Canada bond yield.

Q. YOU PREVIOUSLY MENTIONED A MARGIN OF ERROR, WHAT DOES THIS MEAN?

A. My recommendation is based on estimates and these always have some measurement error attached to them. As I noted previously the Fernandez article has indicated to me that most Canadian finance professors use 5.0% or 6.0% for the market risk premium. So with a beta of 0.50 this means that in all likelihood another Canadian finance professor might have estimated a fair return 0.50% higher than my estimate. However, when I look at the betas for utilities, either individual companies or the utility sub indexes, it is difficult to see how anyone could estimate a beta for a Canadian utility higher than my .45-0.55 range. Adjusting for the Bell Canada effect we simply haven't seen betas consistently outside of this range for 20 years.

So overall I would indicate that the margin of error in my estimates might be 0.50% which means 7.50-8.0%. Taking the mid point I would recommend a fair ROE of 7.75%.

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[21] Note that with 5% issue costs, the idea is that the stock should sell at a market to book ratio of 1.053, so that it will net out book value on any new issue. With utility market to book ratios vastly in excess of 1.052 it is difficult to rationalise any flotation cost allowance, since it is unlikely that there will ever be any dilution.

Q. HOW CAN YOU SAY THAT THIS RECOMMENDATION IS FAIR GIVEN THE CURRENT YIELD ON "A" BONDS?

A. In Schedule 21 are the yields on Government of Canada and "A" and "BBB" bonds in Canada since 1987. Long term "A" bond yields were consistently above 7.0% from October 2008 until early May 2009 and at times very close to my fair return recommendation. Ms. McShane's evidence, for example, is dated May 2009 but was probably heavily influenced by these high A bond yields during the time of its preparation, since she states (Page 5)

> *"If the formula had been applied using long term government of Canada bond yield of 3.75% prevailing in mid-April 2009, the allowed ROE for Newfoundland Power would be only 8.3%, only 1.7 percentage points above the company's cost of long term debt."*

On April 17, 2009 the LTC yield was 3.73% and at that time the Scotia Capital index of A bonds yielded 7.16% for a spread of 3.4365% over LTC yields and only 1.17% below Ms. McShane;'s estimate of the formula ROE. By interpretation from Ms. McShane's numbers NP's debt was yielding 6.6%, much lower than a typical A bond, but still 285 bps (6.60%-3.75%) over LTC bond yields. This in itself is not unusual since there is a history of utility bonds yielding less in a recession than similar rated non-utility bonds.

However, the key question is whether these A spreads indicate that the ROE formula is "broken" in any way. At first blush it appears counter intuitive that the ROE is going down as borrowing costs are going up, since equities as the residual claimant on the firm are clearly riskier than bonds and demand a higher expected rate of return. However there lies the problem; the fair ROE is based on the CAPM and is equal to the investor's required rate of return and is an *expected* rate of return. In contrast, the yield on a bond is not an expected rate of return; instead it is a *promised* rate of return. As such promised rates of return can not be compared to expected rates of return unless the bonds are default-free, that is, issued by the Government of Canada. In this case since there is no default possibility the promised rate is also the rate the investor expects to receive. To see just how uninformative these promised yields are, note that on January 6, 2009 the New York Times reported that the promised yield on two year General Motors notes was 97.448%. It is highly unlikely that investors in GM's common shares have an expected return this high and of course GM went into bankruptcy (chapter 11) and never made the interest payments on these notes, let alone repaid them at full value.

To illustrate the problems suppose we take the simplest possible investment of a one year note; for convenience, the return is paid as interest at the end of the year. If a $1,000 note pays 10% interest and the current required rate of return is also 10% then it will sell at par. Suppose there is another note where there is a 10% possibility of default in which case the investor gets nothing. However, suppose the investor still wants a 10% required rate of return, that is, there is no risk premium attached to the possibility of default. In this case we have to find the promised rate of return on the note such that the investor gets a 90% chance of receiving the par value times one plus the promised return *(1,000*(1+R))* and a 10% chance of getting nothing. In effect we solve this problem:

$$\$1{,}000 = \frac{0.9 * (1{,}000 * (1+R)) + 0.1 * (0)}{(1.1)}$$

In words the investor expects to get the numerator and then discounts this expected payoff at one plus the required return, which is assumed to be the same as the risk-free rate on government bonds. Since we know all the information we can solve for the promised interest rate, which in this example is 22.2%. If we were calculating spreads of default risky bond yields over government bonds we would say that the spread was 1220 basis points! Yet by construction there is no risk premium and the investor wants the same expected rate of return as investing in the equivalent maturity government bond! This simple example demonstrates the fallacy in looking at promised yields on default risky bonds like corporate bonds and inferring risk premiums from them.

It is true in this example that changes in the risk of defaulting changes the promised yield. For example, if the probability of default increases to 20%, then the promised yield increases to 37.5%. However, in reality the promised yield also depends on the loss in default which is rarely the assumed 100%. If in the original example the expected loss is $500 or 50% of the principal then with a 10% default probability the promised yield is 16.67%. However, if the probability of loss now increases to 20% while the amount decreases to $300, the promised interest rate becomes 20%. In this case it is very difficult to disentangle the probability of loss from the amount that is expected to be lost.

Q. BUT DON'T INCREASING SPREADS IMPLY INCREASING RISK AS THE RESULT OF BOTH THE PROBABILITY OF LOSS AND THE AMOUNT EXPECTED TO BE LOST?

A. No, because there may in fact be a risk premium. In the example I assumed no risk premium and in practise it is very difficult to estimate one, but suppose in the example there is a 1% risk premium and a 20% default probability and $300 expected loss. The promised interest rate now becomes 22.5%. Note that a 1% increase in the risk premium becomes a 2.25% increase in the promised interest rate. This is because the risk premium is only earned when the bond does not default as a result it has to be "grossed up." This also means that spreads on more risky bonds increase more when risk premiums increase. This is part of the reason why BBB spreads are usually much more volatile than A spreads: when the economy slows the probability of default increases, the loss usually increases and any impact of increasing risk premiums is thereby magnified.

The result of these factors is that increasing spreads could be caused by increases in default probabilities, increasing expected losses or increasing risk premiums. Ascribing all of the impact of increasing A spreads to larger risk premiums on bonds and then implying that risk premiums on equities have also increased is simply not correct.

Q. BUT DOESN'T THE FACT THAT SPREADS HAVE INCREASED MEAN THAT EITHER RISK OR RISK PREMIUMS HAVE INCREASED?

A. No. A critical fact about bonds is that they can differ across the same issuer. For example, usually there will only be one or two classes of equities issued by a firm. However, the same firm might have several different medium term note issues outstanding as well as some mortgage bonds and even some trust preferred securities. Moreover many of these issues will have been issued under a single trust certificate and thus have differing maturities. The result is that a firm's outstanding debt is split among many different pieces of debt with different characteristics. This makes each of them a separate security and reduces their liquidity.

The following table gives the trading of the major classes of bonds in Canada.

TABLE 1
Turnover in the bond market

Year	Canadas	Corporates	Provincials*
1995	0.244	0.012	0.020
1996	0.303	0.010	0.022
1997	0.317	0.012	0.018
1998	0.270	0.014	0.024
1999	0.202	0.013	0.027
2000	0.195	0.014	0.022
2001	0.236	0.014	0.024
2002	0.236	0.017	0.024
2003	0.263	0.016	0.023

NOTE: Turnover is defined as the annual average based on weekly trading volume divided by the outstanding stock of bonds.
*Provincials include municipal bonds.
SOURCE: Chouinard and Lalani (2002) updated for 2002 and 2003.

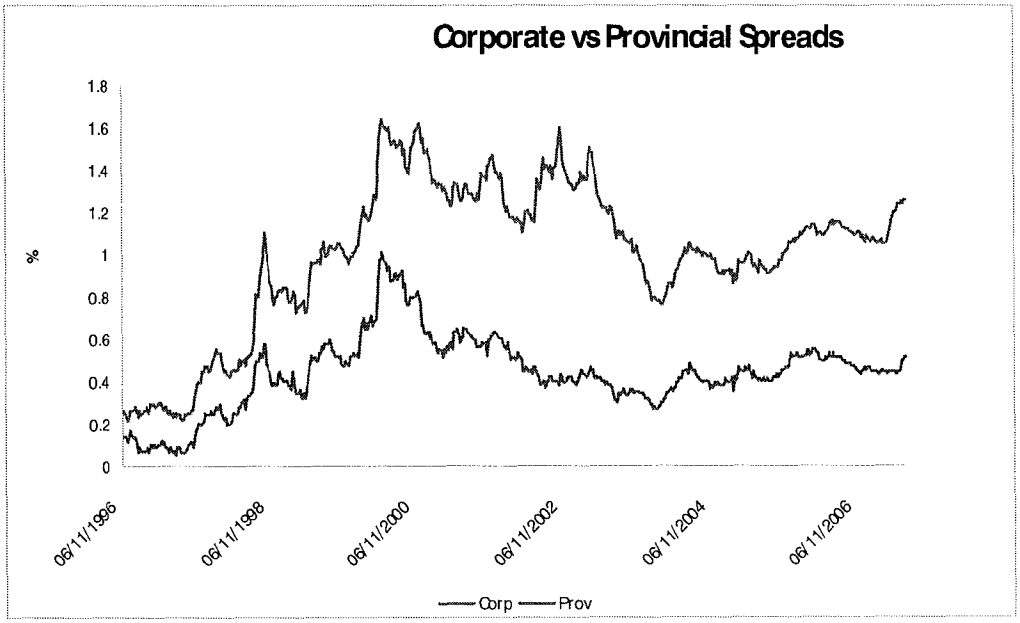
The important point to note is that bonds issued by the Government of Canada are many times more liquid than either bonds issued by the major provinces or corporate bonds. Even here the Bank of Canada has taken serious efforts to create liquidity in the major "benchmark" bonds by buying "off the run" relatively illiquid bonds and issuing more liquid benchmark bonds. The fact that the Bank of Canada has had to do this even for Government of Canada bonds indicates that the illiquidity problems in corporate and provincial bonds are of a different order of magnitude.

Liquidity affects the pricing of securities, since it affects the ability of the investor to sell their investment should they suddenly need cash or if the investment no longer remains suitable for them. Liquidity is manifested in the bid-ask prices the dealer quotes for the security and the amounts that can be sold at those prices. For example a liquid security may be quoted at 49(100) - 51(100) meaning that either 100 round lots (10,000 shares normally) would be bought or sold at those prices. A less liquid security might then face a quote of 45(10) - 55 (10) meaning 10 lots could be sold for 45 and 10 are available for sale at 55.

The problem in the quotes is that if an investor buys a liquid stock and then has to sell at the "same" price shortly after, they would buy at $51 and sell at $49 incurring a $2 transaction cost. In contrast buying the illiquid security and similarly selling would mean buying for $55 and then selling for $45 or incurring a $10 transaction cost. Clearly the illiquid security poses higher costs on the investor so that any investor worried about reselling a security would require a higher rate of return for investing in more illiquid securities.

The illiquidity premium is well accepted in finance. For equities it is known as the small firm effect, since illiquidity is directly related to the size of the firm through its public float of shares. It is also well accepted in the bond market. Amihud and Mendelson[22] in a classic study of the US government securities markets noted that the bid-ask spread, that is the buy and sell prices, for a US$1 million transaction in US Treasury Bills was 1/128th of a point plus a brokerage fee of $12.5–25 per million. In contrast, a similar-sized transaction in Treasury Notes had a 1/32 spread plus a brokerage fee of $78.125 per million. The discounted value of these future differential transactions cost is then impounded in market prices to cause liquidity or transactions cost spreads between different US government securities, where there is ***no*** default or rescheduling risk at all.

Similar effects have been noticed in the spreads for government guaranteed notes where even though they are guaranteed by the government they sell on higher spreads. Another example are the spreads on provincial debt issuers. As noted above provincial debt issues are more liquid than corporate debt, but still nowhere near as liquid as Government of Canada debt issues. The following graph indicates the spreads on provincial and corporate debt issues since "government" in Canada started to move into surplus.



[22] Y Amihud and H. Mendelson, 1991, "Liquidity, maturity and the yields on government securities," Journal of Finance 46, 1411-25.

The important point is that corporate spreads increased in the slowdown in the early 2000's as this is a normal cyclical phenomena. However, note that provincial spreads did as well, even though by then "government" in Canada was in a surplus position and there could have been little serious "bankruptcy" risk attached to investing in the issues of any Canadian province. Over this period the spread range for the corporate bonds was 0.21-1.64% and that for the provincial bonds 0.05-1.01% and the average spreads were 1.0% and 0.44% respectively. In my judgement this data indicates that most of the volatility in the provincial spread was caused by liquidity changes in the market, which by implication was also the cause of much of the change in the corporate spreads.

Q. WHY DOES LIQUIDITY CHANGE?

A. Apart from being related to the size of an issue, liquidity is closely related to the business cycle. Liquidity depends on investors being confident in what they are buying and understanding the risks. When something happens to cast doubt on these issues liquidity drops. As David Longworth, Deputy Governor of the Bank of Canada, said in a speech to the Investment Industry Association of Canada[23] on October, 2, 2007, "Because of this lack of transparency, uncertainty among market participants began to build in early August, and perceptions of counterparty risk rose. Bid/ask spreads widened, market depth diminished, and market liquidity evaporated."

Governor Longworth's remarks were in connection with the initial liquidity crisis associated with the freeze in the asset backed commercial paper market. At that time liquidity disappeared in the sub prime mortgage backed securities market and promised yields reached astronomical levels as there were no buyers or sellers the rates were largely meaningless. With the collapse of Lehman Brothers and the freeze in credit markets around the world we have already seen that commercial paper and banker's acceptance rates sky rocketed as did longer term bond spreads. In each case liquidity was a major factor, if not ***the*** factor: buyers and sellers simply stopped trading and as liquidity dropped spreads increased. As Governor Longworth also indicated market depth also diminished meaning that very little could be traded, in this respect it is

[23] See the Bank of Canada's web site at http://www.bankofcanada.ca/en/speeches/2007/sp07-18.html

important to remember that bonds are large denomination securities and when an institution wants to sell out, market depth is critical.

Q. HOW CAN YOU DISENTANGLE ALL THESE EFFECTS ON BOND SPREADS?

A. Generally you can't which is why it is so difficult to estimate the impact of liquidity: sometimes it is there and then sometimes it is not. Moreover, as before the lower the grade of the bond the greater the impact of any liquidity spreads or risk premiums. To illustrate once we include a possible risk premium and liquidity spread into bond pricing, a single period bond selling at issue at par would be priced as

$$Par = \frac{(1-P)(Par*(1+R))+P*(Par-loss)}{(1+K+l+\alpha)}$$

where P is the default probability, *loss* the loss when the bond defaults, K the yield on the equivalent maturity Canada bond, l the liquidity premium and α the risk premium. With estimates of all these parameters we can determine the promised interest rate on the default risky bond.

For example for a provincial bond with a miniscule risk of default say 0.1% where the loss is only say $20 due to rescheduling, if the Canada yield is 10% then without any liquidity premium the promised yield would be 10.012% and the spread 1.2 basis points. The fact that actual provincial spreads never get this low indicates that either the default risk and loss is considerably higher or that liquidity as indicated above is a reality. If the liquidity spread is 0.25% then this bond instead would have a promised yield of 10.263% or an overall spread of 26.3 basis points, which is consistent with the good economy data above.[24]

For a corporate bond with a 1.5% default risk where $350 might be lost the promised yield rises to 10.68% or a 68 basis point spread. If the liquidity spread is 0.35%, or 0.1% more than the provincial spread because corporate bonds are less liquid, then the promised yield rises to

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[24] Note that the example is not explaining the spreads but simply indicating how they could be determined. Actual bonds have multiple cash flows over longer time periods, which increases the default probabilities.

11.07% and the spread 107 basis points. If we add a 10 basis point risk premium the promised yield rises to 11.14% and we get a 114 basis point spread. This might be regarded as the typical spread for a A corporate bond in reasonably good economic times.

Now what happens as the economy sours and investors rush to the safety of government bonds? First, the probability of default goes up, second the loss in default increases as well since asset resale values fall in a recession, third liquidity dries up so the liquidity premium rises and finally the risk premium ***might*** go up. We have already seen that the spread on provincial bonds increased from a good economy level of about 30 basis points to 101 in the slowdown in the early 2000s. So suppose we increase the corporate liquidity premium by 71 basis points plus another 54 or 1.25% in total to reflect the much more severe current crisis. This means an overall 1.60% liquidity spread. The risk of default for A rated bonds is not very high to start with, so suppose for example it increases from say 1.50% to 3.0% and the possible loss from $350 to $450. In this example the promised yield increases to 13.45% and the spread jumps to 345 basis points, which is about where A spreads actually are at the moment.

The point of the above example is that the A spread jumped from 107 basis points to 345 and mimicked the increase in A spreads recently experienced without any increase in the risk premium required for investing in bonds. If the risk premium increases by 20 basis points to 30, then the promised yield would then jump to 13.66% and the spread 366 basis points.

Note that this example also highlights the fact that bonds can have a relatively low default probability, 3% in the recession scenario above, and yet spreads still balloon in a recession and liquidity crisis. It was just such a very minor increase in default risk attached to asset backed commercial paper that saw that market totally freeze in July 2007. The fact is that for investment grade securities the probability of default is very low to start out with so spreads can increase dramatically as the economy weakens. Moreover this can all happen even if there is barely any change in the risk profile of the firm.[25]

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[25] To emphasise again, during a recession an asset fire sale means that the loss on a defaulting firm is greater than in a boom time. As a result spreads can widen even if there is no increased risk, no increased liquidity premium and no increased risk premium.

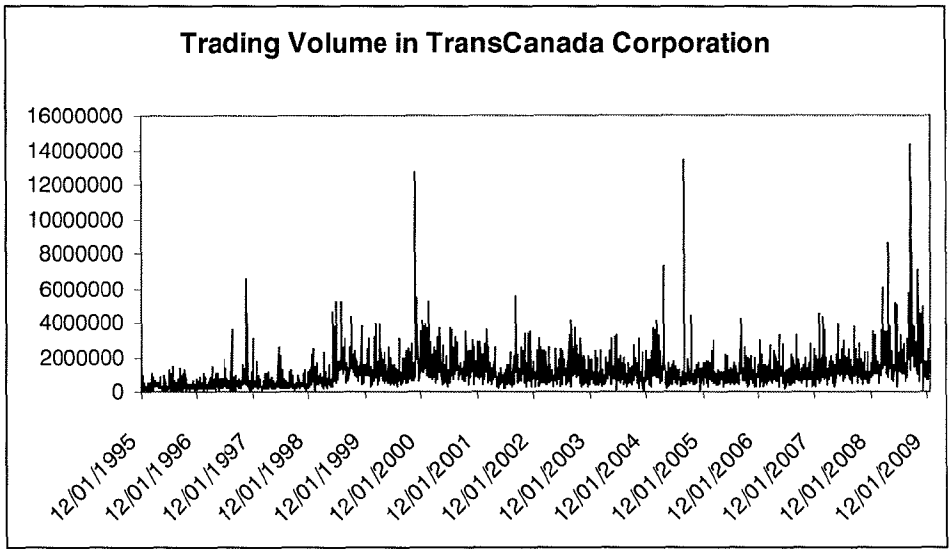
For the above reasons my recommendation is to ignore the impact of any increases in bond yield spreads on the ROE, since they do not indicate that the risk premium attached to investing in bonds has increased. In my judgement a significant part of the increase in "A" spreads was caused by the major banks liquidating their bond inventories in order to raise capital and survive, particularly in the US. The reduction in principal or proprietary trading in the Fall meant that liquidity in the bond market shrunk dramatically. I suspect that it is not an accident that the collapse in A spreads since March has coincided with the major US banks passing their stress tests, raising capital and getting back to business. Regardless, the panic in the bond market has passed and spreads are now back to the level that are typical of serious recession rather than the levels of a few months ago that suggested that the "sky is falling." Further declines in spreads will happen as the economy rights itself since this is a natural part of the business cycle.

Of importance is that as of August 7 the generic A bonds in Scotia capital's index yielded 5.96% and those in its LTC index 4.20% for a spread of 177 bps down from the 344 bps at the time Ms. McShane prepared her evidence. If NP's bonds continue to trade at 60 bps less than the Scotia Index this means that they are currently trading at 117 bps or about 5.37%. This would now be almost 4% below the 8.3% estimated as the formula ROE for NP. However, since the LTC yield has increased from 3.75% to 4.20% this 45 bps increase would also push up the allowed ROE. Regardless, what is absolutely clear is that the financial market conditions that motivated Ms. McShane's critique of the ROE formula are now history as normal market conditions have asserted themselves.

It is also worth mentioning that equity and bond investors often "march to different drummers." The corporate bond market is almost entirely institutional with major purchasers being the life insurance companies, pension funds and bond funds. In contrast, the equity market still has a major retail component with a much more varied mix of investors. The result is that in crises like the one at present there is usually more trading and liquidity in the equity market, since there is a more diverse set of investors and more disagreement as to where the market is going.

The following chart gives the daily trading volume in TransCanada Corporation's (and predecessor companies) common equity since 1996. I chose to look at Transcanada since it is one of Canada's biggest utilities (pipes) and has a long trading history. There are occasional

spikes as large blocks are traded, but it is quite clear that there has been ***increased*** trading activity during the financial crisis and *greater* market liquidity, just as there was in the slowdown in the early 2000s.



This is also borne out by the following market statistics reported by the TSX. In their monthly Ereview for December 2008 the TSX reported that trading volume reached an all time record of 109 billion shares traded for a market value of $1.8 trillion resulting from 1.8 billion trades.

	Volume(Millions)				Value ($ Millions)				Trades (1000s
	Total	Industrial	Mines	Oil	Total	Industrial	Mines	Oil	Total
1992	7326	4741	1481	1104	76161	64737	7022	4402	3504
1993	14882	8606	3536	2740	147055	108448	21915	16692	5985
1994	15460	9808	3520	2131	182202	136464	26970	18768	5533
1995	15758	9911	3523	2324	207665	159888	30726	17052	6068
1996	22341	11614	7329	3398	301299	208355	65364	27581	9186
1997	25670	15227	6332	4111	423170	337412	43537	42221	11143
1998	26765	17907	5082	3776	493212	424424	37290	31498	12463
1999	29280	18850	6382	4048	529004	463599	31777	33628	17268
2000	40752	29248	6693	4811	944254	865792	26581	51881	32775
2001	37190	27646	4065	5480	712515	598379	28580	85556	26155
2002	46351	33119	9800	3433	637709	529671	62387	45651	26541
2003	55563	35125	15001	5437	648654	511292	71110	66252	30894
2004	61278	37218	16852	7208	833907	626848	90620	116439	40267
2005	64167	34396	18236	11535	1075214	733941	112490	228782	55158
2006	82050	35679	32906	13466	1416069	758352	315529	342187	85652
2007	96109	40627	40889	14593	1697185	963021	408527	325637	118578
2008	109240	48673	40238	20328	1853162	1001703	446982	404478	182902

It is quite obvious that unlike the fixed income market where there have been and always are serious liquidity problems during a recession and consequent flights to quality, no such liquidity problems are apparent in the equity market. As a result, ***rewarding equity holders with a higher***

ROE as a result of temporary liquidity problems in the bond market does not have any economic justification.

Q. DOESN'T THE INCREASE IN SPREADS MEAN ANYTHING FOR THE EQUITY COST?

A. Professor Aswath Damadoran at New York University has written a series of textbooks concerned with valuation as well as a recent paper on the equity risk premium.[26] The following is his Table 15 from this recent paper where he estimates the equity risk premium (market risk Premium) for the US.

Table 15: Equity Risk Premium (ERP) for the United States

Approach Used	*ERP*	*Additional information*
Survey: CFOs	3.80%	Campbell and Harvey survey of CFOs (2008)
Survey: Global Fund Managers	3.80%	Merrill Lynch (July 2008) survey of global managers
Historical - US	4.79%	Geometric average - Stocks over T.Bonds: 1928-2007
Historical – Multiple Equity Markets	4.04%	Average premium across 17 markets: Dimson, Marsh and Staunton (2008)
Current Implied premium	4.54%	From S&P 500 – 9/14/08
Average Implied premium	3.98%	Average of implied equity risk premium: 1960-2007
Implied premium adjusted for T.Bond rate and term structure	3.12%	Using regression of implied premium on T.Bond rate
Default spread based premium	3.80%	Default Spread * (ERP/ Default Spread average)

Professor Damodoran lists survey data of CFOs and Fund managers, historic estimates similar to mine in Appendix F, implied estimates using cash flow models both with and without adjustments for bond market spreads and an estimate based on default spreads.

[26] A. Damodaran, "Equity Risk Premium (ERP), Determination, Estimation and Implication," Stern School, NYU, October 2008.

There are two important insights from his table. First, the range of his estimates is from 3.12%-4.54% and all are lower than my estimate of 5.0% with a margin of error. However, more importantly he has a model that estimates the market risk premium which incorporates default or corporate bond spreads. Damodaran estimates the ERP by looking at the relationship between implied market risk premium estimates and the default spread on BBB bonds from 1960-2007. He estimates the market risk premium at 2.02 times the default spread on BBB bonds. Applying this to the recent spike in spreads would indicate that the market risk premium at its peak was over 9.0% and well above its long run average. Conversely with the latest BBB spread in Canada (August 6, 2009) at 2.40% this would put the current market risk premium at just under my 5.0% market risk premium estimate. Even though I do not agree with bringing all this volatility into allowed ROE's Professor Damodaran's use of default spreads would confirm the general fairness of my recommendations.

V. REASONABLENESS OF THE ESTIMATES

Q. YOUR RECOMMENDED FAIR ROE IS LOWER THAN THE COMPANY'S REQUESTED ROE. DO YOU HAVE ANY CORROBORATING EVIDENCE?

A. Yes. The utility risk premium is driven by the relative risk coefficient and the market risk premium. Usually there is less disagreement about the relative risk of utilities, since UHCs are clearly less risky than the overall market and the actual ROE regulated operations are even less risky still. So the major driver of disagreements between different experts tends either to be extraneous evidence such as "comparable earnings" or the size of the market risk premium. Here the market risk premium is often termed the equity risk premium, since much of the literature comes from pension funds and the like that are concerned with the allocation decision between "equities," bonds and money market instruments.

In considering the market risk premium it first has to be pointed out that the size of the equity risk premium is usually estimated from historic data where in the U.S. it has been pegged at around 6.00% using the Ibbotson et al data. This became very controversial when people started doing simple tests of "reasonableness." For example, in Schedule 22 is a simple future value chart showing how one dollar compounds at 6.00%, 10.5% and 12.0%. By year thirty, an investment at 6.0% would have grown to $5.74 whereas an investment at 10% would have grown to $19.99 and an investment at 12% to $29.96. These are staggeringly large premiums for the 10 and 12% returns that proxy for the equity market versus a lower "bond" market return, which leads to the natural question of how risk averse do people have to be in order to require these huge premiums. Mehra and Prescott[27] argued that the degree of risk aversion was unreasonably high. As Siegel[28] points out, "the historical (equity) return has been too high in relation to the return on risk-free assets to be explained by the standard economic models of risk and return without involving unreasonably high levels of risk aversion." The high earned returns phenomenon is now known as the "Equity Risk Premium Puzzle," since people have been at a loss to understand the historic U.S. record.

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[27] R. Mehra and E. Prescott, "The Equity Premium Puzzle," *Journal of Monetary Economics*, (March 1985)

[28] Jeremy Siegel, "The Shrinking Equity Premium," *Journal of Portfolio Management*, (Fall 1999).

There have been two major approaches to explaining the puzzle. First, Siegel showed that the US results are time specific. He estimates the following risk premium estimates over long bonds:

	Geometric[29]	Arithmetic	Real Return
1802-1998	3.5	4.7	3.5
1802-1871	2.2	3.2	4.8
1871-1925	2.9	4.0	3.7
1926-1998	5.2	6.7	2.2
1946-1998	6.5	7.3	1.3

From the above data there seems to be a U.S. market risk premium of 6.7-7.3% from 1926 until 1998, which is the type of data that used to be presented by company witnesses in rate hearings. However, as the time period is lengthened, the equity risk premium drops significantly. For the longest available period the equity risk premium in the U.S. is only 4.7% using arithmetic returns. This leads to the question of why so much reliance is placed on US data since 1926?

The answer to this question is that Fisher and Lorie[30] of the University of Chicago started the data-base at 1926 simply to capture the huge run up in stock prices prior to the Great Crash of 1929. Further their original data-base is the foundation for most of the subsequent capital market data and research. If they had used all of the data that was available to them at the time, subsequent US market risk premium estimates, as Siegel shows, would have been much lower. So part of the US equity market risk premium puzzle is simply a biased starting date.

The final column of Siegel's table shows the real return on Treasury Bonds (Nominal minus actual inflation). Over the whole period the actual real return has been 3.5%, but over the periods since 1926 and 1946 it has been only 2.2% and 1.3% respectively. This is the root of the puzzle, not that equity returns have been so large but that bond returns have been so low for such a long period of time. This is the theme of Appendices E & F of my testimony, that the enormous increase and volatility of interest rates in the post war period has lead to unreasonably low realised bond returns.

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[29] The difference between arithmetic and geometric returns is discussed at length in my Appendix E.

[30] L. Fisher and J. Lorie, "Rates of Return on Investments in Common Stocks," *Journal of Business*, 37-1, 1964.

The second way of resolving the puzzle has been to estimate a forward looking model using the discounted cash flow (DCF) model to estimate the equity return and then subtract the long bond yield. In most applications the Gordon constant growth model[31] is used where the equity cost is the forecast dividend yield (expected dividend d_1 divided by current share price P) plus the expected capital gain or growth yield (g).

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

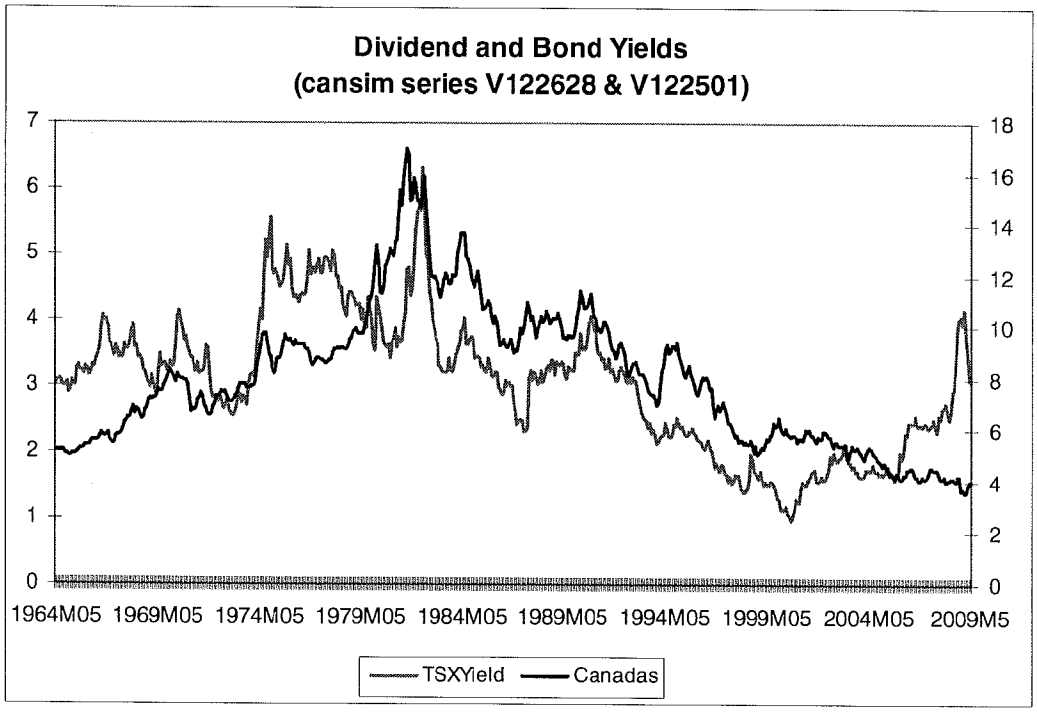
Q. DO YOU PROVIDE A DCF ESTIMATE?

A. My Appendix C presents data for all US utilities followed by Standard and Poors as well as the electric and gas utilities. This data is used to estimate a DCF required rate of return that is then subtracted from the ten year US government bond yield to estimate the utility risk premium appropriate for these U.S. utilities. This estimate of the utility risk premium is that it has been in a range 2.21-2.68% over ten year US Treasury bond yields based on average and median values. This is supported by the increase in the market to book ratios of these companies indicating that the market has been paying higher and higher prices for the same stream of utility earnings. That is, the required rate of return has fallen faster than allowed rates of return.

However, to be conservative, I have also estimated the utility risk premium assuming generally both a higher return on equity and a higher retention rate than has actually been the case. These adjustments tend to increase the forecast growth rate and also the utility risk premium to up to 2.96%. The highest of these estimates would broadly confirm the risk premium estimates from the one and two factor models, since if the risk premiums are valid for Canada, they would imply a fair return of 7.50% (long Canada yield forecast of 4.50% plus the 2.96% risk premium) to which the 0.50% flotation cost would be added. This is slightly higher than my direct estimates from the CAPM and two factor models, but needs adjusting for the yield gap between ten and 30 year debt yields but indicates that the estimates are in the right ball-park.

[31] Developed in Appendix C.

We can also look at the DCF estimate for the Canadian market as a whole, where the following chart indicates just how closely the yield on the TSX Composite tracked the yield on the long Canada bond. Until recently they moved very closely together but for the last few years the yield on the TSX has increased for two reasons. First, the yield increased when income trusts were added to the TSX Composite index in 2006. Second and even more important, the yield is based on trailing dividends and has spiked as a result of the enormous collapse in equity prices in 2008.



At the time of preparing Ms. McShane's evidence the dividend yield on the TSX was just below the 4.2% (left hand scale) level it peaked at in early March when the equity market bottomed out. She claims (Evidence page 12) that the high dividend yield is "signalling an increase in the cost of equity." This was probably partly true but the high yield also reflected the equity market sell off due to lower forecasted earnings, which always happens as we enter recessions. Again this is a debatable point, but what is not debatable is that the Canadian equity market has rebounded from its March 9, 2009 low of 7,566.95 to recently close at 11,046.93 or a phenomenal 46% higher in just five months! This has driven the dividend yield down to 3.09% or a drop of 1.10%. If Ms. McShane's analysis is correct her fair ROE estimates should now be lower by a similar amount.

For individual firms there is a huge forecasting error attached to estimating growth rates, but for the market as a whole there is less error. This is because many of the gains made by some firms are at the expense of other firms. Holding a diversified portfolio removes this risk and leaves the investor exposed to the overall level of profits and dividends. At the economy level there is then a constraint on how much of the national income (GDP) can go to profits, since as the profit share increases it does so at the expense of personal incomes, which in turn leads to higher wage demands.

In Schedule 7 I provided a graph of annual pre-tax corporate profits as a share of GDP. In Schedules 23 is the dividend payout based on the earnings and dividends of the TSX Composite firms where both are adjusted to their index weights. Typically dividend payouts have been about 50% for these large firms with a slight downward trend, except for the undefined payouts in the early 1990s and in 2002 when huge corporate losses caused the payouts to be negative, that is, positive dividends paid out of negative earnings. One of the problems with the data in Schedule 23 is that it is drawn from accounting statements, so that the losses in 2002 for example, were not cash losses but simply the write-off of bad acquisitions made primarily by Nortel and JDS Uniphase.

Schedule 24 graphs dividends and after tax profits as a percentage of GDP where the after tax profits are those reported for tax purposes and do not reflect all the accounting games that go into GAAP profits. As is to be expected, aggregate dividends are more stable than aggregate after tax profits. While profits plummeted during the recessions in 1981, the early 1990s and marginally in the early 2000s the effect is not nearly as pronounced as indicated by Schedule 24. In fact it is quite clear that the losses in 2002 were not widespread, nor reflective of true operating earnings.

From Schedule 24 dividends on average have been 2.4% of GDP since 1961 and after tax corporate profits 6.4%, but much more variable. Recently dividends have been above this long run average at 2.74%, but corporate profits have dropped precipitously and at 5.96% are now below their long run average reflecting the impact of the recession.

Corporate profits tend to peak at around 7-8% of GDP at the top of the economic cycle and then fall back, but this time strong commodity prices lead to record profit levels. Dividends are more stable and rarely exceed 3.0% of GDP as firms don't like to cut their dividends. It is hard not to

conclude from this data that in the long-run, dividends and after tax profits grow at about the same rate as the overall economy, but that periodically growth is faster or slower than this due to the stage in the business cycle. Given that the average real Canadian growth rate since 1961 has been about 3.53%[32] and the Bank of Canada's operating band for inflation centres on 2.0%, this implies a long-run growth rate in dividends and earnings at about 5.60% (1.02*1.0353). If this long run growth rate is added to the current dividend yield on the TSX of 3.09% the DCF estimate is just under 10.0%. This is probably a minor over estimate since dividends are unlikely to grow significantly over the next few years.

Schedule 25 shows the dividend payout of the aggregate dividends from aggregate after tax profits. Again the recessions of the early 1980's, 1990s are clearly evident, although not the slowdown of the early 2000's. However it is obvious from this aggregate data that the aggregate payout is closer to 40%, implying a 60% retention rate.[33] With a normal corporate ROE of about 10% from Schedule 1 and retention rates of 50-60%, this would imply aggregate dividend growth rates of 5.0%-6.0% (*b*ROE*), which approximates the previously estimated nominal GDP growth rate. This reinforces the reasonableness of the aggregate growth assumption and the DCF estimate for the market as a whole of just under 10.0%%.

With a forecast long Canada bond yield of 4.50% this DCF estimate for the market as a whole is broadly consistent with my best estimate of the market risk premium of 5.0%.

Of note are two independent estimates of the Canadian market risk premium by industry professionals. The first was a recent report by TD Economics (January 2006) "rates of return for the long haul," which estimated long run rates of return at cash (T. Bills) 4.40%, long bonds 5.60% and common equities 7.30-7.80%. The 7.30% lower end to the range came from looking at long run earnings and dividend growth in Canada and the top end from the US. This recent TD estimate confirms the observation of many that Canadian risk premiums are lower than in the US and that my DCF estimate for the market as a whole is ***high*** compared to TD's estimate of 7.30-7.80%.

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[32] The Bank of Canada pegs Canada's potential GDP growth rate as lower than this at about 2.80%.
[33] The recent payouts have been about 25% since profits have been inflated by the high commodity prices.

The second was a report by Rajiv Silgardo, the chief investment officer of Barclays Global Investors Canada Ltd, who in a summary published in the Canadian Investment Review (Summer 2003) reported the following equity market risk premiums:

Canada	US	UK	Japan	Aus	Europe
3.75%	4.50	5.75	2.50	4.50	5.00

Mr. Silgado estimated the equity risk premiums by using a modified growth model, but the critical points again are a lower equity market risk premium in Canada than the US and the much lower level of equity market risk premiums than those used by company experts.

The above types of analyses are not specific to Canada. Arnott and Ryan,[34] two finance "professionals," that is, non-academics, estimated the real growth rate in US dividends at 1.0% from 1926-1999. This is well below the real growth rate in US GDP, implying that US aggregate dividends grow at a slower rate than the corresponding values for Canada. They also produced the following table for international growth rates from 1969-1999:

Arnot and Ryan DPS and EPS Growth Rates

	US	Canada	UK	Japan
Real GDP	2.3%	2.9%	2.1%	1.6%
Real EPS	1.4%	-2.2%	1.3%	-3.4%
Real DPS	1.3%	-0.9%	2.2%	-1.6%
Average	1.3%	-1.5%	1.7%	-2.5%

This data shows more pessimistic growth rates than the earlier Canadian data alone, since the time horizon is shorter. It is possible to make dividends grow faster than earnings by companies increasing their dividend payout, which is what happened in the UK. However, across all these major economies, the Arnott and Ryan data indicates that corporate profits and dividends have not kept up with GDP and that the average GDP growth rate is much less than the 3.53% used above for Canada.

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[34] R. Arnott and R. Ryan, "The Death of the Risk Premium," *Journal of Portfolio Management* (Spring 2000).

Arnott and Ryan argued that the actual returns on the U.S. equity market came from a reduction in the required rate of return. As the investor reduces the required rate of return, market prices increase causing a change in the valuation of the same dividend or earnings stream. They show that 2.0% of the U.S. real equity return came from this change in the basis of valuation and make the obvious point that this cannot continue forever. They conclude

> "More important still, our 3.2% outlook for real returns falls short of the real return available in inflation-indexed government guaranteed bonds. For the first time in U.S. capital markets history, the equity risk premium is probably negative, barring some very aggressive assumptions regarding economic growth and the share of growth that makes its way to the investor in today's enterprises."

Of note is that both the S&P500 and the DJIA are essentially at the same level now as when Arnott and Ryan were writing indicating that in fact no risk premium has been earned. So in that sense they were right. Regardless, I am not as pessimistic as Arnott and Ryan are for the US, since I think you have to take a longer historic perspective and account for other factors, but their estimates are typical of the sorts of estimates that have been circulating in the capital market for some time. It is also clear that a DCF model results in required return estimates considerably below the actual realised equity returns earned since 1926, which again reflects the very high ex post, that is, after the fact returns that have been experienced in the equity market.

I also have to point out that these estimates have not been severely impacted by the current credit crunch. In a recent Investment Strategy report (October 22, 2008), just as the market was crashing the Royal Bank of Canada stated

> **"The US equity market is now priced to deliver total annualized returns of about 7.4% per annum over the next ten years."**

RBC went on to track ten year future returns based on the trailing price to normalised earnings ratio (PE).

Price-Normalized Earnings	Expected Price Return	95% Confidence Interval Low	High
5	8.1	(2.4)	18.5
10	4.0	(6.5)	14.5
15	1.6	(8.8)	12.1
20	(0.1)	(10.5)	10.4
25	(1.4)	(11.8)	9.1
30	(2.4)	(12.9)	8.0
35	(3.3)	(13.8)	7.1
40	(4.1)	(14.6)	6.3
45	(4.8)	(15.3)	5.6
50	(5.4)	(15.9)	5.0
55	(6.0)	(16.5)	4.5

What the chart indicates is that investing at a time when the PE ratio is low gives higher future returns, and the highest ten year average return for the US market is 8.1%. Currently, with the relatively depressed state of the US equity market, future ten year returns are at the high end of the scale, but still well within range of my overall estimates for Canada of less than 10%.

Finally I would note that NP's pension plan is valued by Mercer and they have to make an assessment of long run returns to value the pension plans and determine any unfunded liability. Pension plan funding is often murkey and the rules archaic. However, in answer to CA-NP-26 NP provided the following assumptions used by Mercer,

(a) Table 1 shows the long term expected returns for the asset classes listed on page 15 of the Mercer Report.

Table 1
Long Term Expected Returns

Asset Class	Long Term Expected Return
Canadian Equities	8.50%
US Equities	8.50%
Non-North American Equities	8.50%
Fixed Income	4.40%
Cash and short term	1.90%

Note that Mercer is assuming a long run equity market return of 8.50% compared to 4.40% for fixed income which presumably includes GOC debt plus some corporate and provincial debt. This implies a market risk premium of 4.10%. In my judgment this under estimates the market risk premium since Mercer's long run equity return is probably closer to the geometric than the arithmetic return, and the fixed income probably includes some non-GOC debt. However, it indicates that the finance (actuarial) professionals hired by NP have views quite close to my own.

Q. DO YOU HAVE ANY ANALYSTS' "FORWARD LOOKING" ESTIMATES?

A. No. It is generally accepted that analysts' earnings forecasts are biased high. There was increasing concern that with the decline in fixed commissions, security analysts were not getting paid for the quality of their research. Instead, analysts were receiving a share of investment banking fees stemming from corporate underwritings and mergers and acquisitions. In such an environment it was difficult for an analyst to be objective with their earnings forecasts or place a sell order on a stock. To do so would cut the analyst's firm off from future underwritings. Consequently they had effectively become part of the sales team for equities. This conflict of interest was most evident in the Internet and Technology fiascos of the late 1990s, when prominent analysts issued strong buy recommendations on the way up and kept them in place on the way down and got sued in the process.

A Wall Street Journal article (29/4/2003) dealt with the US$1.4 billion settlement between US Attorney General for New York Elliot Spitzer and a series of major US investment banks. Apart from the settlement, two analysts Jack Grubman of Salomon and Henry Blodget of Merrill

Lynch were both charged with issuing fraudulent research reports and agreed to pay penalties of $15 million and $4 million, respectively; they were also banned from the securities business for life. In addition, the following extracts from the WSJ article indicate that there was widespread lack of objectivity in analyst reports. From these admissions, it was quite general for analyst pay to be tied to investment banking business, so their reports were optimistic to please corporate management and pave the way for investment banking business and fees for the analyst's firm.

- The SEC singled out former star technology-industry banker Frank Quattrone of CSFB[35] for criticism for his role in directing analysts' coverage to win investment-banking business
- The SEC charged that CSFB issued fraudulent research on two stocks, Digital Impact Inc. and Synopsis Inc.; produced misleading research on Numerical Technologies Inc., Agilent Technologies Inc. and Winstar Communications
- Merrill Lynch was charged with fraud for its research on GoTo.Com and InfoSpace Inc. and for making exaggerated statements about certain stocks,
- The SEC said that J. P Morgan paid its analysts based in part on the amount of investment-banking business they brought in.
- Regulators found that analysts at Goldman Sachs were also paid in part based on their participation in investment banking-related activities.
- At UBS Warburg, regulators charged that six research analysts were promised "investment-banking bonuses" based on the investment-banking fees they helped win,
- Two Paine Webber analysts were promised compensation equal to 15% of underwriting fees that the firm earned in their sectors.
- At Piper Jaffray the SEC charged, analysts helped pitch for deals at meetings with potential underwriting clients
- At Lehman Brothers regulators found analysts' pay was tied to their success in pulling in banking business
- At Bear Stearns regulators charged, analysts were "encouraged" to work closely with bankers. At one meeting, the head of research told analysts, "being a partner to banking is part of your job."
- The securities unit of J.P. Morgan Chase was also charged with allegedly exerting "inappropriate influence" by investment bankers over analysts

It is quite clear from these admissions that analyst forecasts have in the past been biased high resulting in biased high fair return estimates when combined with a firm's current dividend in a DCF model. Further even if current analyst's forecasts are not subject to this conflict of interest

[35] Credit Suisse First Boston

any estimates drawn from historic "DCF risk premium estimates" still contain these biases. This applies particularly to the common practise of estimating a DCF fair return each quarter and then doing time series analysis on it to predict a fair return consistent with current interest rates. To the extent that the underlying data comes from a period when the DCF estimates are biased the resulting estimates are also biased.

Finally although the analyst scandal was largely confined to the US, the basic conflict of interest still exists in Canada. Most analyst reports qualify their results by admitting to a possible conflict of interest. For example a CIBC World Markets report on Canadian Utilities Ltd (July 29, 2008) states

> "CIBC World Markets does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision."

The fact that analyst's forecast are biased due to a possible conflict of interest seems to have surprised regulators, but this has long been known in academic circles. It is also well known in the professional investment strategy reports. The difference between the strategy reports from investment banks and the analyst reports is that the strategy reports are concerned with overall market values. Consequently, the strategy reports will offer a "sell" signal on equities in general (or changes in the asset mix towards bonds), while the same company's analysts continue to recommend "hold" on the individual equities. The reason for this of course is that the company with a sell recommendation on its stock will rarely do investment banking business with an investment bank that has a negative analyst. On the other hand, a general recommendation to lighten equities and move towards bonds doesn't target individual firms and thus does not alienate individual firms or jeopodise future investment banking business.

For example, on September 28, 2001, Credit Suisse First Boston (CSFB) issued a substantial report on whether equity markets were over or under valued in response to September 11, 2001. They relied on several valuation measures, one of which was a standard DCF model. They used analyst forecasts (Institutional Brokers Estimation Service or IBES) out to five years and then trend earnings thereafter. Using trend earnings moderates any bias in the analyst forecasts since they are not projected out to infinity as is often the case. CSFB then equated this earnings stream

to the current market value to determine the implied equity risk premium. Their equity risk premium estimate for the U.S. market was 5.3%, but they added:

> ***"We would remind readers that over the last ten years IBES earnings numbers have on average been 6.0% too optimistic 12 months prior to reporting date."***

They then "stress tested" their estimates using more reasonable numbers and the equity risk premium dropped to 3.0%-3.8%. Even at this level they warned that because of the bias in analyst forecasts, "Some of our assumptions may be overly optimistic."

In a later section of the same report, CSFB valued the U.S. market using the DCF model. In this case they inputted their cost of equity estimate for the U.S. market and used this to discount the stream of earnings generated by the consensus economic growth rate. Their estimate of the US market equity discount rate was 8.5%, which was broadly consistent with their 3.0-3.8% market risk premium. It is also pretty much the same as my own estimate for the Canadian market using the same approach.

There has also been independent academic corroboration of the CSFB approach. Claus and Thomas[36] used IBES earnings forecasts similar to CSFB, but unlike CSFB they noted the bias in the forecasts but did not reduce them, so the estimates are high.[37] Their market risk premium is then the estimated discount rate minus the yield on the ten-year bond. Schedule 27 provides their estimates for the last ten years for the U.S. and some other countries. Note these estimates are higher than would be used in a regulatory hearing for two reasons. First, in a regulatory hearing the risk premium would be over the thirty-year bond yield, so these risk premiums need to be reduced by the spread between the ten and thirty year bond yield (about 30 basis points). Second, as mentioned the earnings growth forecasts would have to be adjusted for the analyst bias.

Despite these qualifications, there are two important conclusions from the Claus and Thomas research. First, their average for the US of 3.40% is consistent with the CSFB stress tested estimate of 3.0-3.8%. Second, the Claus and Thomas estimates for Canada are for an average

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36 J. Claus and J. Thomas "Equity premia as low as 3%? Evidence from analyst's earnings forecasts for domestic and international stock markets," *Journal of Finance,* October 2001.
37 They noted (page 1657) "We considered a variety of biases that may exist in the IBES forecasts but found only the well-known optimism bias to be noteworthy."

risk premium of 2.23%, which is 1.17% less than their US estimates. This is consistent with the independent evidence that I have provided where I conclude that the US market risk premium is higher than in Canada.

Finally in terms of analyst forecasts I would like to reiterate again that it is well accepted that these estimates are biased high and any DCF estimates produced by using unadjusted analyst growth forecasts are seriously in error. Most recently Easton and Sommers[38] have documented the bias at 2.84% and in their conclusions (page 1012) state:

> We show that, on average, the difference between the estimate of the expected rate of return based on analysts' earnings forecasts and the estimate based on current earnings realizations is 2.84%. When estimates of the expected rate of return in the extant literature are adjusted to remove the effect of optimistic bias in analysts' forecasts, the equally weighted estimate of the equity risk premium appears to be close to zero. We show, however, when estimates are based on value-weighted analyses, the bias in the estimate of the expected rate of return is lower and the estimate of the expected equity premium is more reasonable, 4.43%.

Easton and Sommers also state (page 986)

> Our estimate of the implied expected rate of return on the market from the value-weighted regression, after removing the effect of bias in analysts' forecasts, is 9.67% with an implied equity risk premium of 4.43%. Of course, this estimate of the equity risk premium is more reasonable than that obtained when all observations have equal weight.[8]

Of importance is that their estimate of the US market return of 9.67% is very similar to my estimate for Canada, while their US market risk premium estimate of 4.43% is marginally below my estimate of 5.0%.

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[38] "Effect of analyst's optimism on estimates of the expected rate of return implied by earnings forecasts, Journal of Accounting Research, 45-5, December 2007.

This optimism in analyst forecasts has been accepted by the Alberta EUB when it stated (Decision U99113, page 49)

> "Both the IAT and ATCO used forward-looking estimates of investor expectations. ATCO utilized IBES investor surveys, which the Board considers overly optimistic."

The well documented optimism bias of analyst forecasts clearly biases the DCF equity cost estimate when growth is estimated using these optimistic analyst forecasts without any adjustments.

Q. CAN YOU COMPARE YOUR ESTIMATE OF THE MARKET RISK PREMIUM TO THOSE IN RECENT STUDIES?

A. Yes. Estimating the market risk premium became a "cottage industry" in the early 2000's after the Internet bubble burst and people questioned the "stocks for the long run" argument. In Schedule 27 is a table showing my estimate of 5.0% for the Canadian market risk premium together with some of these studies as well as more recent ones showing alternative estimates derived by both academics and non-academics. The table shows for each study whether the estimate of the market risk premium is based on arithmetic or geometric return estimates and whether it is an historic or forward looking estimate. In a few instances, these classifications are not applicable (n/a). In the Claus and Thomas study, for example, a DCF model is employed in which the authors use IBES earnings growth data to estimate the market return from which the yield on 10-year US Treasuries is deducted to arrive at the market risk premium. Similarly, in the Fama & French and Arnott & Bernstein studies, the authors also employ growth models while in the Graham & Harvey study, the authors use CFO forecasts of the market risk premium one year and ten years forward.

What is clear from Schedule 27 is that the 5.0% market risk premium estimate is high when compared to these studies. These estimates are based on historic realised data, forward-looking methodologies, and evidence from both the US and Canada. Further in Schedule 28 is a table from the CFMRC data base that is the main source of data on Toronto Stock Exchange listed securities. The table performs similar analysis to that contained in my Appendix E, where I estimate market risk premiums for different time horizons. Since the data is largely the same, so to should be the results and they are. In Table 7 of Schedule 28 is the market risk premium estimated over long term government bonds from 1950 ending at various points. For the 1988

end point the market risk premium estimate is 6.575% and then it declines as more data is added until by 2007 it is 4.534%. This should be compared to my Appendix E, Schedule 4, which graphs the market risk premium earned starting in 1924 and finishing at various end points, which shows a similar decline; the only difference is that my risk premium is higher since it starts in 1924 rather than 1950 and declines more slowly since the more recent values are averaged in with more higher values. However, the critical fact is that these estimates are available to all subscribers to the most basic stock market data base available in Canada.

Q. DO YOU ADJUST YOUR ESTIMATES FOR THE INTERNATIONALISATION OF THE WORLD'S CAPITAL MARKET?

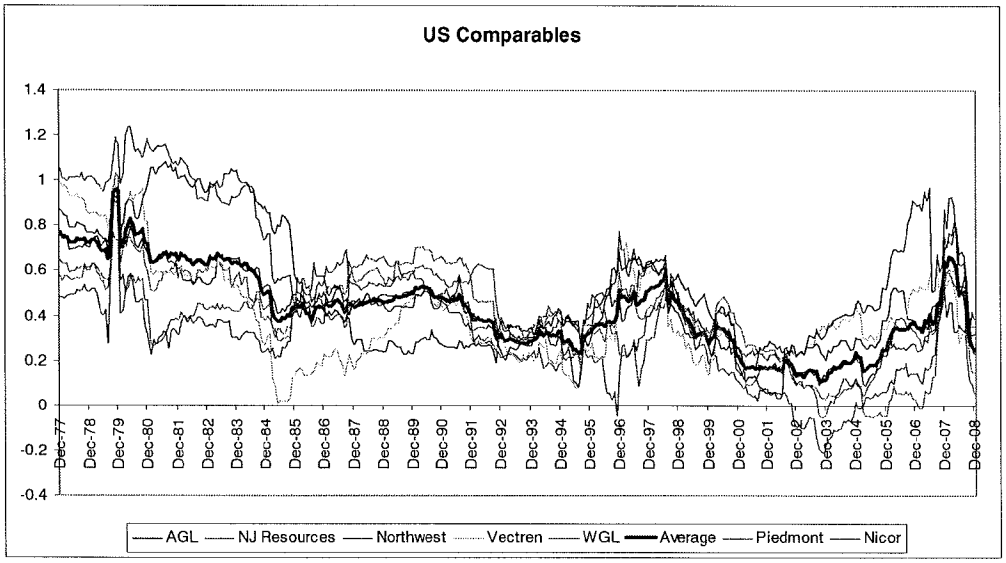
A. No. These issues are discussed in more detail in Appendix D. However, it is undoubtedly true that investors are more aware of international investment opportunities now than say twenty or thirty years ago. At that time the world was characterized by currency restrictions, investment controls and very limited international investing opportunities. Since then most currencies have become freely convertible, most investment restrictions have been removed and there has been an increase in the coverage of international stocks among investment advisors. This latter coverage has been enhanced by international collaboration between investment banks and the growth of some major international investment banks. Hence, it is inevitable that investors will increasingly invest in different stock markets to diversify their risk. However, this diversification *reduces* risk and with it the risk premium. In the same way that diversification across stocks in a domestic market reduces risk, then so too diversification across international markets reduces risk. Consequently, the removal of pension limits on foreign investments, and the gradual reduction in tax restrictions etc, should decrease the equity market risk premium in both Canada and the US. I am not aware of any basis in financial theory for simply averaging the US market experience with that in Canada on the assumption that relaxing investment restrictions will increase risk premiums: ***except in extreme cases financial theory states the exact opposite.***

Further it has to be pointed out that Canadian stocks have always been affected by what happens in the US equity market. One obvious linkage is that the standard barometer of the US equity markets, the Standard and Poors 500 index has always included Canadian stocks. In fact, it wasn't until July 10, 2002 that S&P cleaned up its S&P500 index to exclude foreign stocks and make it a 100% US index. Prior to that time there had been many Canadian stocks included in

the Index, like Inco and Barrick, and Alcan. Similarly some Canadian stocks have at times been part of the Dow Jones index. Hence, taking the performance of US indexes as representing only US stock market performance is incorrect.

Q. DO YOU HAVE ANY COMMENTS ON U.S. UTILITY RISK?

A. Yes, in Appendix G I look at the betas of different samples of US utilities. Increasingly Canadian utilities are relying on US experts who enter testimony based on US capital markets in an attempt to get the higher ROEs that are often being earned by US utilities, despite the fact that Canadian utilities generally have significantly more regulatory protection and as good if not better bond ratings and market access. One piece of evidence is Schedule 9 of that Appendix reproduced below, which shows the betas of different US gas and electric companies.



These are the betas of a sample of US utilities that represent the intersection of two samples developed by Ms. McShane and Dr. Vilbert, two witnesses who were both involved in the recent AUC hearing. The critical message is simply that the average betas of these US utilities that have been specifically chosen to be low risk similar to Canadian utilities, and are not representative of typical US utilities, have been well under 0.60 for the last 25 years. In fact you have to go back to the inflationary period of significant regulatory lag in the 1970's into early 1980's to get average betas much above 0.60. From this I conclude that if asked to provide testimony on the

beta for a low risk US utility I doubt that it would be very much higher than the top end of my range for Canadian utilities of 0.45-0.55.

Q. DO YOU ADVOCATE THE USE OF AN ROE ADJUSTMENT MECHANISM?

A. Yes. My recommended ROE of 7.75% is below the allowed ROEs that fall out of most ROE adjustment formulas so I feel that they are generous to the utilities. These ROEs are almost universally adjusted by 75% of the change in the long Canada forecast yield.[39] Although it is my judgment that the currently allowed ROEs are generous and exceed my estimate of a fair ROE, the fact that they have been used for so long and reviewed without major changes by so many regulators indicates that they have merit and are in the zone of reasonableness. They have also generally tracked the fair ROE downwards as lower long Canada bond yields have caused a reduction in the risk premium in the long Canada yield and a corresponding increase in the market risk premium. As a result the 75% adjustment of ROEs to long Canada rate changes has been remarkably accurate.

I would also judge a 75-80% adjustment to the change in long Canada bond yields to be in the right "range," which can be illustrated by a simple example. Suppose for simplicity that the market risk premium is 5% at a long Canada yield of 5.0%, and that a utility has a beta a coefficient of 0.50. In this case, the utility's return is then 7.5%, which is the long Canada yield plus half the market risk premium. If the long Canada yield declines to 4% *and the adjustment coefficient is 0.50,* as is often proposed by utility witnesses, then the utility return would decline to 7.0% that is, by 0.50 times the 1.0% drop in the long Canada bond yield. Its risk premium would then increase to 3.0% over the long Canada yield.

However, if the utility's beta is constant at 0.50 this means that the market risk premium increases from 5.0% to 6.0% since the utility risk premium is half the market risk premium. In this case, the market required return is unchanged at 10.0%, that is previously it was 5.0% on top of the 5% long Canada bond yield, whereas now it is 6.0% on top of the new 4.0% long Canada bond yield. The inescapable conclusion is that if the adjustment coefficient is set at 0.5, the

[39] In the original 1993 BCUC hearing Dr. Berkowitz and I recommended an 80% adjustment to changes in the forecast LTC yield the same as is used for NP and the PUB in Manitoba. For a time the BCUC used 100% adjustment with break points below which the adjustment changed.

overall required return on the market is ***independent*** of the long Canada yield. These calculations are shown below:

Implausibility of a 0.5 Adjustment Coefficient

Risk-Free	MRP	Beta	Utility Return	Market Return
5.0	5.0	0.50	7.50	10.0
4.0	6.0	0.50	7.00	10.0

This example indicates that an adjustment coefficient of 0.5 renders the whole notion of an equity risk premium over the long Canada yield moot since the equity market return is assumed to be constant. I therefore judge the ROE formulas to be successful with a 0.75 to 0.80 adjustment and recommend that they continue to be used with some minor downward adjustment in the level of the ROE.

Q. HAVE YOU ANY COMMENTS ON THE VALIDITY OF ROE FORMULAE?

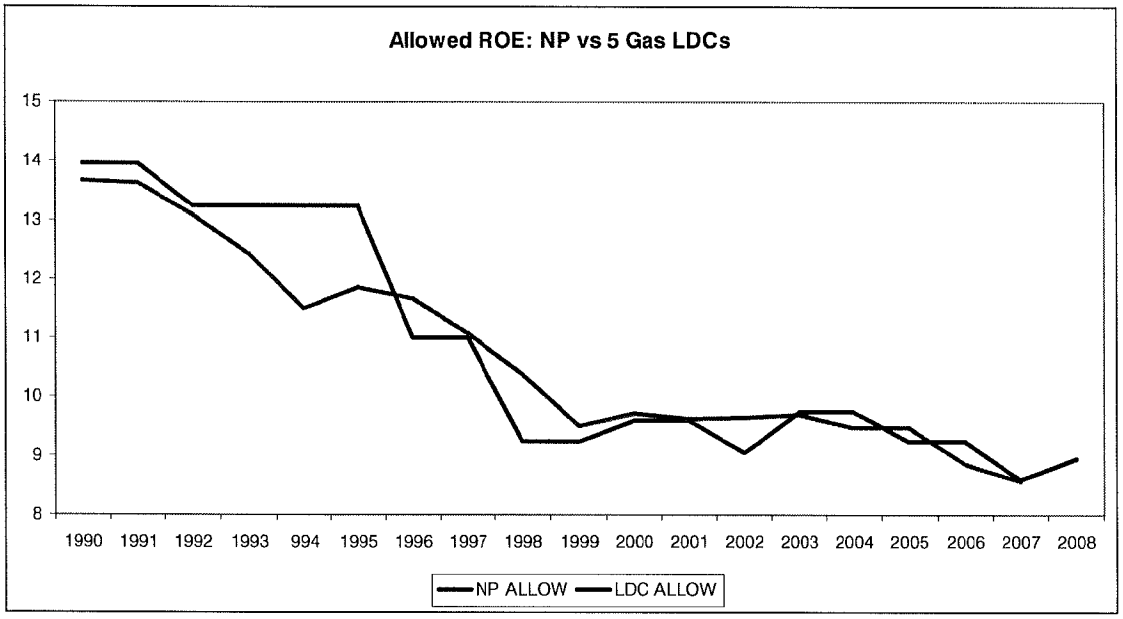
A. Yes. As I discuss in Appendix D, in 1994 the National Energy Board introduced its formula ROE with a forecast long Canada yield of 9.25% and a utility risk premium of 3.0%. This allowed ROE then adjusted by 75% of the change in the forecast long Canada bond yield or conversely the utility risk premium changed by 25% of the change in the forecast long Canada bond yield. If the forecast long Canada bond yield for simplicity is taken to be 4.25%, then this 5.0% drop in the long Canada bond yield has increased the utility risk premium by 1.25%. With a utility beta of 0.50 this implies a 2.50% increase in the market risk premium since the early 1990s.

Of interest is that the yield on the real return bond in Schedule 18 has dropped dramatically since 1994. For the period 1991-2000 the real yield was 4.0-4.5%, whereas more recently it has been 1.50-2.0% or a decline of 2.50% consistent with bond betas of 0.50 and a 5.0% true market risk premium. If this drop in the real return bond reflects a drop in the long Canada bond yield, independent of what is happening in the equity market, then this would justify an increase in the market risk premium of 2.5%. Coincidentally this is approximately what the NEB formula implied over the same time period.

I therefore take some comfort from the idea that the utility fair ROE should change by about 75% of the change in the forecast long Canada bond yield.

Q. DO YOU AGREE WITH THE CURRENT FORMULA USED FOR NP'S ROE?

A. I am firmly in the camp that believes that what matters is the outcome of the formula not how the formula is constructed. In the following graph is the allowed ROE for NP graphed against that for five gas utilities, where the allowed ROEs were provided by Ms. McShane in answer to CA-NP-28 except for Gaz Metro where her answer included incentives rather than the base allowed ROE.



It is clear to me that the Board's ROE formula produces very similar results to those in use in Alberta (ATCO Gas) BC, (Terasen Gas), Quebec (Gaz Metro) and Ontario (Enbridge and Union Gas). As a result it is as fair as the other ROE formulae currently in use.

I know that in previous hearings the question has been raised as to whether the base interest rate should be some adjusted consensus forecast, as used elsewhere, or the spot yield at a particular point in time as used for NP. I am also aware that the Board has received evidence in the past from Dr. Cannon that consensus interest rate forecasts are consistently optimistic (biased high) and he has recommended continuation of the current ROE formula. The critical point is that if the Board changes its ROE formula, it not change the interest rate assumption *without* also

changing the associated risk premium. That is, what is important is the outcome not the parameters used to generate the outcome.

Q. IS THERE ANY EVIDENCE THAT THE FORMULA ROES AND CURRENT ALLOWED COMMON EQUITY RATIOS ARE HARMING UTILITIES?

A. Not that I am aware of. As I have already shown the shares of Canadian UHCs were not unduly affected by the dreadful equity market crash of 2008. This is because of the stability of their operations and the security of their dividend payments. In this sense "fair" is determined in the equity market by the reaction of investors. It is a basic principle of regulation that equity investors invest money up front and then rely on the regulator awarding them a fair ROE. In this case if the equity investor invests one dollar in regulated assets, there is an implicit contract that they will be given the opportunity to earn a fair ROE, such that the dollar that is invested is still worth a dollar, that is, that there is no confiscation of wealth by subsequently awarding a sub-standard ROE. This is the basic meaning behind Mr Justice Lamont's definition of a fair ROE.

What this means is that once a dollar has been invested in a regulated utility, the investor has to be given the opportunity to earn what he could earn in the market on other equivalent investments, if he still had the dollar to invest. This process is akin to someone investing in a savings account where a judge has to determine the correct savings rate each period that can be withdrawn from the fund. The important implication is that if the judge (regulator) is successful then the savings will always be worth their original investment. This is the meaning of the basic result in finance that fair means that the market to book ratio equals one. The only thing different about utilities, as compared to the savings example, is that there is some very minor business risk.

In Schedule 29 is a table of earned ROEs, preferred stock yields and market to book ratios for a sample of ROE regulated Telcos up until 1996.[40] This sort of data was previously included by Professor Berkowitz and myself in estimates of risk premiums over preferred stock yields. These risk premiums were then consistent with the above remarks about preferred share yields being the correct tax comparison. Note that for 1970-1983 their market to book ratios were hovering

[40] Source data is from my paper, The Importance of Market to Book ratios in Regulation, NRRI Quarterly Bulletin, Winter 1997.

around 1.0 and at times were significantly below 1.0, as the combination of high inflation historic test years and regulatory lag exposed these Telcos to significant risk. As interest rates fell from the early 1980s highs, the market to book ratios of these utilities increased significantly as allowed ROEs were not cut sufficiently to reflect these market changes. The point is that observing the market to book ratio is a valid way of assessing how investors are reacting to utility allowed ROEs. This does not mean that you can set ROEs by looking at these market to book ratios, but simply that it indicates generally whether allowed ROEs are fair or not.

Schedule 30 is a graph of the market to book ratios for a sample of Canadian utility holding companies (UHCs). The key implication is that, except for PNG, the market to book ratios are all well above 1.0 despite the recent stock market crash. For PNG it is clear that despite the efforts of the BCUC to reduce PNG's risk, the market is still sceptical of the company's long run prospects. These market to book ratios include to a differing degree the impact of non-regulated operations, but there is a clear indication that none of these companies have suffered a loss of financial flexibility as regulators have moved to the use of adjustment mechanisms.

Further there is direct evidence of the value of regulated assets from sales between firms. For example,

- TCPL purchased the 50% of Foothills that it did not own at a market to book of 1.6 based on the common equity. Moreover since TCPL already owned 50% of Foothills the number of potential buyers was limited, which reduced the price.
- Aquila purchased TransAlta's distribution and retail business at a market to book of 1.5 based on a total rate base of $472m (premium of $238m);
- Fortis purchased Aquila's Alberta interests for a premium of $215mm over a rate base of $601mm.
- AltaLink purchased TransAlta's transmission business for a $200mm premium over a rate base of $644m.
- In 2005 Kinder Morgan purchased Terasen Inc for 2.7X book value,
- In 2006 Gaz Metro sold GMLP units for $16.48 when their book value was less than half that.
- In 2007 Fortis paid 1.2X rate base or $3.7 billion for Terasen Gas and assumed $2.3 billion in debt for an implied equity market to book of about 1.80X.

Note that in most of these cases, the market to book ratio, based on the equity, is much greater than that based on the total rate business, since the debt is normally assumed and is valued at close to its book value. For example in Fortis' purchases from Aquila it paid $1.3 billion for total rate base assets of $943mm (in Alberta and BC) for an overall premium of $357mm over rate base and an overall market to book of 1.38X. However, it "assumed" the existing debt which was 60% of rate base, so effectively Fortis assumed about $565.8mm in debt and paid $734.2mm for the 40% book equity of $377.2 mm. The market to book ratio based on equity was therefore about 1.96X. The final value depended on closing transactions, but the point is that the market to book based on the common equity was well above the indicated values based on total rate base.

Q. ARE PRICE TO BOOK OR MARKET TO BOOK RATIOS REALLY A RELEVANT VALUATION METRIC?

A. Yes. For utilities they are a paramount valuation metric since the book value represents the capital that has been contributed and the market value indicates what it is currently worth. For other companies it depends how useful the book value is. With significant inflation in the period 1960-1980, book values fell out of fashion, since balance sheet data was horribly distorted since it was based on historic cost accounting. As inflation has fallen balance sheet data has become more useful and with it the book value per share. In a recent RBC capital markets report (July 18, 2007) before the current crisis the report had the following data:

	S&P/TSX Composite	S&P/TSX 60	S&P/TSX Completion
June Close	13,906.57	799.70	931.45
12-Month Trailing Earnings			
Reported	$802.83	$48.45	$46.69
Recurring (Before Excess Provisions)	$773.14	$46.40	$45.77
P/E (Recurring)	18.0x	17.2x	20.4x
12-Month Estimated Earnings			
Bottom Up RBC CM	$881.78	$53.03	$51.86
Bottom Up Consensus	$873.64	$52.39	$51.84
P/E (Consensus)	15.9x	15.3x	18.0x
Book Value	$5,289.99	$288.23	$403.83
P/BV	2.6x	2.8x	2.3x
Indicated Dividend	$331.71	$16.00	$31.76
Yield	2.4%	2.0%	3.4%

Clearly the professionals at RBC think that price to book is important. Similarly more recently (October 13, 2008) RBC published a report on Canadian banks stocks where the price to book was their most important valuation metric:

Sustainability of potential rally would be difficult

We continue to believe that the core businesses of Canadian banks will face deterioration in growth and profitability, which would put a cap on the magnitude and duration of a rally. We expect loan growth to decline, wealth management revenues to decline and loan losses to rise. Furthermore, the outlook for trading revenues is highly uncertain going into Q4/08 given the volatility experienced in many asset classes.

- In that kind of environment, we do not believe that today's median price-to-book multiple of 1.6x is particularly cheap given that that is where banks traded in the early 2000s when Canadian banks last dealt with rising loan losses, weak equity markets and slowing loan growth. We believe that, based on normalized profitability, 1.6x book value is an attractive multiple, but leading indicators in the following areas would need to turn more positive before banks can sustainably rally: credit market health, funding markets health, equity markets, housing markets, and unemployment.

Q. IS THERE ANY EVIDENCE SUPPORTING FINANCIAL MARKET ACCESS FOR CANADIAN UTILITIES?

A. Yes. In the Fall of 2006 Enbridge Gas Distribution (EGDI) came before the OEB and requested an increase in its common equity ratio to 38%. EGDI claimed (E2-1-1, in EB2006-0034)

> The purpose of this evidence is to clearly identify the need for a higher equity thickness in the Ontario Energy Board (the "Board") approved capital structure for the utility. This need results from changes in Enbridge Gas Distribution's current business risk environment and financial risk position. The evidence will show that the utility's business risks have increased since the last time these risks were assessed in EBRO 479 for the 1993 test year. Most importantly, the increased business risk has occurred at the same time as a dramatic decline in the Company's financial strength resulting in: 1) a challenge to the Company's ability to raise term debt when required; and 2) a real risk of a further downgrade in the Company's credit rating.

In response to EGDI's claim that the "Sky is falling" the OEB gave EGDI a 1.0% increase in its common equity ratio to 36%, the same that had been negotiated by Union Gas in a settlement shortly before. In December 2007 EGDI issued $200 million of ten year medium term notes at a yield of 5.162% when the ten year Canada yield was 4.09% for a spread of 107 basis points.

It is quite clear from this that even in a period of "flight to quality," which started in July 2007 EGDI could raise debt capital on advantageous terms. The fact is that there is no evidence of the "dramatic decline" in EGDI's financial strength as claimed by the company and it could still raise capital on advantageous terms with the OEB formula allowed ROE and a 36% common equity ratio.

Since EGDI's December 2007 issue there have been a number of financings that have occurred. On November 20, 2008 right in the middle of the stock market crash as all the major indexes touched their lows and Citibank stock price collapsed to under $3, the Canadian press gave out the following information:

> Enbridge Inc. (TSX: ENB.TO), a major pipeline and energy services company, has managed to raise $500 million by issuing corporate debt in a tough credit environment, which the chief executive says will be used to finance a raft of growth projects. The Calgary-based company said Thursday its wholly owned subsidiary Enbridge Pipelines Inc. has completed an issue of $300 million worth of 10-year bonds. The bonds carry an annual interest rate of 6.62 per cent and were sold to 30 institutional investors.
>
> This follows a $200-million five-year term debt issue by Enbridge Gas Distribution, the company's Ontario-based utility, completed last week. Enbridge said that debt carried an annual interest rate of 5.57 per cent and was sold to 32 institutional investors.

Note that Enbridge did the right thing. As credit markets tighten not just do spreads increase but investors are loath to lend for long periods of time. In response Enbridge shortened the maturity of their debt and issued ten year notes.

Not just debt issues have been placed. A few days after Enbridge's debt issue and just after Citigroup was bailed out by the US government and the market rout at least stabilised for a time TransCanada announced the following:

TransCanada Closes $1.0 Billion Common Share Offering and New US$950 Million Committed Credit Facility

Tuesday November 25, 9:01 am ET

CALGARY, ALBERTA--(MARKET WIRE)--Nov 25, 2008 -- TransCanada Corporation (Toronto:TRP.TO - News)(NYSE:TRP - News) (TransCanada) today announced that it has completed its public offering of Common Shares. The offering was announced on November 17, 2008 when TransCanada entered into an agreement with a syndicate of underwriters, led by RBC Capital Markets, BMO Capital Markets and TD Securities Inc. under which they agreed to purchase from TransCanada and sell to the public 30,500,000 common shares.

Setting up almost $2 billion in new financing right bang smack in the middle of the worst stock market panic and crash in 71 years indicates just how stable Canadian utilities are. A few days later on December 5, 2008 TransCanada made the following announcement:

CALGARY, ALBERTA--(MARKET WIRE)--Dec 5, 2008 -- TransCanada Corporation (Toronto:TRP.TO - News) (NYSE:TRP - News) (TransCanada) today announced that the syndicate of underwriters led by RBC Capital Markets, BMO Capital Markets and TD Securities Inc. of its recent Common Share offering have exercised their full over-allotment option to purchase an additional 4,575,000 Common Shares at a price of $33.00 per Common Share.

TransCanada Corporation's share issue had been so well received that the underwriters exercised their option to sell even more shares.

It is not just the really big utilities that have accessed the market for new capital On December 5, 2008 NP's parent, Fortis, arranged almost $350 million in new financing:

ST. JOHN'S, NEWFOUNDLAND AND LABRADOR--(Marketwire - Dec. 2, 2008) - Fortis Inc. ("Fortis" or the "Corporation") (TSX: FTS.TO) announced today that it has entered into an agreement with a syndicate led by Scotia Capital Inc., CIBC World Markets Inc. and RBC Dominion Securities Inc. pursuant to which they have agreed to purchase from Fortis and sell to the public 11,700,000 Common Shares of the Corporation. The underwriters will also have the option to purchase up to an additional 1,755,000 Common Shares to cover over-allotments, if any, and for market stabilization purposes, during the 30 days following the closing of the offering (the "Over-Allotment Option").

Following this issue Fortis returned to the market in April when the equity market rally was barely under way as indicated by the following Globe and mail article:

Globe and Mail

Thursday, April 9, 2009 06:48 PM

Fortis shows window open for financing

Andrew Willis

The window is wide open for stock sales by high quality Canadian companies, as utility Fortis tapped the market late Tuesday for $300-million.

Fortis, a growth play among utilities if there is such a beast, did a bought deal with Scotia Capital, CIBC World Markets and RBC Dominion Securities just a few hours after Manulife raised $2.125-billion.

On one side of this sale, you have institutions putting cash to work at relatively attractive valuations.

The other side of this transaction is a realization on the part of boards and CEOs that current markets are reality. The fabulous valuations seen just a few short months ago? They, sadly, are part of your history.

That change in mind set is evident in CEOs who were running companies with top-tier valuations - Manulife's Dominic D'Alessandro and TD Bank's Ed Clark. If these guys are issuing stock at current prices, that sends a message.

Fortis, which bought a massive B.C. natural gas pipeline network last year, will use the proceeds from the share sale to knock back $200-million of debt that has come due. The deal came a week after a $1-billion stock sale from pipeline operator TransCanada. Income-seeking investors are big buyers of these utilities - Fortis features a 4 per cent dividend yield.

Get used to seeing the bank-owned dealers leading deals for companies that are major borrowers. CEOs value lending relationships these days, and are rewarding banks that provide credit. That's not tied selling. It's smart business for both banks and borrowers.

Fortis sold 11.7 million shares for $25.65 each. If the underwriters opt to exercise an overallotment option, the financing could raise $345-million.

Fortis shares closed Tuesday, ahead of the financing, at $27, so the offering came at a 2.7 per cent discount. Fortis shares are changing hands Wednesday at $25.32, against the backdrop of weakness in the overall market.

Finally as many firms are cutting capital expenditure programs and slashing their dividends to conserve cash because of the credit crunch, utilities are increasing their dividends. Just to broaden the scope of the discussion of utility financing, Emera made the following announcement:

HALIFAX, Oct. 20 /CNW/ - (EMA-TSX): The Board of Directors of Emera Inc. today approved an increase in the annual common share dividend rate to $1.01 from $0.95 per common share. The first quarterly dividend payment, of $0.2525 per common share, is payable on and after November 17, 2008 to common shareholders of record at the close of business on November 3, 2008.

Not many firms would so confidently increase their dividend one month after Lehman Brothers collapsed and the financial markets froze up.

It is clear that the Canadian utilities are seen to be so strong that they can readily raise financing on current allowed ROEs and financial structures even in the middle of the worst financial crisis for 71 years. This is a tribute to the protective regulation afforded them by our regulatory bodies.

Q. IS THERE ANY OTHER EVIDENCE OF THE VALUE OF CANADIAN REGULATION?

A. Yes. For the second time in a decade Canadians have witnessed the result of deregulated "free" markets in the United States. It is worth reminding ourselves that the Americans do things different from the rest of the world and they are not a model to be emulated. Just because the technology to generate electricity and transport and distribute natural gas and electricity, is the same in the US as it is in Canada, or for anywhere else in the world for that matter, does not under any circumstances mean that either the business or financial risk is the same.

We are coming up to the ten year anniversary of the bankruptcy of Pacific Gas and Electric which entered Chapter 11 on April 6, 2001. We are also coming up to the anniversaries of the Enron and Worldcom frauds, both built on regulated operations and a little further ahead are the stock market disasters represented by pipelines like Duke Energy. Americans very much have these memories in mind when they think of the risk involved in investing in their "utilities," since enormous amounts of wealth were dissipated when things went so disastrously wrong.

Now almost ten years later we have a similar disaster in the US where clearly the regulation of US banks failed. The Bush administration was committed to light handed regulation and the result has been the collapse or forced acquisition of Bear Stearns, Lehman Brothers, Washington Mutual, Wachovia, Countrywide, NCC, Fannie Mae. Freddie Mac, Indy Mac and AIG, while the major US banks are on life support; only being kept alive by the US government because to let them fail would reproduce the Great Depression. Even so it is doubtful that Citigroup, Bank of

America, Goldman Sachs and Morgan Stanley can survive in their current format. What we have witnessed with US regulatory policy in the financial sector is symptomatic of an American approach to regulation in general, which is light handed. So far this approach has cost the world about US$14 trillion and plunged it into the worst recession in living memory.

The message from these two disasters of US regulatory policy is that the US is not Canada, no matter what American witnesses before the Canadian regulatory tribunals seem to think. Regulation in the US has followed a different path to that in Canada, as is patently obvious to anyone who looks at its results. Drawing any insights from how investors perceive US utilities (or banks) given this different regulatory approach in my judgment is of very little value. I would strongly advise Canadian regulatory tribunals to ignore the advice of experts, who have US experience in mind when they from their judgments. Instead they should focus on Canadian solutions that have worked, rather than US solutions that have resulted in disaster. In this I would echo the words of our Prime Minister

> ***"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."***

Quite obviously the US has gone on a different path in terms of regulatory policy and it makes no sense for Canada to follow it.

Q FINALLY DR. BOOTH IN YOUR JUDGEMENT IS NP'S FINANCIAL INTEGRITY PRESERVED WITH YOUR RECOMMENDATIONS?

A. Yes. My Appendix H discusses NP's business risk and its financial market access. NP's credit rating has been a DBRS stable "A" for some time, but on August 3 Moody's upgraded NP by two full notches from Baa1 to A2. The reason was primarily technical in the sense that NP's issuer rating was lower than its secured bond rating, but until recently NP had not been given any credit for this. Now Moody's is recognising this and the fact that security is more valuable than it previously recognised; so it has decided to give wider rating spreads to reflect this. Overall this means that both DBRS and Moody's now rate NP as high as almost any other Canadian regulated utility.

Ms. McShane refers to NP's financial metrics (interest coverage etc) as being low for Moody's then Baa1 rating. The two notch upgrade simply shows that Moody's takes a variety of factors into account in deriving its ratings and regards NP as a much stronger credit than a simple ratio analysis would indicate. The key additional metrics are the very low business risk and the supportive regulatory environment in Canada in general and Newfoundland and Labrador in particular.

Of note is that before the Board are yet more requests to lower NP's risk by changing the accounting for OPEBs and pensions. These are forecast to increase NP's revenue requirement, so that ratepayers provide NP with cash in the forecast test year to meet these commitments. Others will be examining these issues, but asking for such a huge increase in NP's allowed ROE and associated income tax component[41] while at the same time asking for changes in regulatory treatment that lower NP's already minimal risk seems inconsistent.

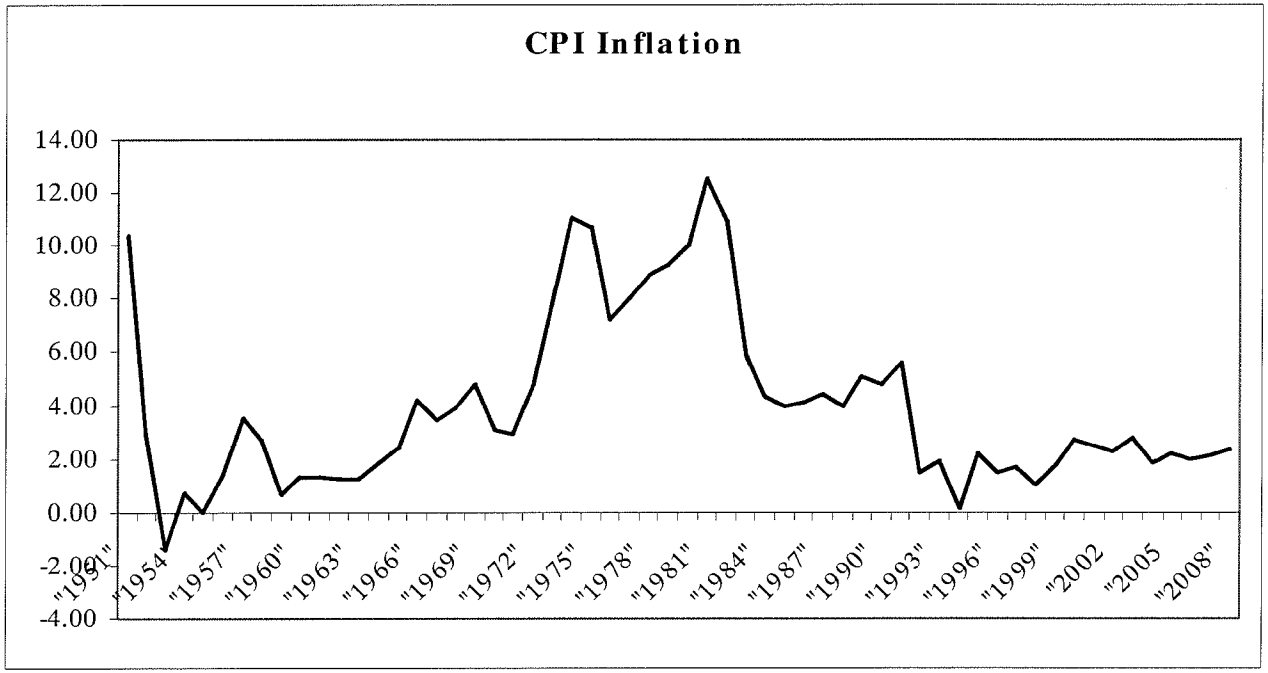
Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

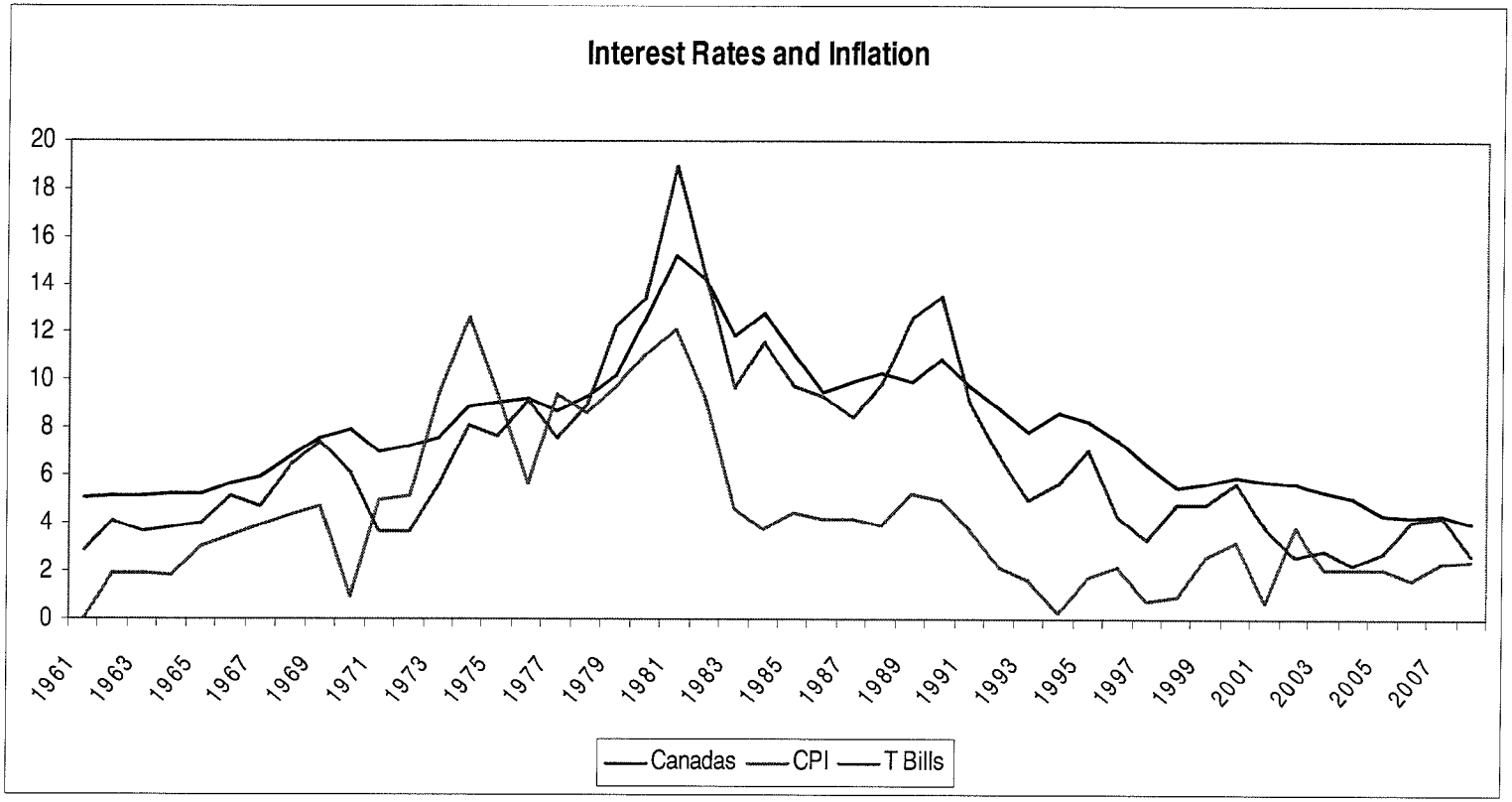
[41] Since net income is after tax,, an increase automatically increases NP's income tax component This is another way of saying that ratepayers pay the pre-tax equity cost and NP is asking them to pay much more than the simple increase to 11% implies.

	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	12.69
1989	7.58	2.62	5.06	12.02	9.92	0.84	11.47
1990	8.16	0.19	4.81	12.81	10.81	0.86	7.57
1991	10.32	-2.09	5.61	8.83	9.81	0.87	3.87
1992	11.24	0.88	1.45	6.51	8.77	0.83	1.69
1993	11.42	2.34	1.90	4.93	7.88	0.78	3.81
1994	10.43	4.80	0.12	5.42	8.58	0.73	6.7
1995	9.54	2.81	2.22	6.98	8.35	0.73	9.77
1996	9.73	1.62	1.48	4.31	7.54	0.73	10.35
1997	9.16	4.23	1.69	3.21	6.47	0.72	10.93
1998	8.35	4.10	1.00	4.74	5.45	0.67	8.78
1999	7.58	5.53	1.75	4.70	5.68	0.67	9.88
2000	6.85	5.23	2.69	5.48	5.92	0.67	10.93
2001	7.23	1.78	2.52	3.85	5.79	0.67	7.42
2002	7.66	2.92	2.25	2.57	5.67	0.65	5.67
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	11.63
2005	6.77	2.85	2.21	2.71	4.41	0.83	12.71
2006	6.32	2.53	2.00	4.02	4.29	0.88	14.18
2007	6.03	2.50	2.14	4.17	4.32	0.94	12.04
2008	6.15	0.41	2.37	2.62	4.06	0.94	10.38
Cansim	V13682111	v1992067	v41690973	V122484	V122501	V37426	V634672/V63462

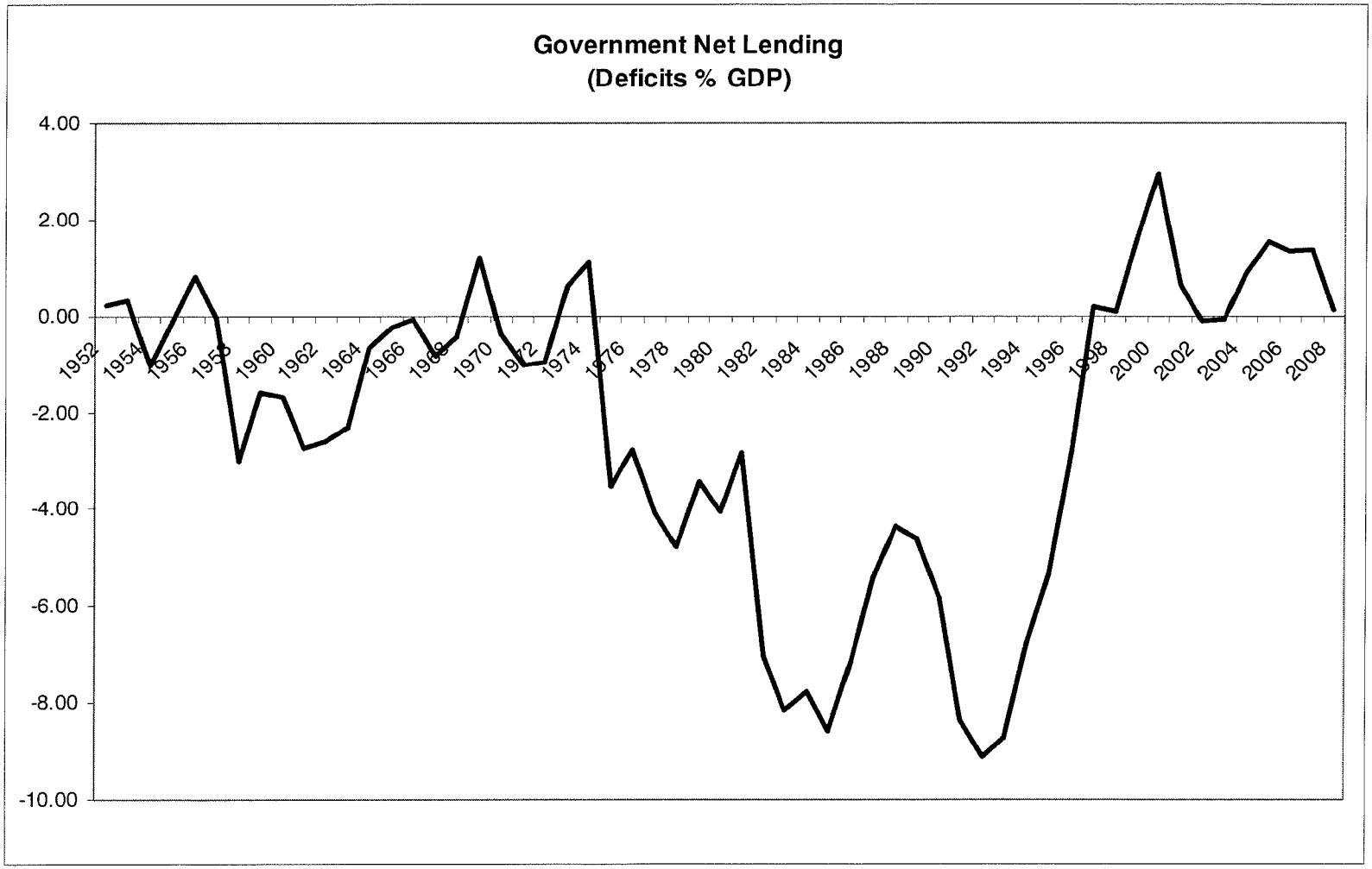
SCHEDULE 2


CPI Inflation
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
-2.00
-4.00
"1951"
"1954"
"1957"
"1960"
"1963"
"1966"
"1969"
"1972"
"1975"
"1978"
"1981"
"1984"
"1987"
"1990"
"1993"
"1996"
"1999"
"2002"
"2005"
"2008"

SCHEDULE 3


Interest Rates and Inflation
20
18
16
14
12
10
8
6
4
2
0
1961
1963
1965
1967
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
Canadas
CPI
T Bills

SCHEDULE 4

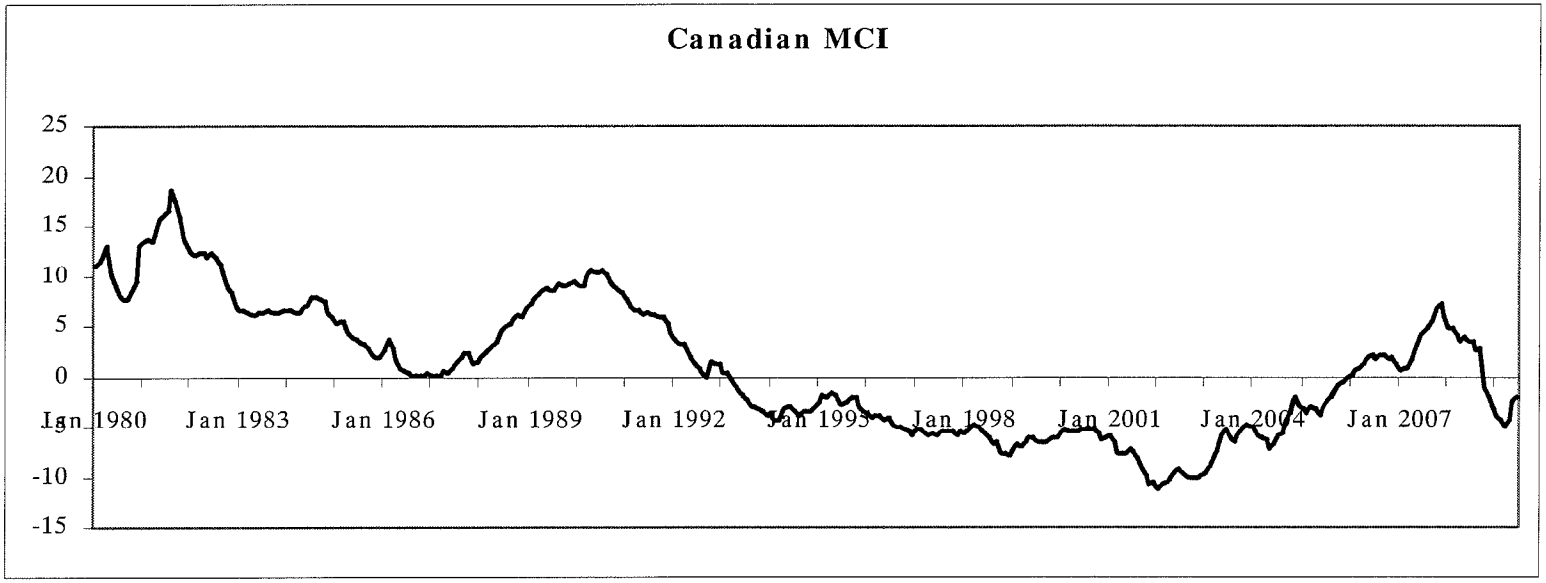

Government Net Lending
(Deficits % GDP)
4.00
2.00
0.00
-2.00
-4.00
-6.00
-8.00
-10.00
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008

CANADA BOND YIELDS

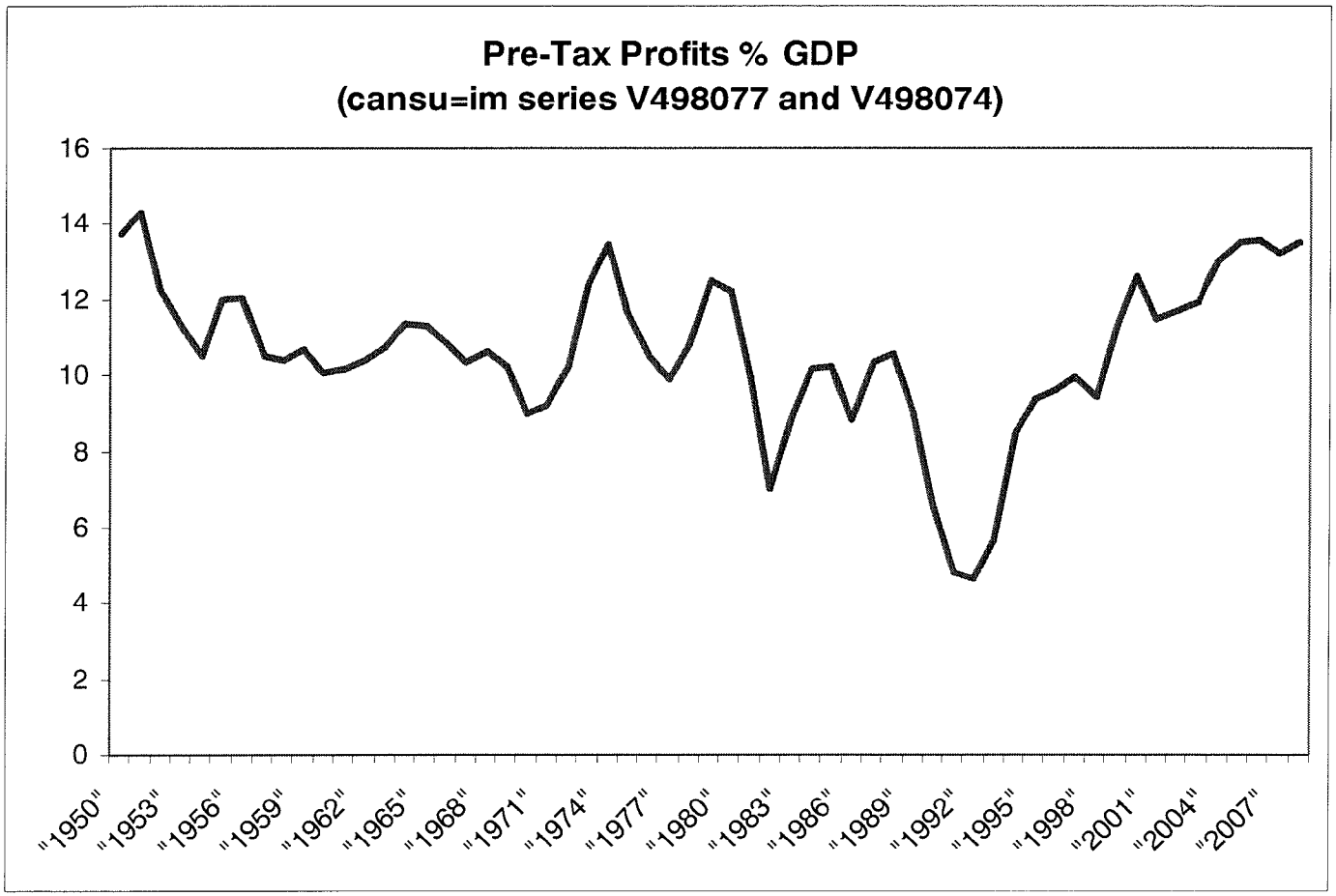
Overnight money market rates		0.25
Benchmark bonds		
Canada	91 day Treasury Bill yield	0.26
Canada	Six month Treasury Bills	0.36
Canada	One year Treasury Bills	0.66
Canada	Two year	1.45
Canada	Three year	1.91
Canada	Five year	2.67
Canada	Seven year	2.91
Canada	Ten year	3.55
Canada	Long term (30 year)	4.02
Canada	Real return bonds	1.84
Marketable Bond Average yields		
Canada	1-3 year	1.32
Canada	3-5 year	2.49
Canada	5-10	3.21
Canada	Over tens	4.08

Source: Bank of Canada's web site at http://bankofcanada.ca/en/securities.htm, for August 4-5, 2009.

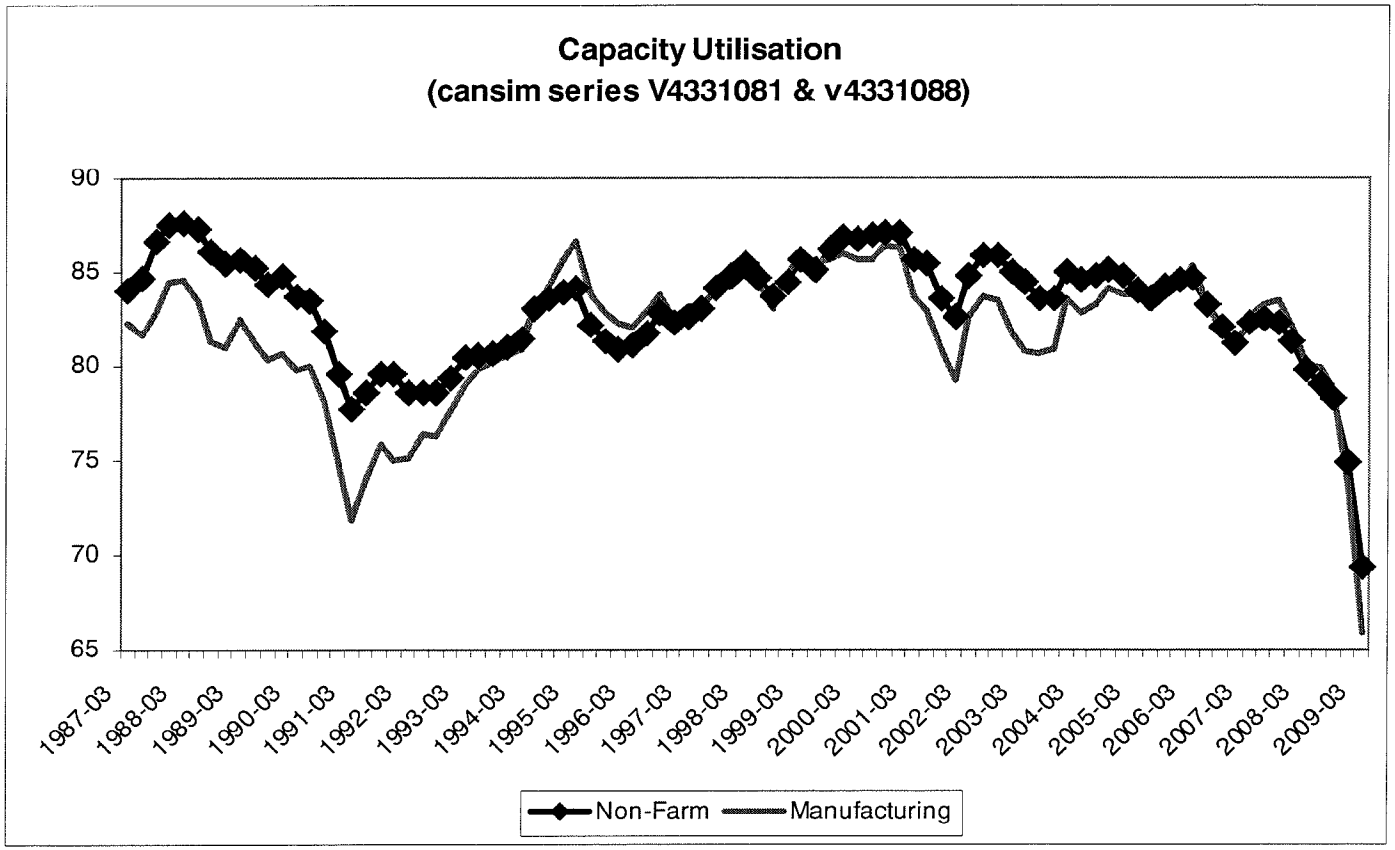
SCHEDULE 6

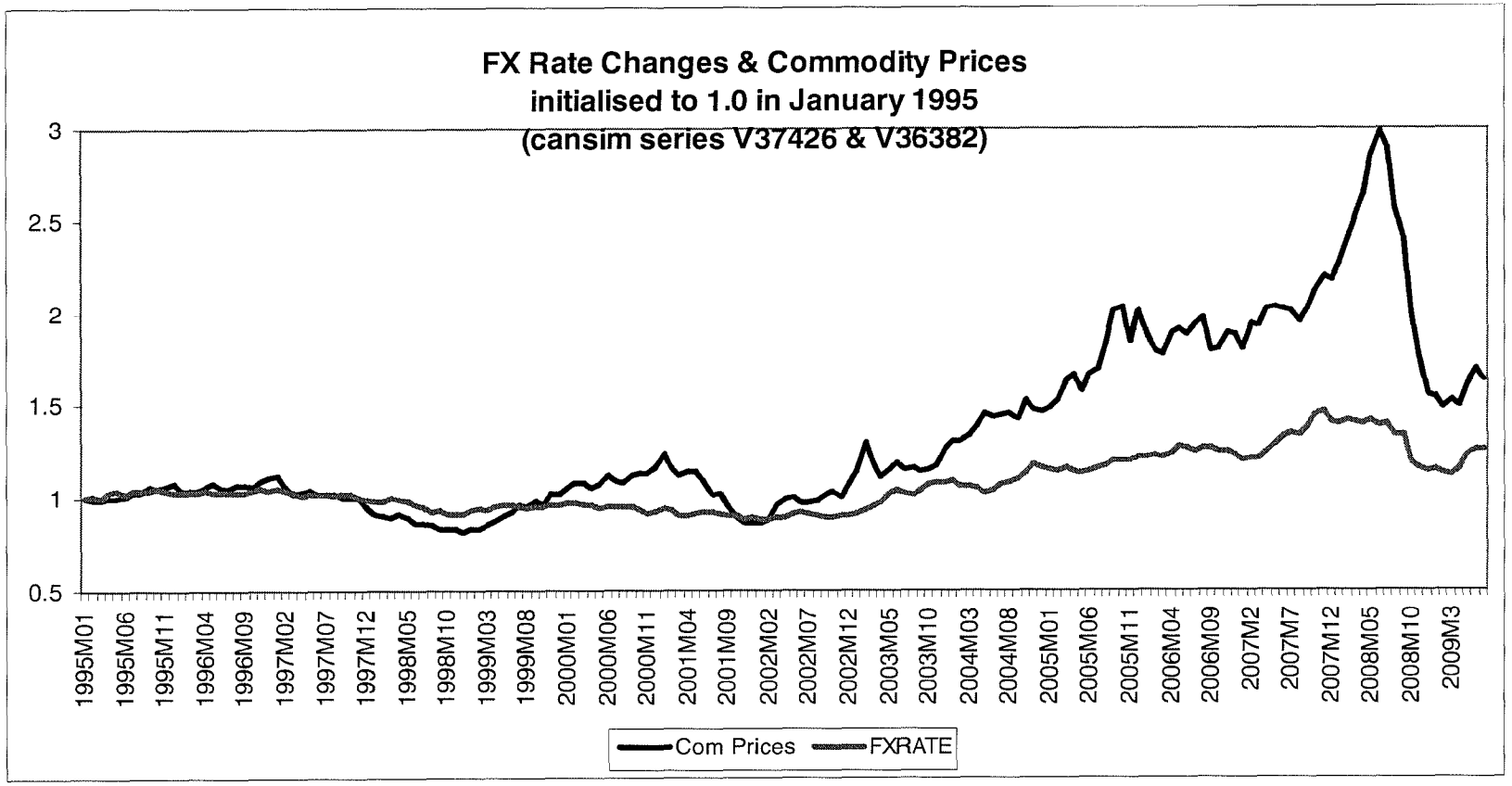

Canadian MCI
25
20
15
10
5
0
-5
-10
-15
Jan 1980
Jan 1983
Jan 1986
Jan 1989
Jan 1992
Jan 1995
Jan 1998
Jan 2001
Jan 2004
Jan 2007

SCHEDULE 7

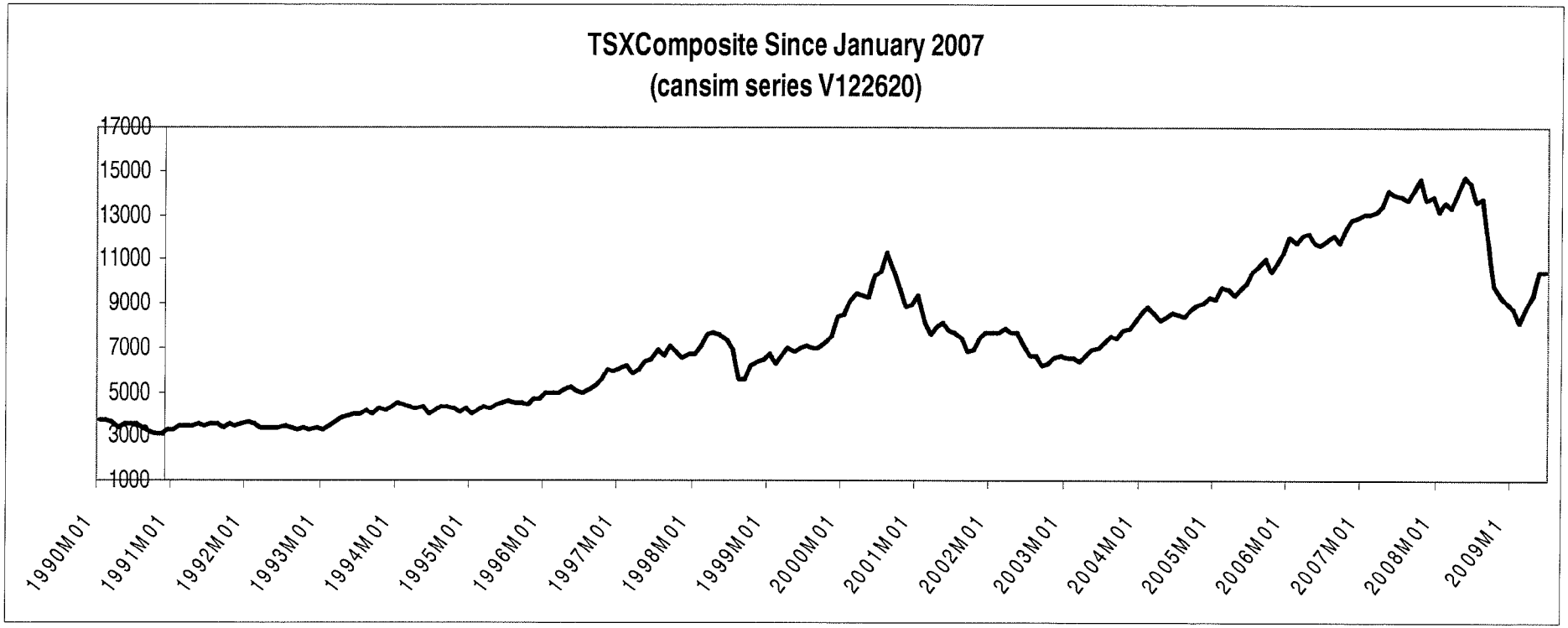

Pre-Tax Profits % GDP
(cansu=im series V498077 and V498074)
16
14
12
10
8
6
4
2
0
"1950"
"1953"
"1956"
"1959"
"1962"
"1965"
"1968"
"1971"
"1974"
"1977"
"1980"
"1983"
"1986"
"1989"
"1992"
"1995"
"1998"
"2001"
"2004"
"2007"

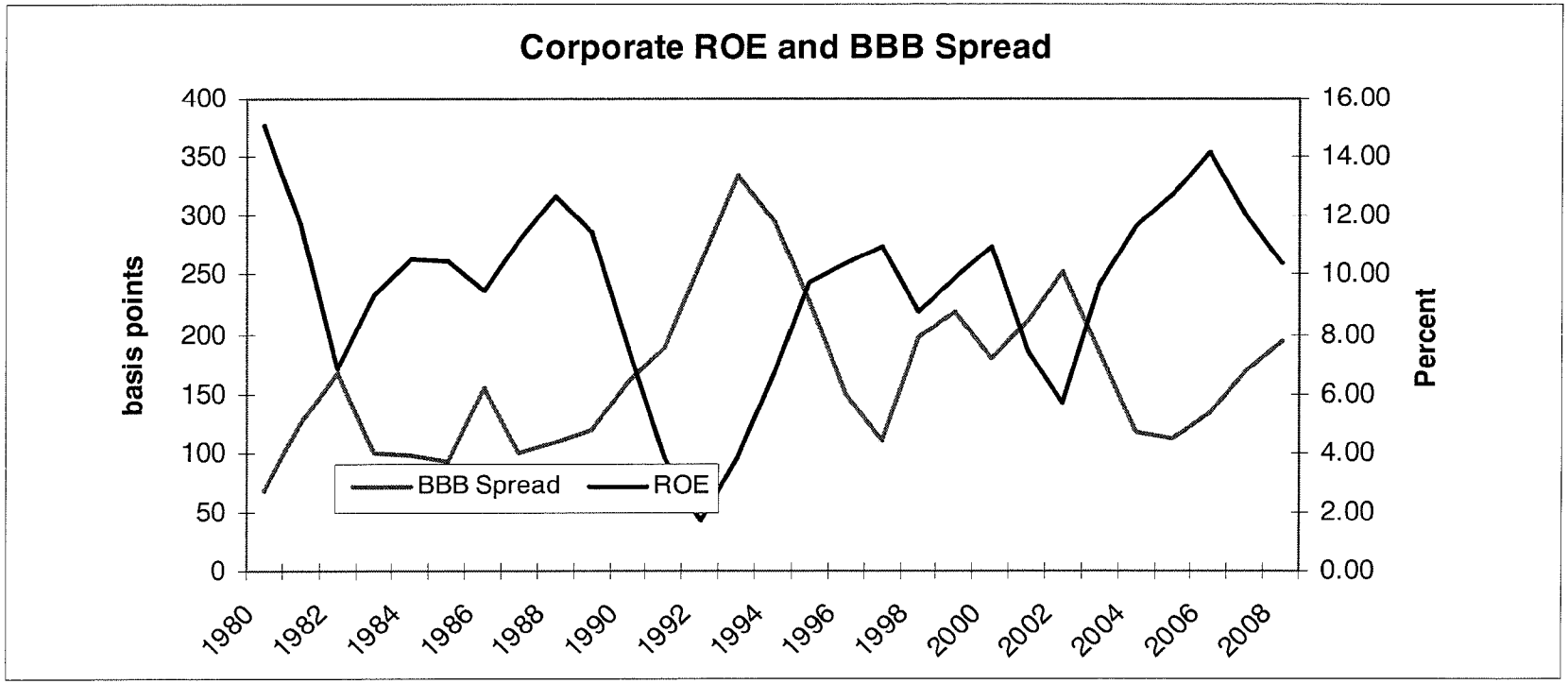
SCHEDULE 8

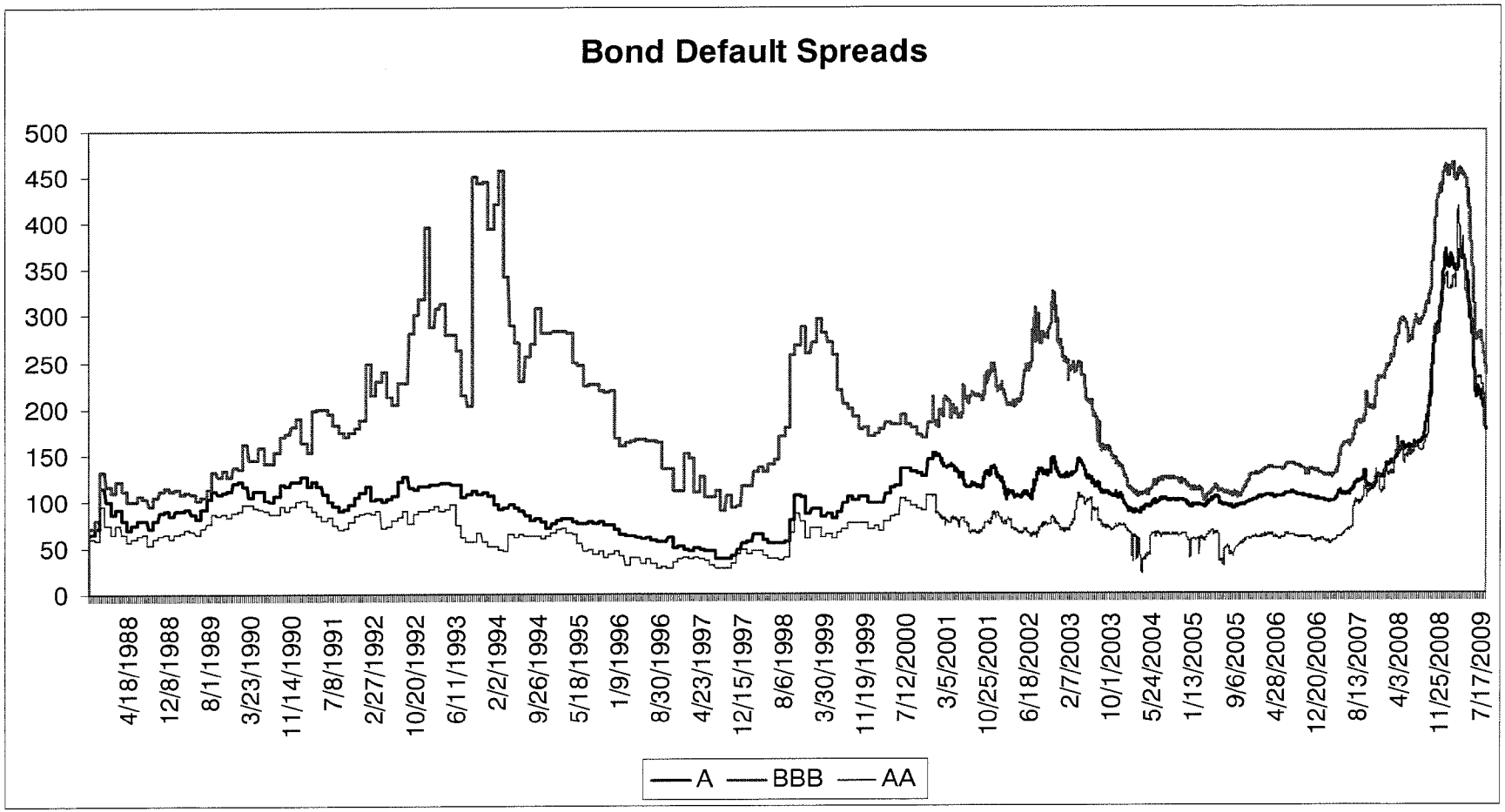

Capacity Utilisation
(cansim series V4331081 & v4331088)
90
85
80
75
70
65
1987-03
1988-03
1989-03
1990-03
1991-03
1992-03
1993-03
1994-03
1995-03
1996-03
1997-03
1998-03
1999-03
2000-03
2001-03
2002-03
2003-03
2004-03
2005-03
2006-03
2007-03
2008-03
2009-03
Non-Farm
Manufacturing

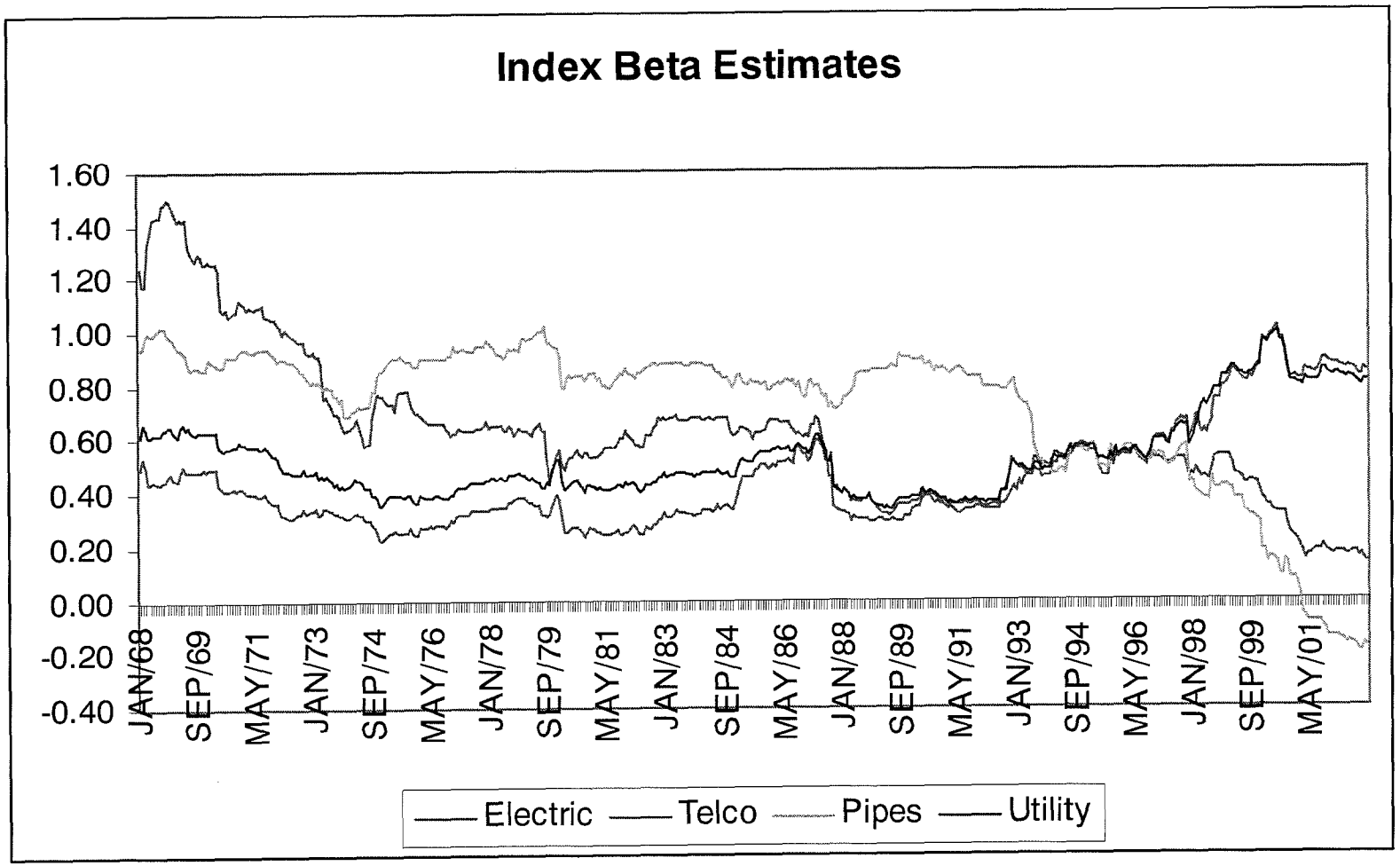

FX Rate Changes & Commodity Prices
initialised to 1.0 in January 1995
(cansim series V37426 & V36382)
3
2.5
2
1.5
1
0.5
1995M01
1995M06
1995M11
1996M04
1996M09
1997M02
1997M07
1997M12
1998M05
1998M10
1999M03
1999M08
2000M01
2000M06
2000M11
2001M04
2001M09
2002M02
2002M07
2002M12
2003M05
2003M10
2004M03
2004M08
2005M01
2005M06
2005M11
2006M04
2006M09
2007M2
2007M7
2007M12
2008M05
2008M10
2009M3
Com Prices
FXRATE

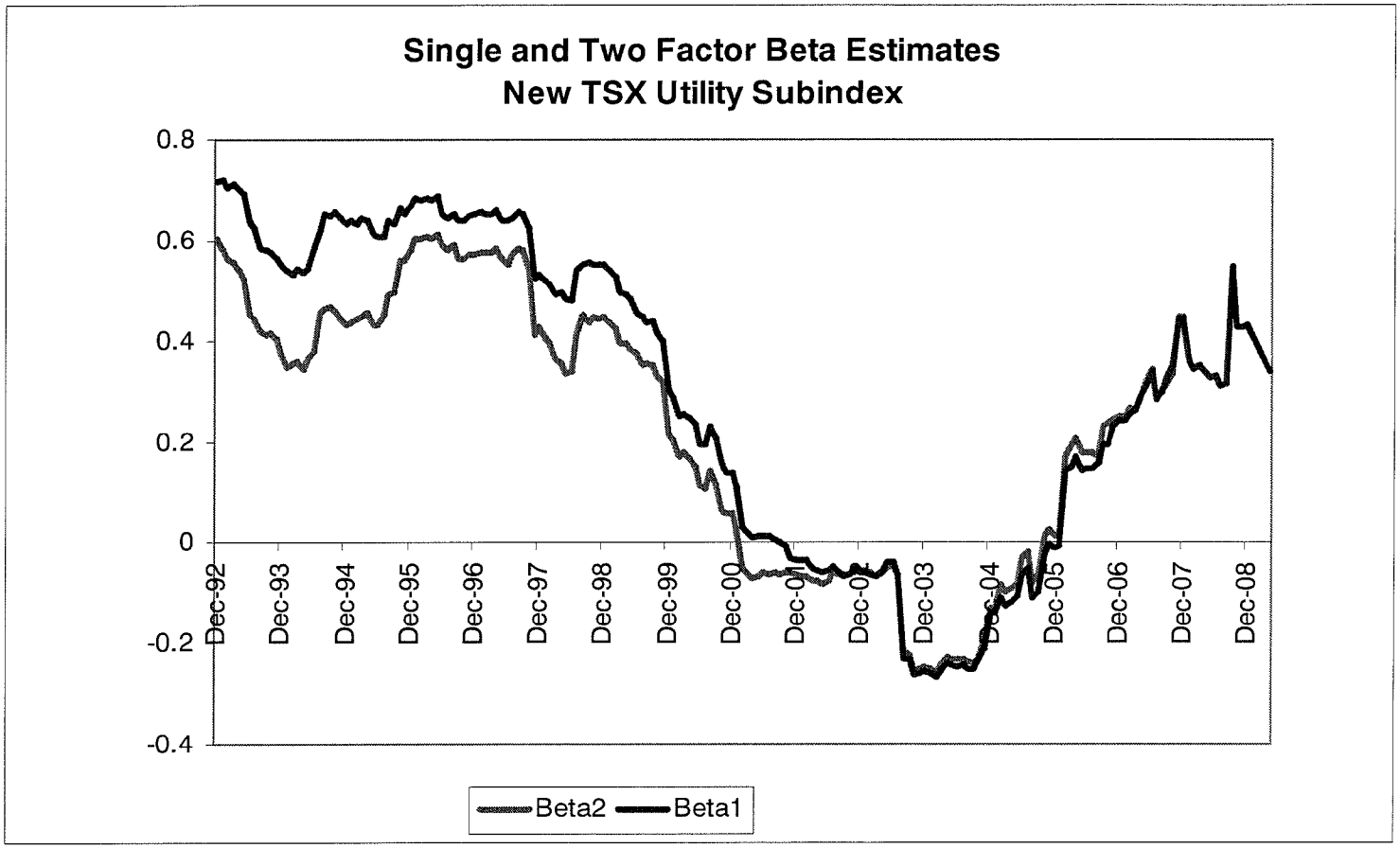
SCHEDULE 10

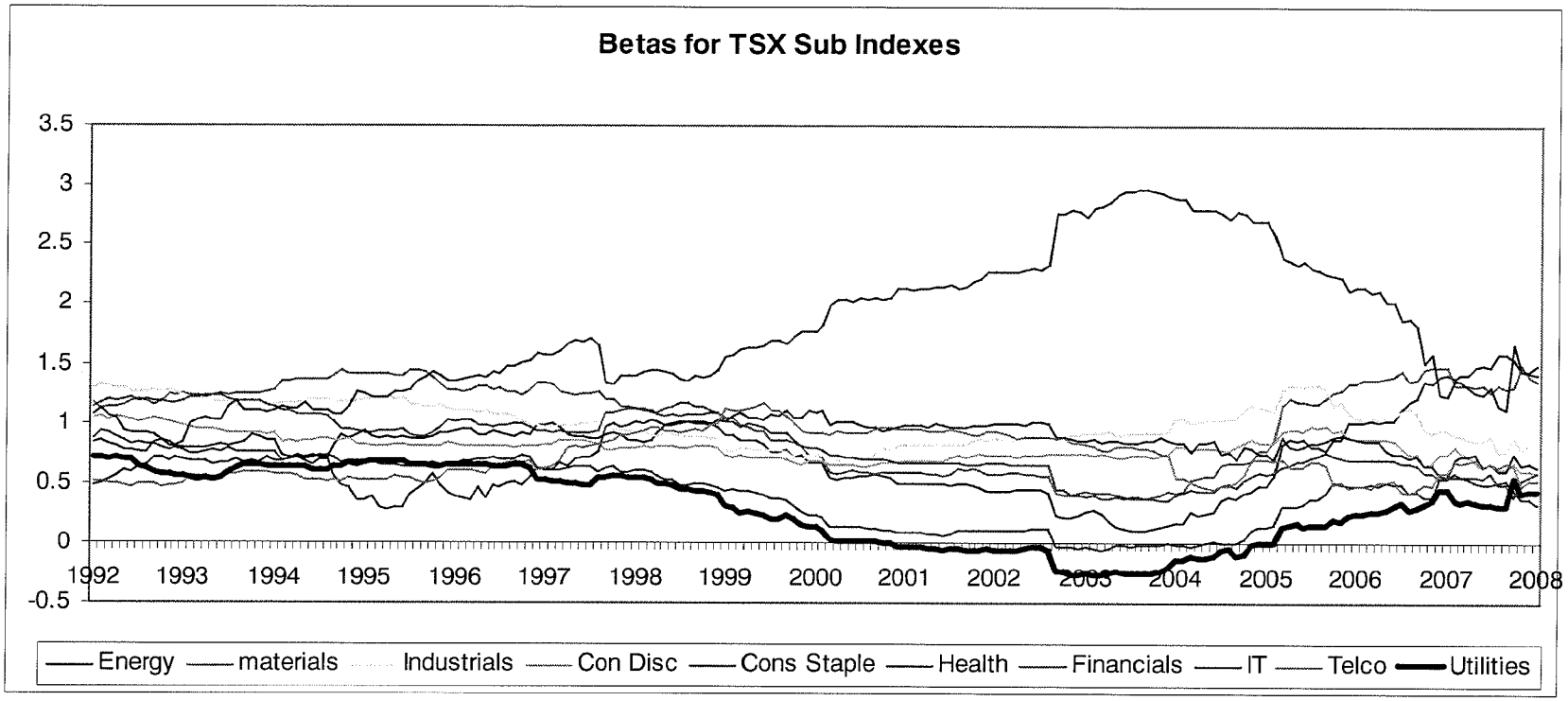

TSXComposite Since January 2007
(cansim series V122620)
17000
15000
13000
11000
9000
7000
5000
3000
1000
1990M01
1991M01
1992M01
1993M01
1994M01
1995M01
1996M01
1997M01
1998M01
1999M01
2000M01
2001M01
2002M01
2003M01
2004M01
2005M01
2006M01
2007M01
2008M01
2009M1


Corporate ROE and BBB Spread
basis points
Percent
400
350
300
250
200
150
100
50
0
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
BBB Spread
ROE
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008

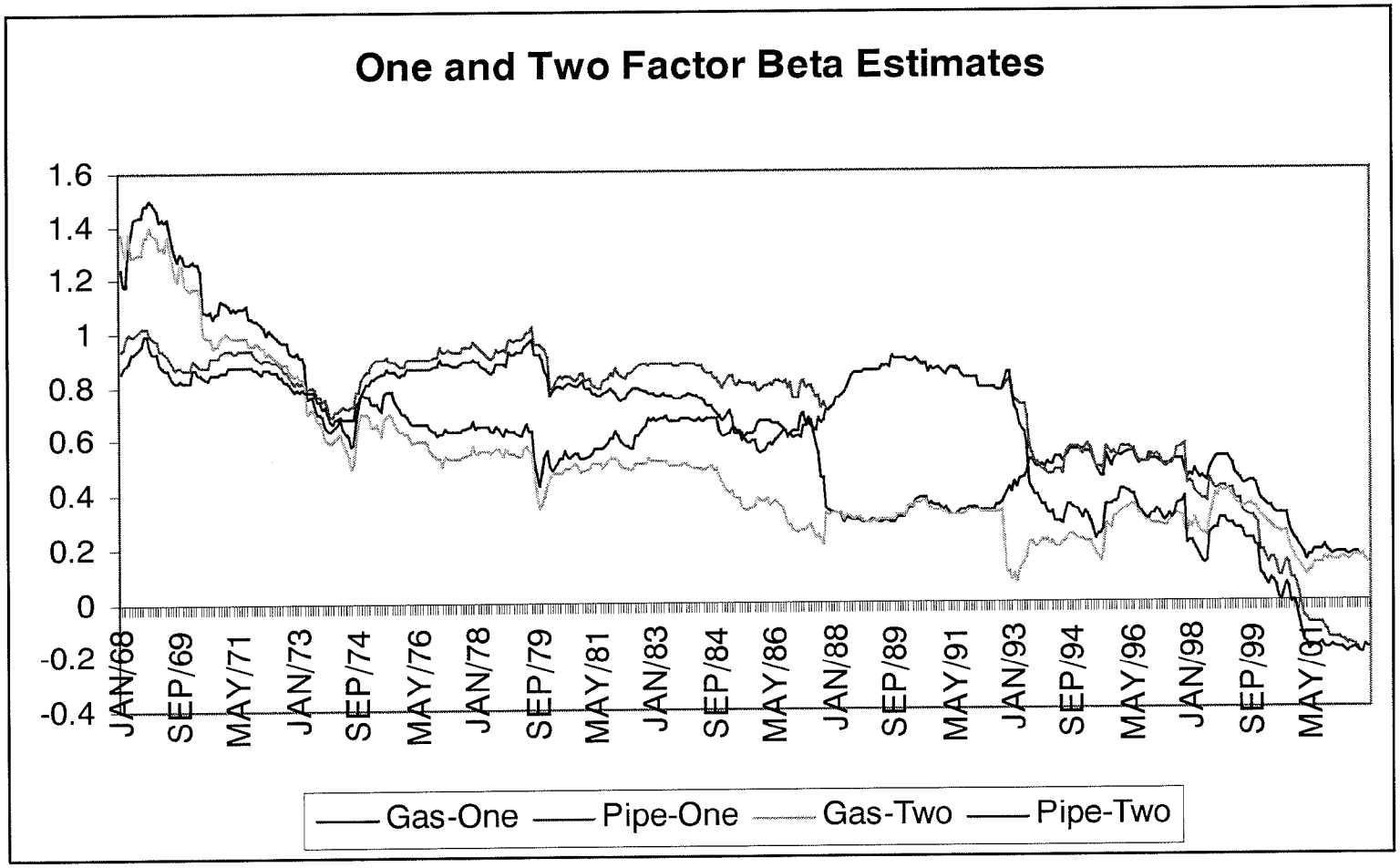

Bond Default Spreads
500
450
400
350
300
250
200
150
100
50
0
4/18/1988
12/8/1988
8/1/1989
3/23/1990
11/14/1990
7/8/1991
2/27/1992
10/20/1992
6/11/1993
2/2/1994
9/26/1994
5/18/1995
1/9/1996
8/30/1996
4/23/1997
12/15/1997
8/6/1998
3/30/1999
11/19/1999
7/12/2000
3/5/2001
10/25/2001
6/18/2002
2/7/2003
10/1/2003
5/24/2004
1/13/2005
9/6/2005
4/28/2006
12/20/2006
8/13/2007
4/3/2008
11/25/2008
7/17/2009
A
BBB
AA

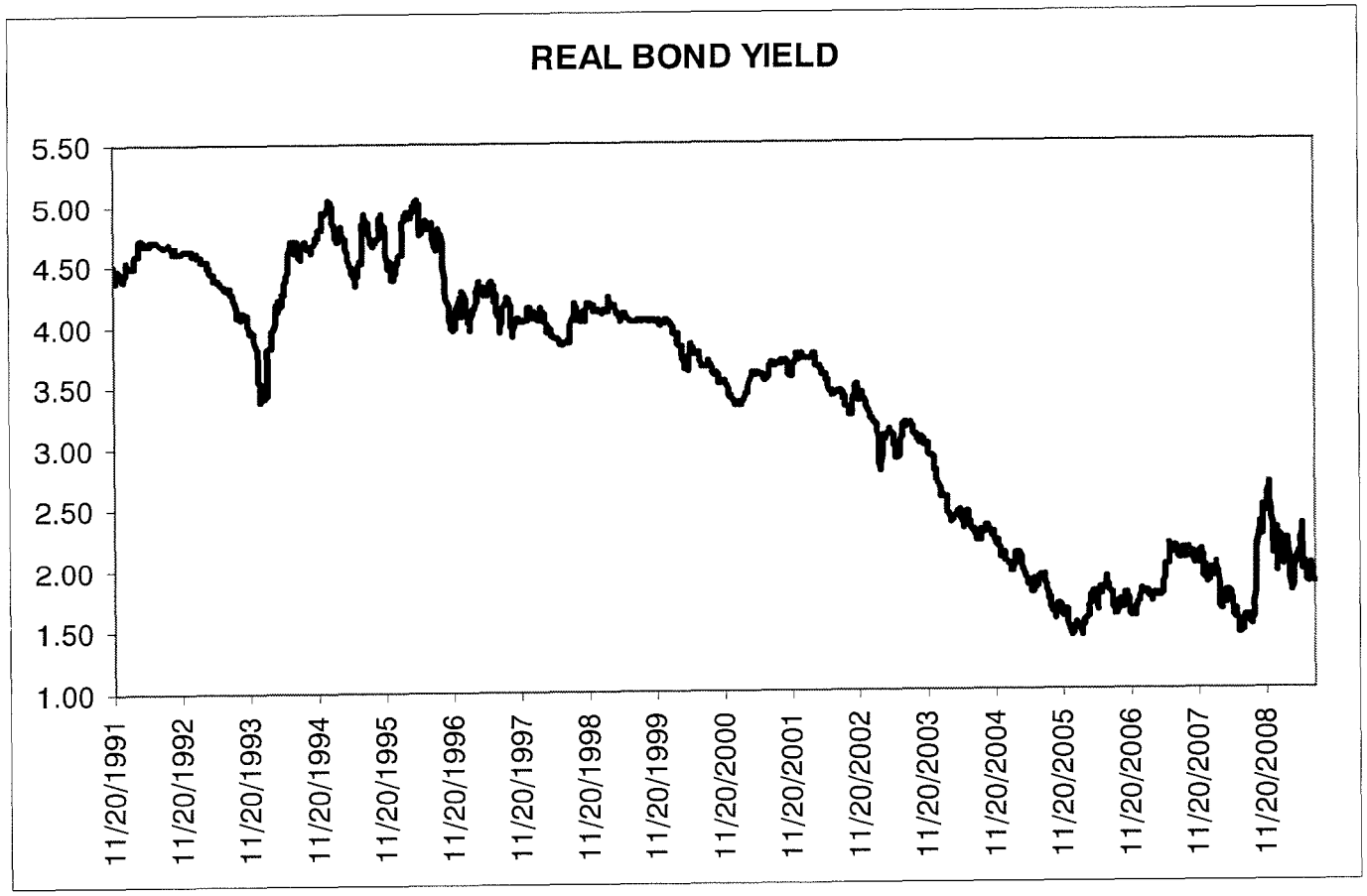

Index Beta Estimates
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
-0.20
-0.40
JAN/68
SEP/69
MAY/71
JAN/73
SEP/74
MAY/76
JAN/78
SEP/79
MAY/81
JAN/83
SEP/84
MAY/86
JAN/88
SEP/89
MAY/91
JAN/93
SEP/94
MAY/96
JAN/98
SEP/99
MAY/01
Electric
Telco
Pipes
Utility


Single and Two Factor Beta Estimates
New TSX Utility Subindex
0.8
0.6
0.4
0.2
0
-0.2
-0.4
Dec-92
Dec-93
Dec-94
Dec-95
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-03
Dec-05
Dec-06
Dec-07
Dec-08
Beta2
Beta1


Betas for TSX Sub Indexes
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
Energy
materials
Industrials
Con Disc
Cons Staple
Health
Financials
IT
Telco
Utilities

	Energy	materials	Industrials	Con Disc	Cons Staple	Health	Financials	IT	Telco	Utilities
1992	0.47	1.17	1.29	1.04	0.88	1.07	1.14	0.83	0.51	0.72
1993	0.70	1.24	1.22	0.98	0.78	0.78	1.18	0.84	0.50	0.55
1994	0.68	1.27	1.15	0.92	0.76	0.85	1.14	1.11	0.58	0.63
1995	0.93	1.41	1.19	0.82	0.68	0.36	0.92	1.25	0.53	0.67
1996	0.93	1.28	1.10	0.83	0.66	0.39	1.02	1.36	0.61	0.65
1997	0.98	1.33	0.97	0.82	0.62	0.60	0.93	1.56	0.62	0.53
1998	0.85	1.12	0.94	0.80	0.60	1.02	1.11	1.40	0.92	0.55
1999	0.91	1.04	0.78	0.73	0.43	1.00	1.00	1.55	1.11	0.30
2000	0.67	0.74	0.73	0.69	0.23	1.10	0.79	1.78	0.92	0.14
2001	0.50	0.60	0.82	0.68	0.10	0.98	0.67	2.12	0.94	-0.03
2002	0.43	0.57	0.86	0.73	0.11	0.99	0.67	2.27	0.92	-0.06
2003	0.27	0.43	0.91	0.74	-0.04	0.85	0.39	2.75	0.82	-0.26
2004	0.17	0.42	1.04	0.81	-0.02	0.84	0.41	2.89	0.55	-0.14
2005	0.48	0.78	1.12	0.84	0.14	0.74	0.58	2.71	0.71	-0.01
2006	1.01	1.34	1.05	0.87	0.48	0.88	0.70	2.14	0.49	0.24
2007	1.41	1.47	0.95	0.74	0.54	0.56	0.55	1.22	0.59	0.44
2008	1.42	1.36	0.79	0.59	0.32	0.64	0.58	1.49	0.53	0.43


One and Two Factor Beta Estimates
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
JAN/68
SEP/69
MAY/71
JAN/73
SEP/74
MAY/76
JAN/78
SEP/79
MAY/81
JAN/83
SEP/84
MAY/86
JAN/88
SEP/89
MAY/91
JAN/93
SEP/94
MAY/96
JAN/98
SEP/99
MAY/01
Gas-One
Pipe-One
Gas-Two
Pipe-Two


REAL BOND YIELD
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
11/20/1991
11/20/1992
11/20/1993
11/20/1994
11/20/1995
11/20/1996
11/20/1997
11/20/1998
11/20/1999
11/20/2000
11/20/2001
11/20/2002
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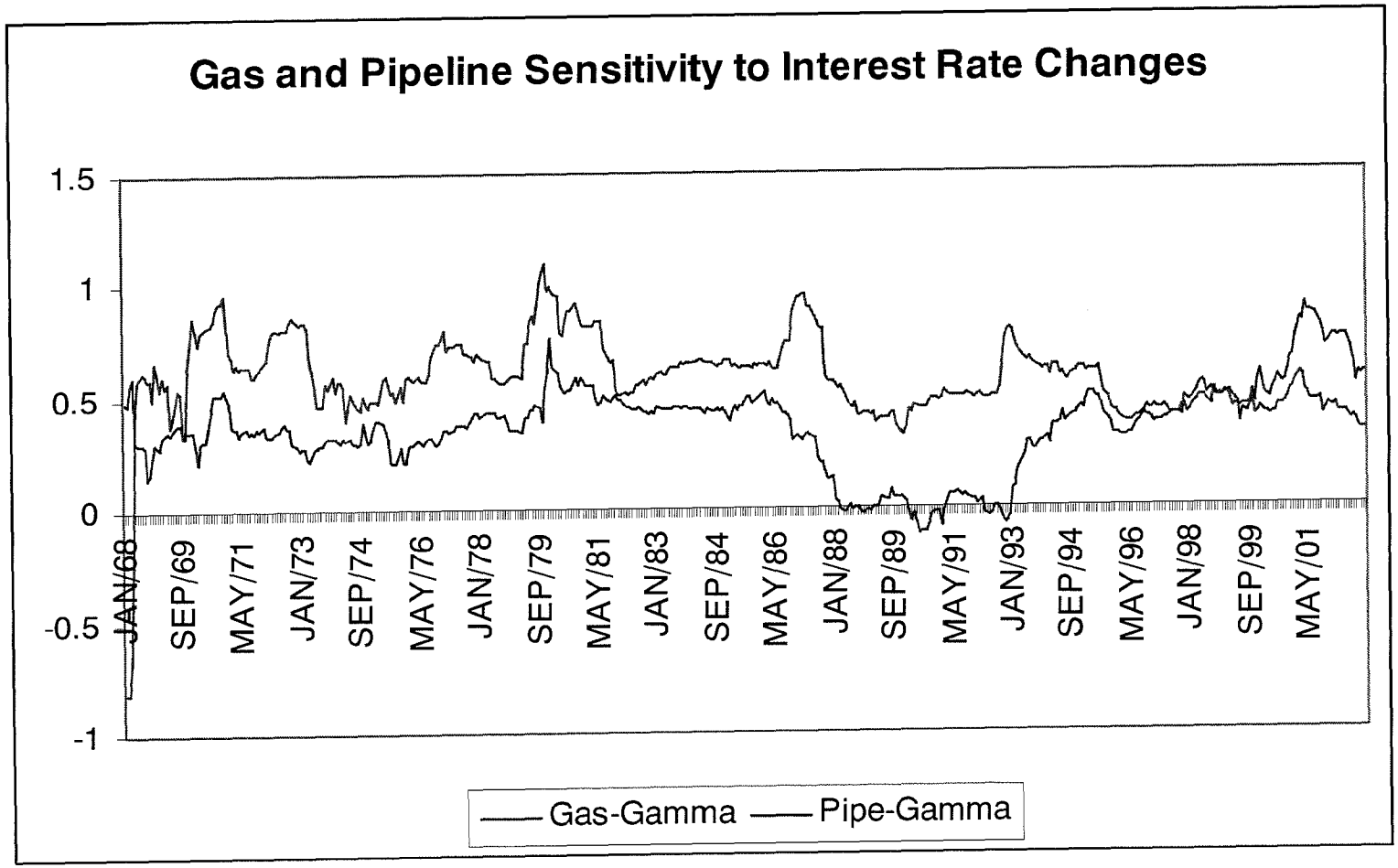
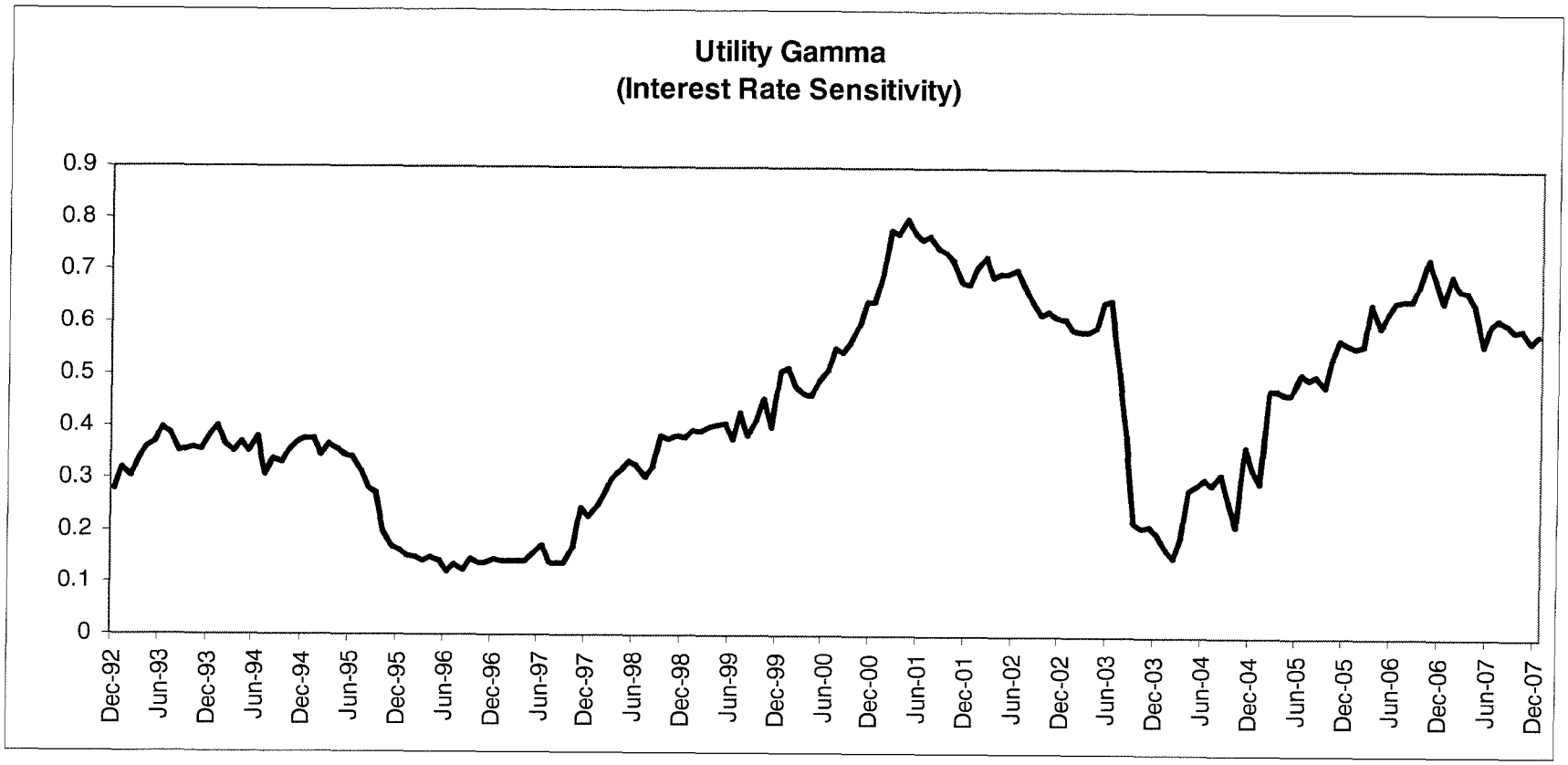
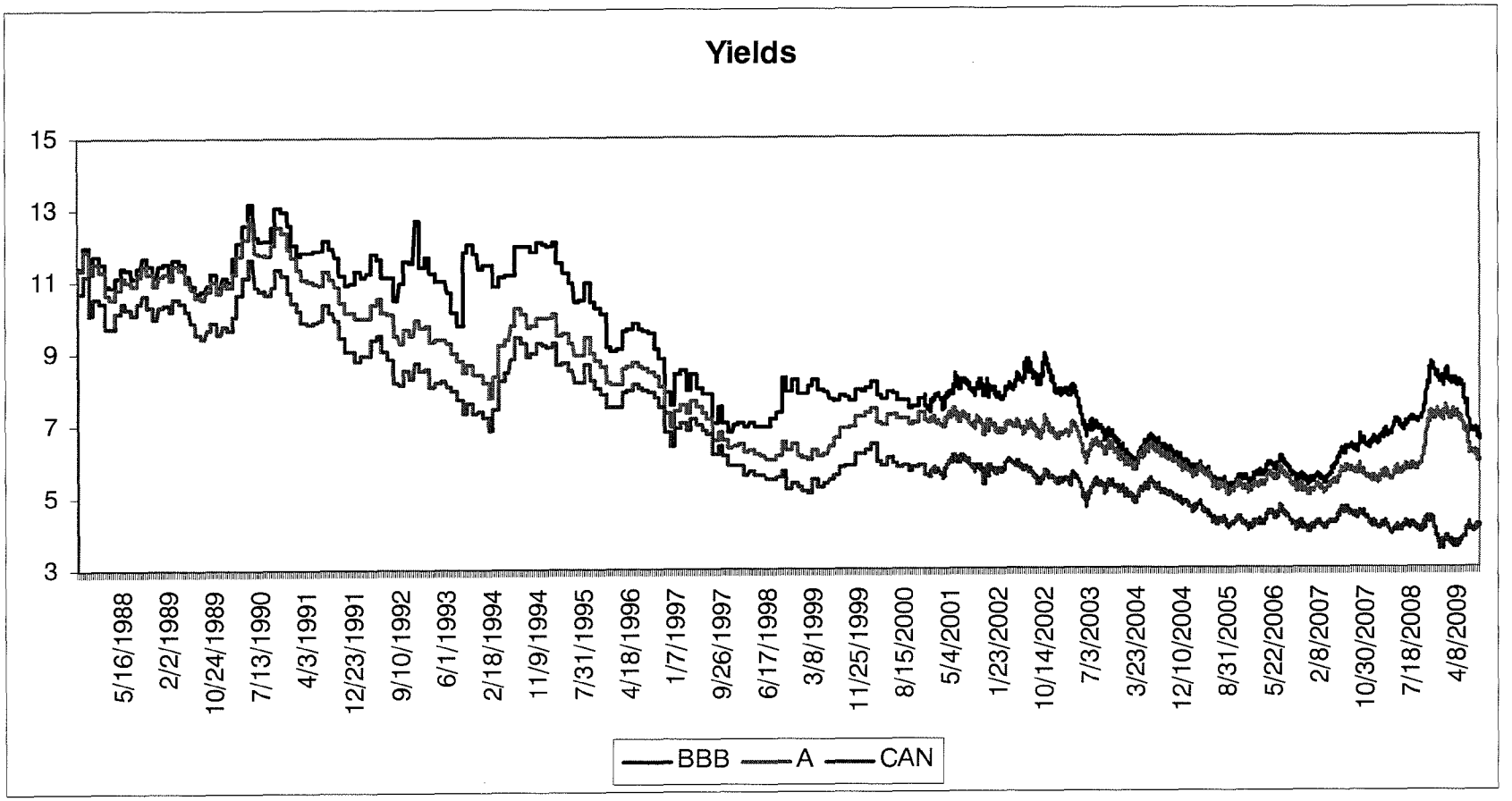
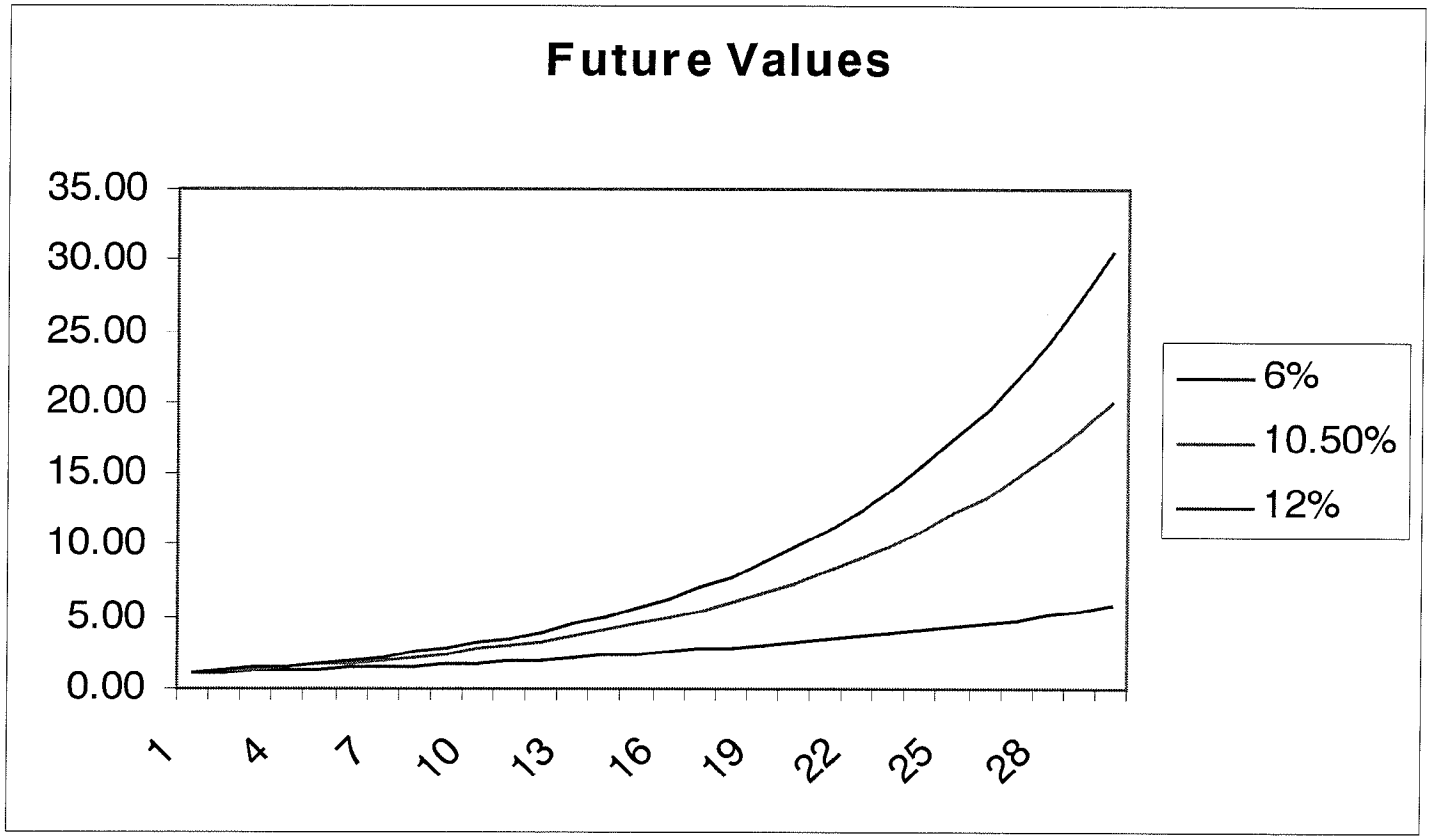
11/20/2004
11/20/2005
11/20/2006
11/20/2007
11/20/2008


Gas and Pipeline Sensitivity to Interest Rate Changes
1.5
1
0.5
0
-0.5
-1
JAN/68
SEP/69
MAY/71
JAN/73
SEP/74
MAY/76
JAN/78
SEP/79
MAY/81
JAN/83
SEP/84
MAY/86
JAN/88
SEP/89
MAY/91
JAN/93
SEP/94
MAY/96
JAN/98
SEP/99
MAY/01
Gas-Gamma
Pipe-Gamma

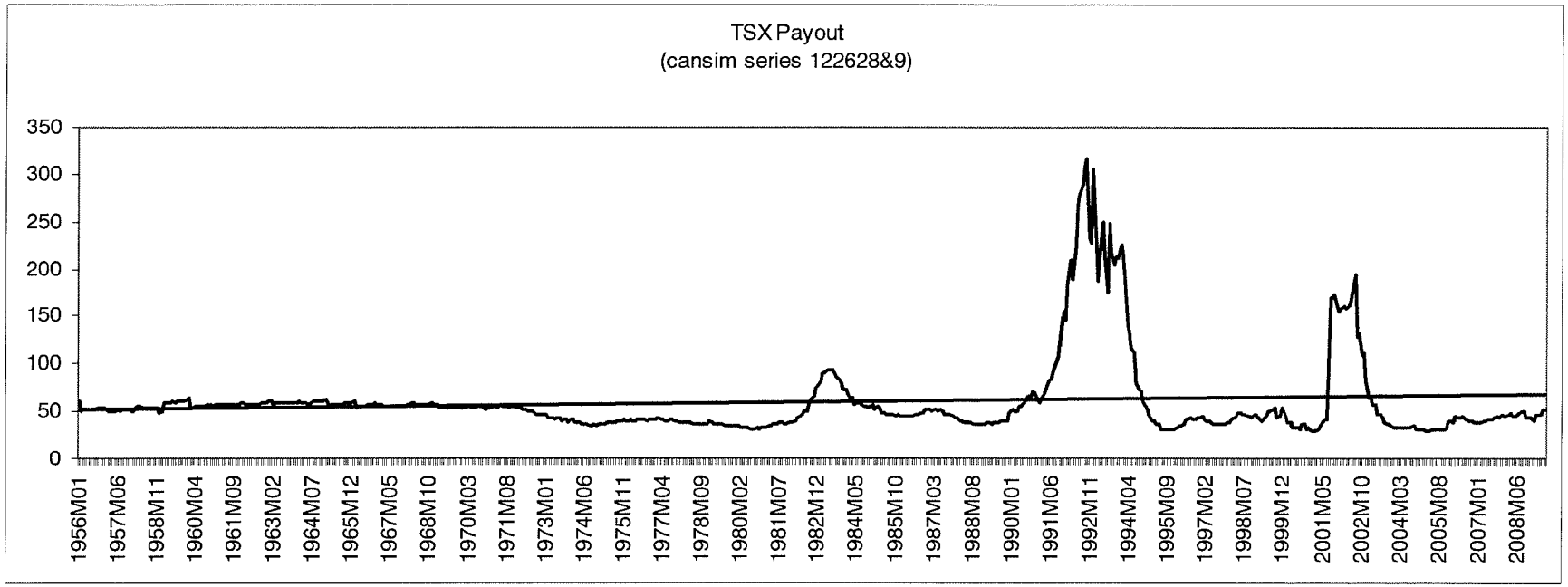
SCHEDULE 20

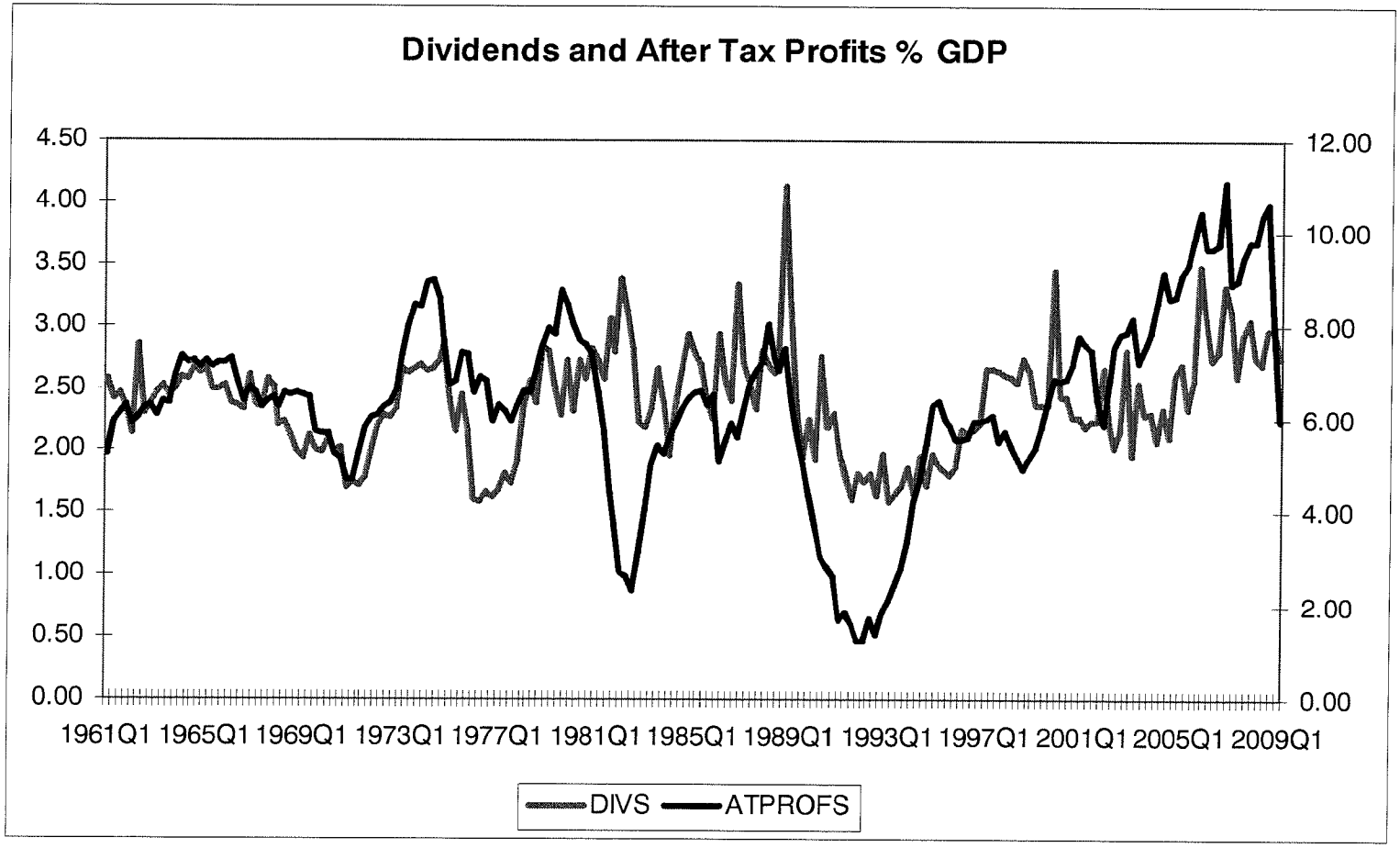

Utility Gamma
(Interest Rate Sensitivity)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Dec-92
Jun-93
Dec-93
Jun-94
Dec-94
Jun-95
Dec-95
Jun-96
Dec-96
Jun-97
Dec-97
Jun-98
Dec-98
Jun-99
Dec-99
Jun-00
Dec-00
Jun-01
Dec-01
Jun-02
Dec-02
Jun-03
Dec-03
Jun-04
Dec-04
Jun-05
Dec-05
Jun-06
Dec-06
Jun-07
Dec-07

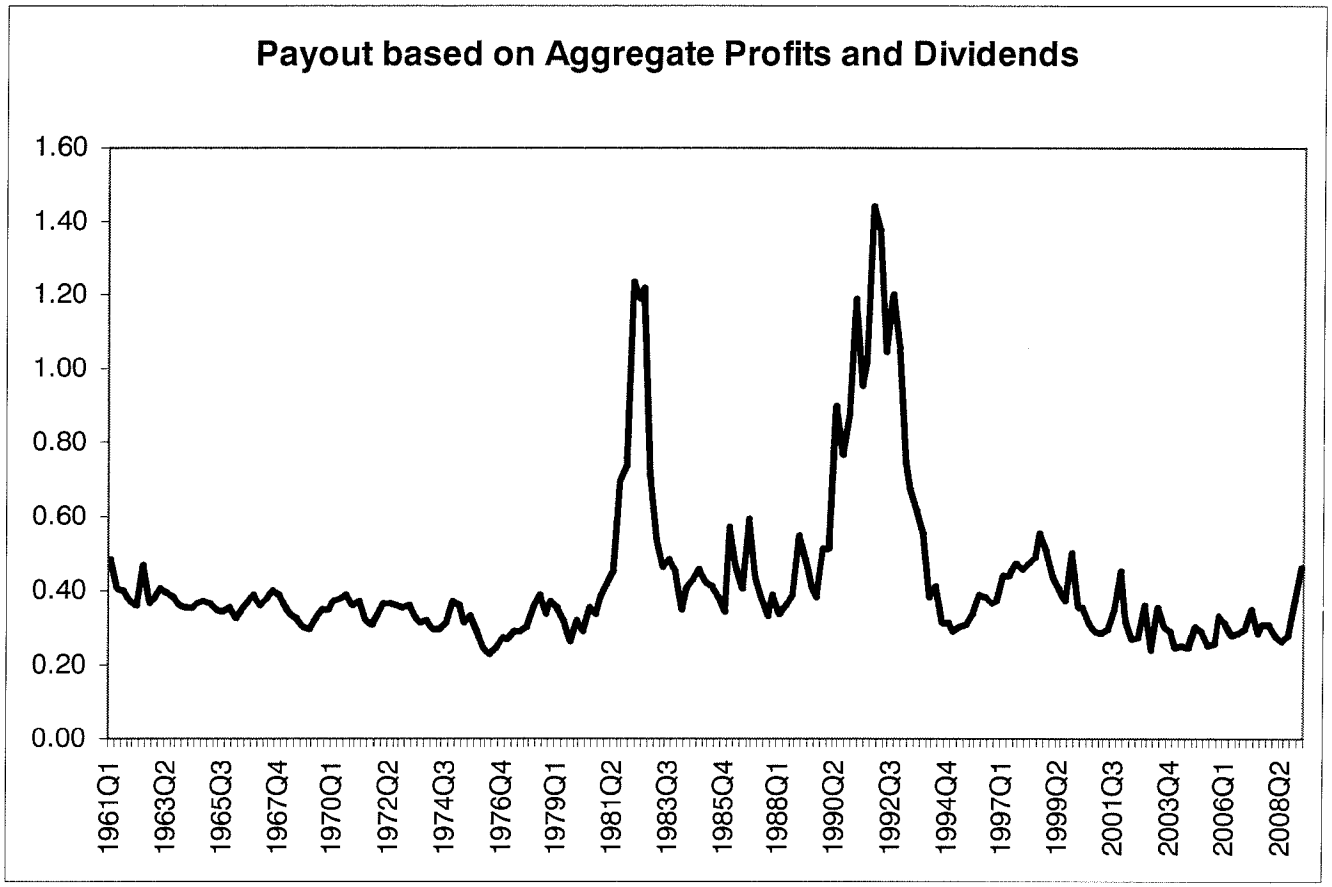

Yields
15
13
11
9
7
5
3
5/16/1988
2/2/1989
10/24/1989
7/13/1990
4/3/1991
12/23/1991
9/10/1992
6/1/1993
2/18/1994
11/9/1994
7/31/1995
4/18/1996
1/7/1997
9/26/1997
6/17/1998
3/8/1999
11/25/1999
8/15/2000
5/4/2001
1/23/2002
10/14/2002
7/3/2003
3/23/2004
12/10/2004
8/31/2005
5/22/2006
2/8/2007
10/30/2007
7/18/2008
4/8/2009
BBB
A
CAN


Future Values
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
1
4
7
10
13
16
19
22
25
28
6%
10.50%
12%

SCHEDULE 23


TSX Payout
(cansim series 122628&9)
350
300
250
200
150
100
50
0
1956M01
1957M06
1958M11
1960M04
1961M09
1963M02
1964M07
1965M12
1967M05
1968M10
1970M03
1971M08
1973M01
1974M06
1975M11
1977M04
1978M09
1980M02
1981M07
1982M12
1984M05
1985M10
1987M03
1988M08
1990M01
1991M06
1992M11
1994M04
1995M09
1997M02
1998M07
1999M12
2001M05
2002M10
2004M03
2005M08
2007M01
2008M06


Dividends and After Tax Profits % GDP
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
1961Q1 1965Q1 1969Q1 1973Q1 1977Q1 1981Q1 1985Q1 1989Q1 1993Q1 1997Q1 2001Q1 2005Q1 2009Q1
DIVS
ATPROFS


Payout based on Aggregate Profits and Dividends
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
1961Q1
1963Q2
1965Q3
1967Q4
1970Q1
1972Q2
1974Q3
1976Q4
1979Q1
1981Q2
1983Q3
1985Q4
1988Q1
1990Q2
1992Q3
1994Q4
1997Q1
1999Q2
2001Q3
2003Q4
2006Q1
2008Q2

US EQUITY MARKET RISK PREMIUM

(USING THE DCF MODEL AND ANALYSTS' GROWTH FORECASTS)

	Claus and Thomas Equity Market Risk Premia[a]			
	US	Canada	France	UK
1989	3.57	3.08	3.64	3.17
1990	3.54	1.51	3.04	2.57
1991	3.01	0.75	2.94	2.47
1992	3.09	0.42	2.26	2.77
1993	3.65	1.69	2.31	3.29
1994	4.06	1.65	1.7	2.87
1995	3.97	2.71	2.06	3.02
1996	3.45	2.69	2.38	3.34
1997	3.23	2.28	2.28	2.53
1998	2.51	2.68	2.53	2.09
C&T Average	**3.4**	**2.23**	**2.6**	**2.81**

a. J. Claus and J. Thomas, "Equity premia as low as 3.0%? Evidence from analysts' earnings forecasts for domestic and international stock markets," *Journal of Finance*, October 2001.

Market Risk Premium Studies

	Country	Holding Period	Arith/Geom.	Historic/Prospective	Market Risk Premium
Dimson, Marsh and Staunton[a]	Canada	1900-2000	Arithmetic	Historic	6.00%
	U.S.	1900-2000	Arithmetic	Historic	7.00%
Claus and Thomas[b]	U.S.	1985-1998	n/a	Prospective	3.40%
	Canada	1985-1998	n/a	Prospective	2.43%
Fama and French[c]	U.S.	1951-2000	n/a	Historic	2.55-4.32%
Ibbotson and Chen[d]	U.S.	1926-2000	Arithmetic	Prospective	5.90%
Arnott and Bernstein[e]	U.S.	1802-2001	n/a	Prospective	2.40%
Graham and Harvey[f]	U.S.	2001-2011	n/a	Prospective	3.60-4.70%
Richard Guay[g]	Canada	n/a	n/a	Prospective	3.00%
Easton and Sommers[h]	U.S.	1992-2004	n/a	Historic	4.43%
Mean					**4.22%**
Booth	Canada	1924-2007	Arithmetic	Historic/Prospective	5.00%

a. E. Dimson, P. Marsh and M. Staunton, *Triumph of the Optimists: 101 Years of Global Investment Returns*, Princeton University Press, 2002.

b. J. Claus and J. Thomas, "Equity Risk Premia as Low as Three Percent? Evidence from Analysts' Earnings Forecasts for Domestic and International Stocks", *Journal of Finance*, October 2001.

c. E. Fama and K. French, "The Equity Risk Premium", *Journal of Finance*, April 2002.

d. R. Ibbotson and P. Cheng, "Stock Market Returns in the Long Run: Participating in the Real Economy", Yale International Center for Finance Working Paper No. 00-44, March 2002.

e. R.D. Arnott and P.L. Bernstein, What Risk Premium is Normal?", *Financial Analyst Journal*, March/April 2002.

f. J.R. Graham and C.R. Harvey, "Expectations of Equity Risk Premia, Volatility and Asymmetry from a Corporate Finance Perspective", Fuqua School of Business Working Paper, Duke University, November 2001.

g. R Guay "The Equity Premium and Risk management in a Global Portfolio," Presentation to the Risk Management Conference, Summer 2003.

h. P.Easton and G. Sommers, "Effect of analyst's optimism on estimates of the Expected Rate of Return Implied by Earnings Forecasts, Journal of Accounting Research, 45-5, Dec 2007.

Spread Between S&P/TSX Composite Total Return Index
and
Selected Bond Returns
January 1950 through December 2007

Table 5
Spread Over 91 Day T-Bills

Date	Geometric Mean	Arithmetic Mean	Std. Dev
8812	5.070%	6.293%	18.042%
8912	5.172%	6.371%	17.816%
9012	4.280%	5.530%	18.397%
9112	4.229%	5.449%	18.179%
9212	3.926%	5.133%	18.080%
9312	4.403%	5.627%	18.167%
9412	4.185%	5.394%	18.027%
9512	4.248%	5.432%	17.827%
9612	4.630%	5.816%	17.827%
9712	4.787%	5.948%	17.660%
9812	4.546%	5.699%	17.562%
9912	4.960%	6.123%	17.639%
0012	4.904%	6.046%	17.470%
0112	4.423%	5.598%	17.598%
0212	3.970%	5.174%	17.699%
0312	4.376%	5.575%	17.777%
0412	4.519%	5.696%	17.634%
0512	4.812%	5.981%	17.603%
0612	4.960%	6.112%	17.473%
0712	4.971%	6.103%	17.319%

Table 6
Spread Over
Medium Term Government Bonds
(7 1/2 year average term)

Date	Geometric Mean	Arithmetic Mean	Std. Dev
8812	5.094%	5.543%	19.826%
8912	5.164%	5.613%	19.568%
9012	4.399%	4.908%	19.824%
9112	4.083%	4.557%	19.703%
9212	3.696%	4.165%	19.626%
9312	3.895%	4.395%	19.449%
9412	3.984%	4.458%	19.226%
9512	3.747%	4.190%	19.091%
9612	3.971%	4.436%	18.951%
9712	4.008%	4.467%	18.746%
9812	3.680%	4.138%	18.684%
9912	4.267%	4.749%	18.977%
0012	4.101%	4.572%	18.825%
0112	3.609%	4.117%	18.916%
0212	3.075%	3.616%	19.075%
0312	3.386%	3.943%	19.040%
0412	3.475%	4.024%	18.869%
0512	3.727%	4.285%	18.793%
0612	3.904%	4.455%	18.666%
0712	3.937%	4.478%	18.499%

Table 7
Spread Over
Long Term Government Bonds
(17 year average term)

Date	Geometric Mean	Arithmetic Mean	Std. Dev
8812	5.696%	6.575%	20.334%
8912	5.679%	6.533%	20.073%
9012	4.992%	5.912%	20.215%
9112	4.600%	5.461%	20.180%
9212	4.142%	4.993%	20.173%
9312	4.241%	5.088%	19.947%
9412	4.378%	5.190%	19.731%
9512	4.052%	4.809%	19.680%
9612	4.234%	4.995%	19.507%
9712	4.097%	4.833%	19.331%
9812	3.681%	4.413%	19.354%
9912	4.362%	5.094%	19.751%
0012	4.157%	4.872%	19.617%
0112	3.704%	4.460%	19.650%
0212	3.156%	3.948%	19.814%
0312	3.473%	4.271%	19.769%
0412	3.466%	4.249%	19.586%
0512	3.557%	4.335%	19.417%
0612	3.736%	4.502%	19.285%
0712	3.782%	4.534%	19.116%

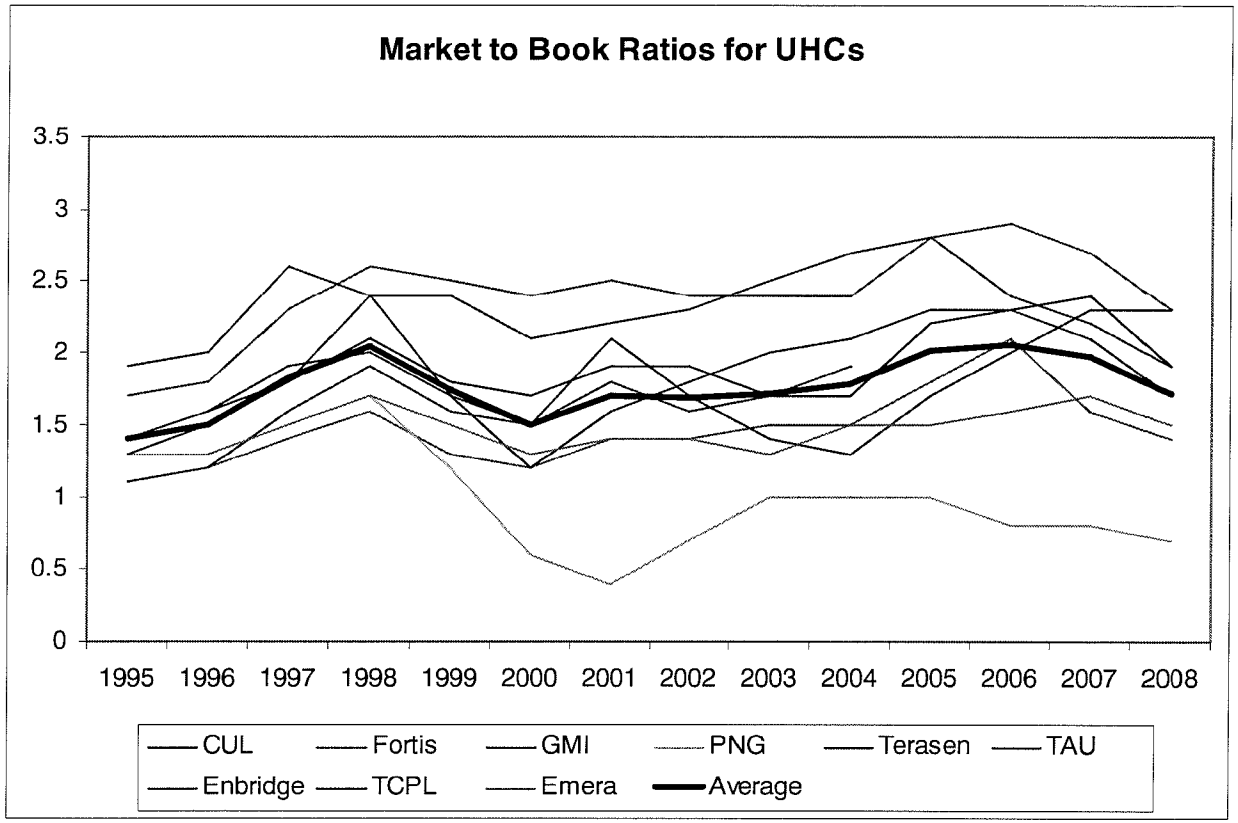
SCHEDULE 29

RETURN ON EQUITY AND MARKET TO BOOK RATIO

	TELCO ROE	TELCO M/B*	PREF YIELD	SPREAD
1970	9.63	0.97	7.42	2.21
1971	11.00	1.07	6.98	4.02
1972	11.83	1.12	7.00	4.83
1973	11.46	1.01	7.26	4.20
1974	9.94	0.86	8.90	1.04
1975	11.80	0.84	9.48	2.32
1976	12.84	0.93	9.28	3.56
1977	13.37	1.06	8.39	4.98
1978	13.43	1.17	8.34	5.09
1979	14.09	1.19	8.64	5.45
1980	13.68	1.05	9.89	3.79
1981	14.06	0.92	12.02	2.04
1982	15.08	0.91	13.78	1.30
1983	15.58	1.16	10.16	5.42
1984	14.82	1.24	9.89	4.93
1985	14.11	1.39	9.26	4.85
1986	13.16	1.41	8.92	4.24
1987	13.03	1.31	8.51	4.52
1988	12.90	1.27	8.37	4.60
1989	12.79	1.32	8.46	4.33
1990	12.68	1.26	9.20	3.48
1991	12.72	1.34	8.54	4.18
1992	12.41	1.35	8.20	4.21
1993	11.98	1.41	7.73	4.25
1994	11.49	1.50	7.96	3.53
1995	10.25	1.33	7.76	2.49
1996	11.22	1.47	7.51	3.71

* Average high low price divided by average book value per share.

SCHEDULE 30


Market to Book Ratios for UHCs
3.5
3
2.5
2
1.5
1
0.5
0
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
CUL
Fortis
GMI
PNG
Terasen
TAU
Enbridge
TCPL
Emera
Average

Appendix A

Joseph L. Rotman School of Management
University of Toronto

Professor Laurence Booth
CIT Chair in Structured Finance

Rotman

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TEACHING AND RESEARCH INTERESTS. Main interest is teaching domestic and international corporate finance. Research interests centre on the cost of capital, empirical corporate finance and capital market theory.

ACADEMIC BACKGROUND:

D.B.A.,	Indiana University, (finance major).
M.B.A.,	Indiana University, (finance major).
M.A.,	Indiana University, (Economics).
B. Sc.(Econ),	London School of Economics.

AWARDS & HONOURS

MBA Second Year Instructor of the Year Award, 1996, 1998 (joint) & 2000
Best paper in corporate finance, 1999 SFA meetings
ASAC Distinguished Professor Address 1990,
Director Financial Management Association 1988-90,
English Speaking Union Fellow,
Fulbright,
Elected to Beta Gamma Sigma,
First class honours B.Sc.(Econ)
CBV (Chartered Business Valuator),
National Post Leader in Management Education Award 2003

ACADEMIC EMPLOYMENT: CIT Chair in Structured Finance (1999-), Professor of Finance, Rotman School of Management, University of Toronto (1987-Present), Visiting Professor Nankai University (China) 1989, the Czech Management Centre (1998), visiting scholar London School of Economics (1985).

TEACHING Graduate (MBA) courses on The Economics of Enterprise, the

EXPERIENCE: Economic Environment of Business, Business Finance, Corporate Financing, International Financial Management, Mergers & Acquisitions, Financial Management, Capital Markets & Corporate Financing (EMBA), Financial Theory of the Firm (Ph.D), Capital Markets Workshop (Ph.D). Undergraduate courses (B.Comm) in International Business and Business Finance. Executive courses (2-5 days) on Money and Foreign Exchange Markets, Business Valuation, Financial Strategy, Equity Markets, Capital Market Innovations, Mergers & Acquisitions and Finance for Non-Financial Managers.

JOURNAL ARTICLES

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"What Drives Provincial-Canada Yield Spreads" Canadian Journal of Economics, (Summer 2007) with Walid Hejazi and George Georgoplous.

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TESTIMONY

Expert financial witness (individually & with the late Professor M.K. Berkowitz) in rate hearings for Altalink partners, ATCO Gas (South), ATCO Pipelines (South), ATCO Electric, Bell Canada, Consumers Gas, Teleglobe, Maritime T&T, Island Tel, BC Tel, AGT, Newfoundland Tel, Union Gas, Ontario Hydro, Centra Gas Ontario, NB Tel, Northwestel, Pacific Northern Gas, BC Gas, West Kootenay Power, TransCanada Pipelines, TransEnergie, Trans Mountain Pipelines, IPL, Westcoast Energy, Nova Gas Transmission, Foothills Pipeline, TQ&M, ANG, and Centra Gas Manitoba.

Other civil cases include: prudent investments in a money market fund; the use of inverse floaters; the valuation of a brick company; the purchase of a private company by a Crown corporation; the liability of an investment dealer in a deficient private offering memorandum; the role of the Crown in managing moneys placed "in trust," the motivation for differential investment decisions, the materiality of press releases and the role of event clauses in contracting.

Ph.D SUPERVISOR:

George Pink, A Dominance Analysis of Canadian Mutual Funds, 1988,

Greg Lypny, An Experimental Study of Managerial Pay and Firm Hedging Decisions, 1989,

Frank Skinner, Credit Quality Adjustments and Corporate Bond Yields, 1990,

Rui Pan, Probability Analysis of Option Strategies, 1994,

Peter Klein, Three Essays on the Capital Gains Lock-in Effect, 1996,

Guy Bellemare, Capital Market Segmentation: US -Canada, 1996,

Kevin Lam, The Pricing of Audit Services, 1997,

Sean Cleary, The Relation Between Firm Investment and Financial Slack, 1998,

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Lynnette Purda, Elements of Corporate Debt Policy, 2003,

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Mill Creek Jewellery,1995 (With E. Kirzner)
Chapters, draft 2002.
Second Cup Valuation, draft 2002.

SERVICE:

Executive Committee member 1980-2, 1989-90, 1993-4, 2001-3
Finance Area Co-ordinator 1987-91, 1994-2008
External Advisory Board, Health Administration Faculty, 1985-92.
Editorial Board Activities:

Journal of Economics & Business 1982-87.
Finance Section Editor, Canadian Journal of Administrative Sciences 1993-2005.
Journal of Multinational Financial Management 1989-.
Journal of International Business Studies 1992-2002
Associate Editor, Multinational Finance Journal, 1995-
Journal of Applied Finance 2003-2007

Director at large Multinational Finance Journal 1998-
Co-Chair 1991 Northern Finance Association meetings.
Chair 1998 Northern Finance Association meetings
Chair Multinational Finance Society meetings July 2009
Programme Committee member FMA meetings, October 1993.
Programme Committee member SFA meetings November 2002.
Programme Committee member, MFS meetings 2002-5
Programme Committee Member, Global Finance Conference, 2006.
Programme Committee Member, European Financial Management 2006.
Frequent media commentator.

August, 2009.

APPENDIX B

THE FAIR RATE OF RETURN CONCEPT AND "COMPARABLE EARNINGS"

Corporate ROEs as an opportunity cost

The owners of a firm invest money to buy real and financial assets; their personal equity investment in the firm is then recorded as 'stockholder's equity' in the firm's balance sheet. In order to undertake an investment the owners must expect to earn a rate of return at least equal to their minimum required rate of return, which is termed their cost of equity capital or fair rate of return.[1] It is this rate of return that is an opportunity cost and that we award regulated utilities in order to treat their shareholder's fairly not the rate of return that the firm expects to earn.

Investors have to expect to earn their fair return or opportunity cost otherwise they will not undertake the investment, so there is a link between what a firm earns and what an investor requires. However even if we are able to create a sample of firms that are identical in risk to the firm under examination, so that the investor's cost of capital is similar, there is ***no*** reason for the earned rate of return of the sample (commonly referred to as the "comparable earnings" to be similar to either that of the firm or its fair return.

The basic problems with the earned rate of return are as follows:

1. It is an average not a marginal rate of return;
2. It is an accounting rate of return not an economic rate of return;
3. It may include the impact of market power;
4. It is based on non-inflation adjusted numbers;
5. It is earned on historic accounting book equity that does not reflect what can be earned on investments today;
6. It varies with the firms selected in the "comparable earnings" sample

In corporate investment decisions the stream of future expected cash flows from an investment is discounted back to determine its present value cash flow and accepted if this value exceeds its

[1] These terms are used synonymously.

cost. This is the project's net present value ***(NPV)***. Alternatively, the internal rate of return ***(IRR)*** is the discount rate that sets the stream of expected future cash flows equal to the cost of the project. The IRR is then frequently called the economic rate of return and the IRR criterion says to accept a project if the IRR exceeds the cost of capital. In this way if the economic rate of return or IRR is at least equal to the cost of capital, then the project enhances shareholder value and should be accepted.

The process of capital budgetting is then illustrated in Schedule 1, where the firm accepts the projects that generate the most NPV first, since these create more shareholder value. So in Schedule 1 the firm would accept the project with an IRR of 20% before one with an IRR of 15% and so on all the way down to the last marginal investment at I^{*}[2] which is the firm's optimal level of investment. If we could actually observe this process within a firm what we would then always observe is that the average expected IRR or economic rate of return will always exceed the fair rate of return or cost of capital. This is because firms should not accept negative NPV projects. The test for this is simple. Firms should only accept projects where the IRR exceeds the fair return which means positive NPV projects, as such the market value of their projects should exceed their cost, which is what a positive NPV means and their market to book ratio should be above 1.0. Observing market to book ratios above 1.0 is therefore a litmus test for average economic rates of return exceeding a fair return or alternatively firms not destroying shareholder value.

The implication of the foregoing discussion is therefore a very fundamental problem that comparable earnings is biased in favour of over estimating the fair rate of return, since

1. It is an average not a marginal rate of return;

The second problem is that whereas decision making is made based on economic value added the source of the data for "comparable" earnings estimates is the accounting data. Unfortunately accounting statements often bear only a faint resemblance to the underlying economics. For example, the economic rate of return uses tax accounting for depreciation (CCA) since

[2] This assumes that the projects are risk adjusted.

accelerated depreciation reduces the tax paid in the early life of and project and enhances cash flow and the IRR. In contrast, the accounting statements use generally accepted accounting principles (GAAP) and the firm may choose from a variety of depreciation methods including straight line which reduces the earlier deprecation and increases the accounting return on equity or ROE.

Another example is accounting for research and development and advertising expenditures. In both cases these are made since they generate future benefits and are thus investments. However, accountants are very worried about manipulation of financial statements and require that both these expenditures be expensed rather than capitalised. The result is that small growth firms are expensing investments and vastly understating their true profitability. In contrast mature stable firms with brands and established products that have been generated by these expenditures have their profitability over stated since the value of these brands and technology are not captured on the balance sheet since they have never been capitalised.[3]

There are many other problems with accounting data which is why any serious analyst looks to the cash flow statement to assess the quality of a firm's earnings. Inventory problems in terms of LIFO versus FIFO, revenue recognition problems in terms of point of sale, one time capital gains form asset sales, gains from pension revaluations etc can all distort the true profitability of a firm. As a result, comparable earnings is deficient since

2 *It is an accounting rate of return not an economic rate of return;*

Closely related to the fact that it is an accounting rate of return is that positive NPV's only come from the ability of the firm to create value for its shareholders. If a firm does create a brand or some special product through R&D then not only is the asset that generated the value not capitalised, but the net income will include the impact of any monopoly profits or market power. It is these monopoly profits that generate the dynamism of a competitive free enterprise system but if there are barriers to entry the profitability of these dominant firms will bear no relationship to opportunity costs.

[3] They can be through mergers and acquisitions which I will discuss shortly.

We can think of this on terms of the way the economic system t roots out failed firms. There might be several firms all undertaking the same investment in R&D or advertising, but the nature of competition is that only a few will survive to become the leading firms in the industry. If we match large capital intensive utilities with similar firms in other industry we tend to pick up these successful firms that won the competitive race and now have strong market positions and high ROEs. Hence, a sample of "comparable earnings" firms

3. It may include the impact of market power;

It is for this reason that traditionally comparable earnings ROEs are deflated by making a market to book adjustment to remove the impact of market power. Otherwise the utility is being granted a return equivalent to that which firms with market power are earning elsewhere when the basis of regulation is to *remove* the impact of this market power.

The accounting ROE is also affected by inflation. This is not the serious problem it has been in the past, but North American GAAP is still based on historic cost accounting and the numbers in the financial statements are the historic, not the replacement or current value costs. This affects both the opportunity cost and the ROE. Consider, for example, a situation where the investor wants a 5% real rate of return and inflation is expected to be 4.76%, so the nominal required rate of return is 10%. Suppose there is a $100 investment expected to earn a real return of 5% in perpetuity. What this means is that this year's cash flow of $5 is expected to increase to $5.24 next year, and then to $5.49 the following year. Alternatively, the same expected cash flow can be calculated from the inflation adjusted value of the investment, which increases from 100 to $104.76. The firm is then expected to earn a real return of 5% on this inflation adjusted book value, so that .05 * $104.76 also gives $5.24.

The above example illustrates how the real return bond issued by the Government of Canada works. The principal or par value is increased with the consumer price index and the investor then receives a fixed real rate of return on this inflation adjusted principal value. Why this is important is that non-regulated firms operating under inflation have the characteristics of the real return bond. If these firms are inflation neutral then their profits go up with inflation, as does the

market value of their investment, so they continue to earn the same real rate of return. Historic cost accounting does not recognise this increase in the market value of the assets, so the earned returns are in excess of the real rate of return due to the understatement of the book value. In the example if the investment value is not increased, the accounting return would be 5.24%, not the actual real return of 5%.

What the example illustrates is that if non-regulated firms are inflation neutral then their reported returns are real returns. However, to the extent that their investments are not revalued and continue to be reported at historic costs, then the reported returns exceed the real return. In this case we would again observe market to book ratios in excess of 1.0. In this case it is because the assets are valued at historic, instead of current dollar values. Again investors can not buy the assets at these historic costs and as a result their fair return is overstated. What this means is that an ROE from a sample of "comparable earnings" firms is biased since

4. It is based on non-inflation adjusted numbers;

The above inflation problem has become more important as the rate of inflation has gradually declined in Canada. The one objective piece of information in the fair opportunity cost is the yield on the Government of Canada bond which has come down due to inflation. However, the "comparable earnings" ROE is almost always a sample average over a pervious time period usually ten years. Even if there was no market power and marginal IRRs always equalled the cost of capital, the secular decline in the opportunity cost means that backward looking historic estimate over estimates the current fair rate of return. It is necessary to average over time to remove some of the random error but the time period has to be checked to be consistent with the underlying inflationary expectations. Otherwise a problem with the comparable earnings ROE estimate is that

5. It is earned on historic accounting book equity that does not reflect what can be earned on investments today;

The final problem is that the swings in the economy affect the assessment of the accounting rates of return. At the peak of the cycle, excess spending by consumers and businesses push up prices

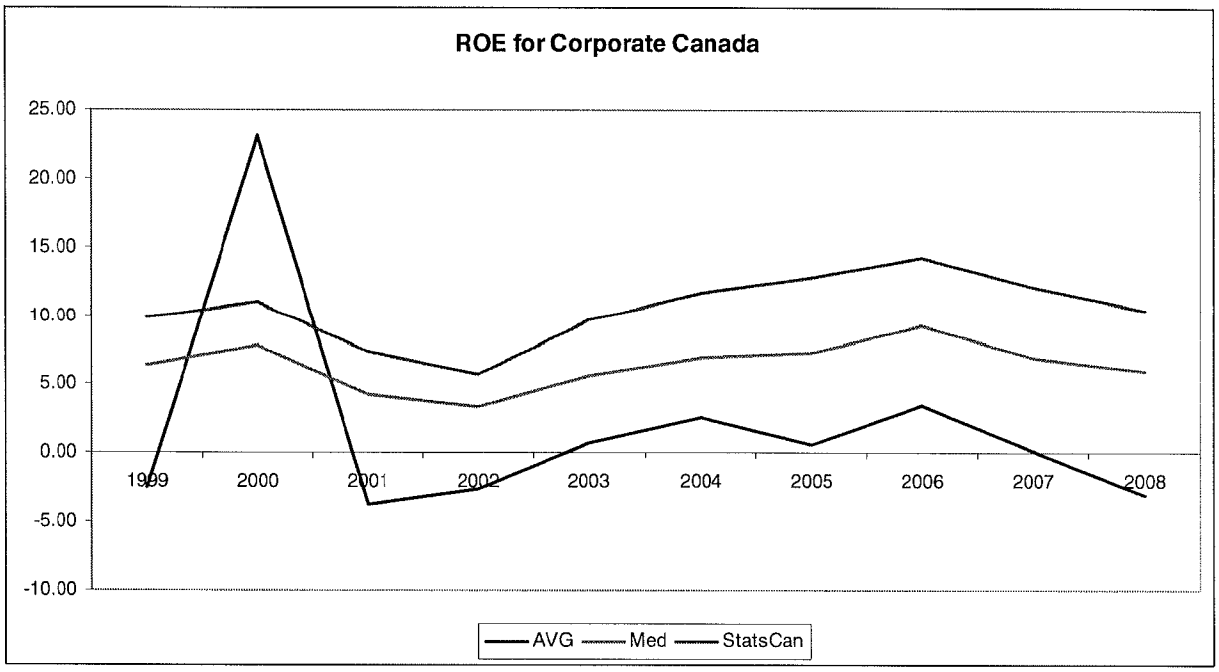
and firms generate large profits. Conversely, in recessions the lack of demand causes sharp price discounting, reduced margins and lowered, if not negative, rates of return. The peaks and troughs of the business cycle can be offset by averaging over the full business cycle, but this just leads to the problem that only rarely is the economy stable enough that the past business cycle can be used as a predictor of the future business cycle. However, the variability in accounting ROEs opens up enormous selection errors in choosing firms. This leads to the sample selection problem that the sample average ROE

6. It varies with the firms selected in the "comparable earnings" sample

Range of Estimates

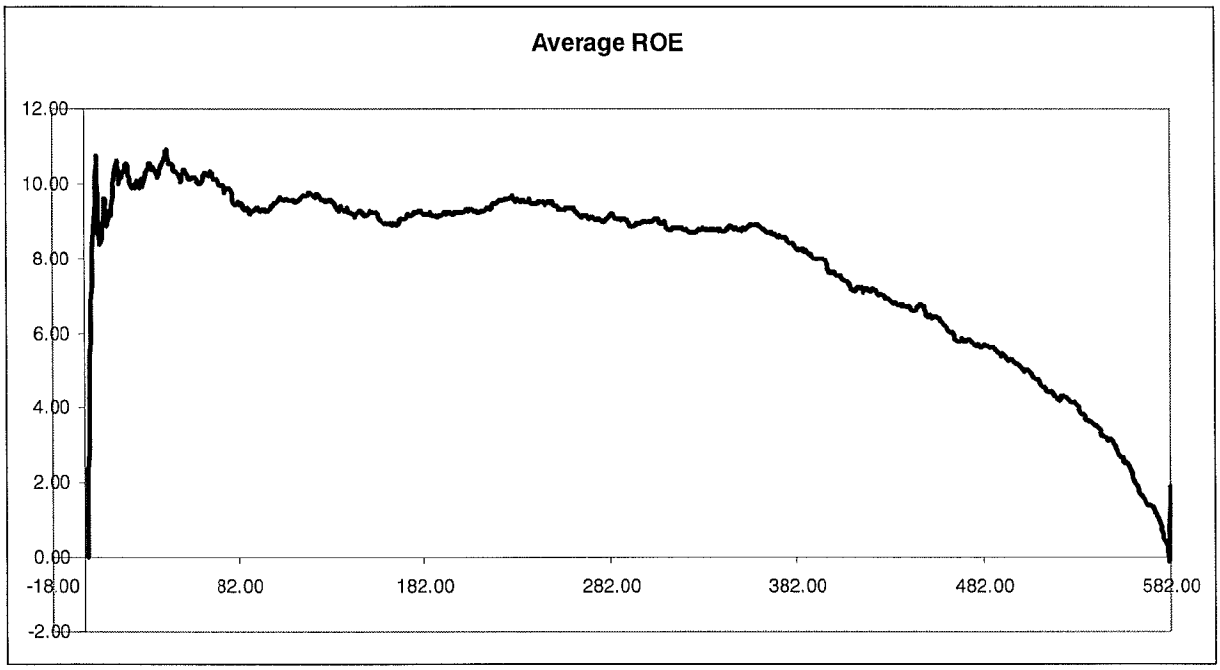
The previous discussion simply indicated the methodological problems with averaging ROEs from a sample of firms claimed to be comparable to the firm in question and using this as an estimate of the fair ROE. To illustrate the problem in Schedule 2 is the actual ROEs for each firm included in the Financial Post's full coverage sample of firms. So no "screens" have been used to remove firms that were not felt to be representative. This is the population of firms not a sample, in the same way that the TSX market return reflects the losses from holding Nortel and not an imaginary portfolio of firms that only produced good results. The data is their reported ROE from 1999-2008 with the last two columns the standard deviation of this annual ROE and the average over the ten years. The firms are ranked from lowest to highest based on this standard deviation.

The following graph shows the average and median ROE for each year from this Financial Post population of firms as well as the average ROE produced by Statistics Canada for Corporate Canada as a whole. Of note is that the median from the FP population tracks the Statistics Canada data very carefully, whereas the average does not. The simple correlation coefficient indicates this since it is 0.30 for the average and 0.95 for the median ROE with the Statistics Canada data.



What is important is that over this ten year period the average ROE from the Statistics Canada data is 10.45% whereas it is 6.39% for the median and only 1.85% for the average from the FP population. If "comparable earnings" is meant not as an estimate of an opportunity cost, which it is not and instead is justified on the basis of some fairness criterion then the typical firm in Canada earned 6.39% over this ten year period, which is the average of each year's median ROE. This estimate is pulled down by the large number of relatively small firms, in contrast the Stats Canada data is higher at 10.45%, but both are significantly below the 11.50-11.75% used by Ms. McShane as a comparable earnings ROE estimate. Since her sample of firms is in the overall population it is reasonable to ask how 6.39%-10.45% became 11.5-11.75%.

To see this I sorted the firms according to the standard deviation of their ROE, which is a standard risk measure. I then simply formed a portfolio starting with the lowest risk firm by successively adding more risky firms until I had a sample equal to the entire population. I then calculated the average ROE for each of these portfolios The result is graphed below. The starting point is a bit anomalous since Imperial Ginseng has a zero ROE for each year and thus its average and standard deviation are both zero.



However, what is striking is how the average ROE increases to just over 10% (highest is 10.90%) and then progressively decreases as more risky firms are added, particularly after the 350 lowest risk firms are added. The reason for this is that losses in year 200X also causes the book equity to fall for 200X+1 so that another year of losses magnifies the loss. This is a basic problem with ratios.

The upshot is that to get a high ROE from a sample of comparable earnings firms simply means coming up with "reasonable" screens to narrow down the sample and exclude these firms with significant losses. Some of the firms followed by FP are very small with limited history, so one screen would be to impose a minimum equity size. Since firms making large losses usually do not also pay a dividend another screen might be to remove firms without a consistent dividend history. Another screen might be to remove firms from certain industries that either have a lot of starts ups or are cyclical. The point is that a priori the screens might sound reasonable. But the fact is that the end result is to go from the population ROE as indicated above to a higher number by screening out firms with low average ROEs.

The Fair ROE Standard

It is for the above reasons that most economists ignore accounting rates of return and go directly to the capital markets for an assessment of a fair rate of return. The objective of rate of return regulation is that the owners of the firm should not earn excess rates of return from the exercise of monopoly power, nor be penalised by the act of regulation. This economic proposition has been reinforced by legal precedent. In Northwestern Utilities vs. City of Edmonton (1929), it was stated that a utility's rates should be set to take into account "changed conditions in the money market." By definition "Comparable earnings" ROE estimates have nothing to do with changed conditions in the money market or any measure of an opportunity cost.

A fair rate of return was further confirmed in BC Electric (1960) when Mr. Justice Lamont's definition of a fair rate of return, put forward in Northwestern utilities, ie.,

> "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."

was adopted. Economists immediately recognise this definition as an opportunity cost. Only if the owners of a firm earn their opportunity cost will the returns accruing to them be fair, i.e., will the return neither reward the owners with excessive profits, nor reward the ratepayers by charging them prices below the cost of providing the service. Hence, the opportunity cost is from economic theory, as well as the Northwestern Utilities decision, a fair rate of return.

Of note is that Mr. Justice Lamont's definition includes three critical components:

(1) The fair return should be on the "capital invested in its enterprise (which will be net to the company)"

This means that the return should be applied to the capital actually "invested" in the company, which is normally interpreted as the "book value" of the assets, and not their market value. As the Alberta EUB stated (Generic Cost of Capital Decision U-200452, p 24)

> "The Board considers that the application of a market required return (i.e. required earnings on market value) to a book value rate base is appropriate in the context of regulated utilities."

The reason for this is that market values change as a result of the regulatory decision and has little connection with the actual capital invested in the firm. As a result, Mr. Justice Lamont's definition is normally interpreted as applying a market based opportunity cost to the original historic cost rate base.

(2) "other securities"

Mr. Justice Lamont specifically states that the alternative investment should be other securities, and not the book value investment of other companies. This was a natural outgrowth of the *Northwestern Utilities Limited* decision that was concerned with the authority of the Board to change the allowed rate of return to reflect "changed conditions in the money market." In 1929 the term "money market" had a broader interpretation than its current use; "capital market" would be closer to today's terminology.

The motivation for the definition was clearly the desire to change the allowed rate of return to reflect the changes in "market opportunities." This is equivalent to the standard economic definition of a market opportunity cost that the return should be equivalent to what the stockholders could get if they invested elsewhere. Clearly this can only be at market prices, since the utility investor cannot invest elsewhere at book value! Hence, the opportunity cost has to be measured with respect to market rates of return.

(3) "attractiveness, stability and certainty"

These words clearly articulate what a financial economist would call a risk-adjusted rate of return. Even in 1929 it was obvious that investors required higher rates of return on risky investments, than on relatively less risky ones.

Further in *Federal Power Commission et al v. Hope Natural Gas Co.* [320U.S.591, 1944], the United States Supreme Court decided that a fair return

"should be sufficient to assure confidence in the financial integrity of the enterprise so as to maintain its credit and to attract capital."

Financial integrity is critical for a utility. Since the equity holders have made a "sunk" investment, it is possible for subsequent regulated decisions to deprive the stockholders of a reasonable return and thus make it very difficult to access the market for new capital. Financial integrity is thus equivalent to the ability to attract capital and fair treatment to investors. The investor's "market opportunity cost" accomplishes these additional objectives, since by definition the opportunity cost is the rate that the investor can earn elsewhere. Thus it is a rate that attracts capital and if the company can attract capital on reasonable terms it can maintain its financial integrity. The upshot of these remarks is that Mr. Justice Lamont's definition of a fair rate of return is essentially a ***market based investor opportunity cost.***

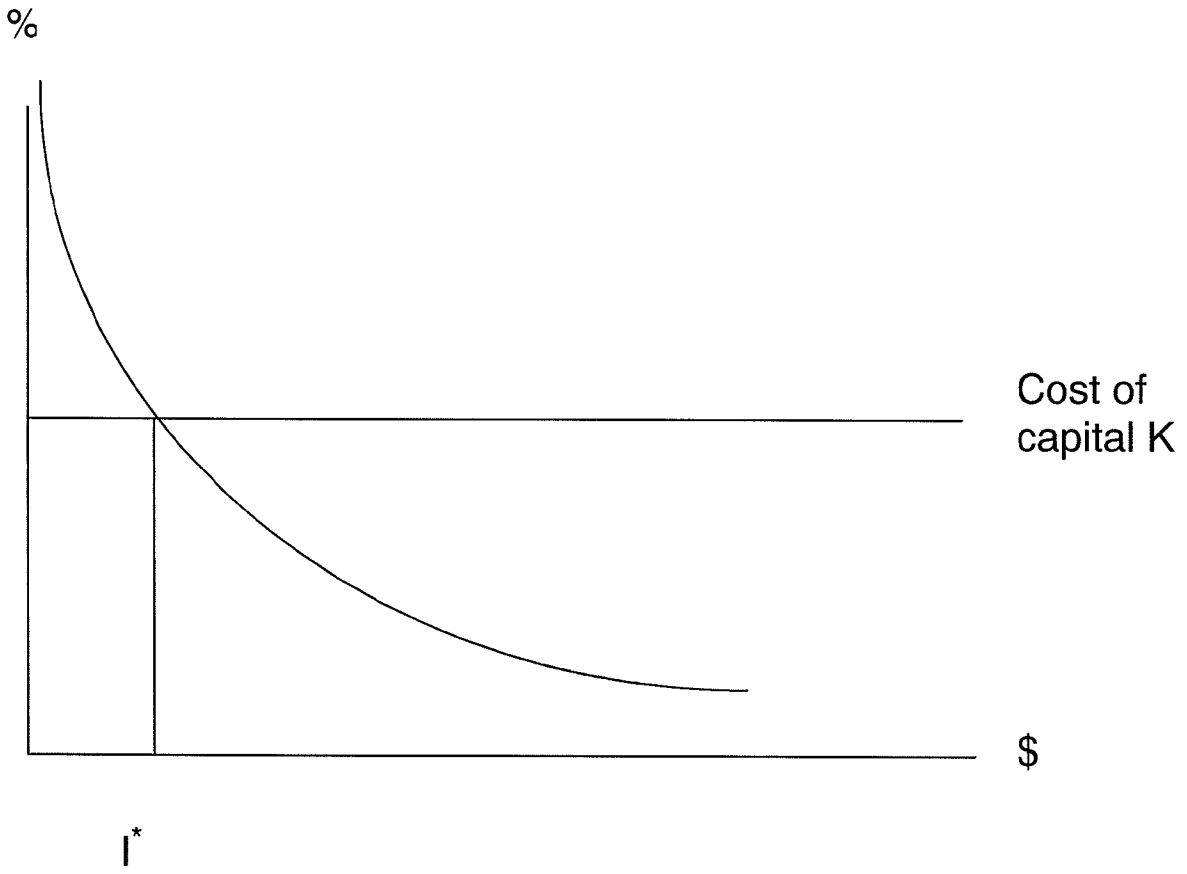
By basing regulation on the investor's opportunity cost of capital, as defined by Mr. Justice Lamont, not only is the economic objective of regulation attained, but so too is the need for the return to be fair, since this is the rate at which equity capital can be raised. The obvious need to maintain the credit and financial integrity of the firm is also preserved, since the firm is offering a competitive rate of return and attracting capital. This is why most economists would base a regulated firm's fair level of profits on the external investor's opportunity cost, as actually determined in the market, and <u>not</u> on an accounting rate of return that is not immediately tied to conditions in the "money market". The opportunity cost principle embodies all of the fairness, capital attraction and financial integrity issues of concern for equitable regulation, whereas "comparable earnings" addresses none of them.

The above are the main reasons why comparable earnings testimony is no longer accepted as a an accurate method of determining fair rates of return. As Newfoundland Power (Ms. McShane?) stated in answer to answer to CA-NP-1

Ms. McShane is not aware of any decisions in the past 10 years which have given weight to the comparable earnings test as applied by Ms. McShane. In arriving at its cost of capital decision for TGI and TGVI in March 2006, the British Columbia Utilities Commission stated that it did not believe comparable earnings had outlived its usefulness, and that it may yet play a role in future ROE hearings. The BCUC did conclude in that decision that there was insufficient evidence before it regarding whether or not a market/book ratio adjustment was merited and, if so, how it might be accomplished. As indicated at pages F-6 to F-9 of her testimony in this proceeding, Ms. McShane explains why an adjustment is not warranted.

Schedule 1

Average vs Marginal ROE



Schedule 2

Company Name	2008 %	2007 %	2006 %	2005 %	2004 %	2003 %	2002 %	2001 %	2000 %	1999 %	STDEV	AVG
	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999		
Imperial Ginseng Products Ltd.	...	0	0	0	0	0	0	0	0	0	0.00	0.00
Thomson Reuters Corporation	8.36	9.15	9.04	9.38	9.08	9.49	7.21	8.67	8.2	6.36	1.01	8.49
Emera Incorporated	9.92	10.93	9.07	9.03	9.8	9.77	6.65	10.58	10.86	10.83	1.30	9.75
Canadian Tire Corporation, Limited	11.23	14.21	13.39	13.86	13.81	12.84	11.87	11.53	10.56	11.2	1.30	12.43
Leon's Furniture Limited	18.77	19.19	19.56	19.19	18.92	16.52	17.09	17.28	19.28	21.14	1.37	18.69
Canadian Utilities Limited	15.67	15.96	14.24	12.24	15.19	13.71	17.56	14.96	15.44	14.54	1.42	14.95
ClubLink Corporation	1.92	2.89	0.24	-0.97	-1.87	0.1	-0.25	0.12	1.23	1.63	1.42	0.50
Dundee Real Estate Investment Trust	2.91	1.68	1.25	1.97	4.25	0	...	...	..	...	1.45	2.01
Fortis Inc.	8.68	9.96	11.83	12.39	11.25	12.28	12.24	12.25	9.71	8.56	1.54	10.92
Gaz Métro Limited Partnership	16.57	13.31	15.8	16.94	18.21	18.05	18.91	17.45	17.93	17.66	1.59	17.08
Magnotta Winery Corporation	7.88	8.63	10.2	10.34	10.85	11.13	11.58	11.82	11.82	13.83	1.69	10.81
Jazz Air Income Fund	-1.07	2.38	0	...	...	...	...	...	...	...	1.77	0.44
ATCO Ltd.	16.23	15.69	14.98	11.57	13.41	12.05	16.66	14.35	14.39	14.13	1.78	14.45
Pacific Northern Gas Ltd.	6.79	5.01	5.86	8.34	6.97	7.59	5.94	7.5	9.75	10.79	1.79	7.45
Richelieu Hardware Ltd.	16.28	17.16	18.3	18.37	20.47	21.15	21.78	19.89	19.76	17.36	1.83	19.05
Uni-Select Inc.	13.56	13.69	15.44	16.29	15.52	19.16	16.7	16.11	15.19	18.71	1.84	16.04
Saputo Inc.	15.53	18.29	16.25	14.13	18.78	19.54	18.12	19.43	16.01	18.55	1.85	17.46
Eastern Platinum Limited	2.12	-2.95	-1.64	-1.44	0	...	...	...	...	...	1.93	-0.78
Canadian Western Bank	16.01	17.27	14.73	13.18	12.92	12.85	11.17	13.47	16.91	13.03	2.00	14.15
Canadian Real Estate Investment Trust	10.82	4.37	9.98	8.99	8.13	10.87	10.74	9.56	11.38	8.38	2.06	9.32
Toromont Industries Ltd.	19.65	20.04	18.98	17.47	17.79	16.91	12.74	16.41	15.36	16.58	2.16	17.19
McGraw-Hill Ryerson Limited	14.44	13.4	8.21	8.27	10.48	9.88	10.81	12.83	9.78	13.42	2.23	11.15
Cominar Real Estate Investment Trust	4.82	5.36	9.43	9.64	9.84	10.93	12.04	11.22	10.98	10.69	2.28	9.60
SFK Pulp Fund	3.34	-1.9	0.28	-1.16	5.07	0.8	0	...	...	...	2.47	0.92
Western Financial Group Inc.	1.82	8.15	7.88	7.06	7.27	4.77	4.66	3.88	2.15	2.08	2.49	4.97
Logistec Corporation	15.35	12.94	12.88	10.24	10.99	7.27	8.11	11.88	13.21	13.79	2.54	11.67
Fort Chicago Energy Partners L.P.	7.9	10.95	9.85	9.67	10.71	8.58	5.37	3.08	5.83	6.51	2.59	7.85
Bank of Montreal	12.59	14.62	16.99	18.65	19.83	16.28	13.37	13.99	17.94	14.08	2.61	16.01
Trimac Income Fund	5.59	5.65	4.08	0	...	...	...	...	...	...	2.65	3.83
Logibec Groupe Informatique Ltée	14.9	20.02	18.26	17.06	19.19	19.53	12.26	14.6	18.35	14.3	2.65	16.85
Cineplex Galaxy Income Fund	5.94	7.01	2.9	4.55	0	...	...	...	...	...	2.75	4.08
RONA Inc.	11.37	15.05	16.41	20.75	20.28	15.65	14.68	14.94	15.08	13.65	2.95	15.99
Lassonde Industries Inc.	18.48	17.51	11.32	15.34	11.98	14.5	12.75	10.89	11.07	9.85	2.96	13.37
Contrans Income Fund	22.95	19.7	26.58	20.27	19.89	15.87	22.6	23.21	20.91	...	2.98	21.33
Alarmforce Industries Inc.	14.34	7.91	10.22	5.38	9.76	15.38	13.73	10.6	11.67	10.53	3.02	10.95
IESI-BFC Ltd.	6.91	4.76	4.53	2.23	9.3	5.92	0	...	...	...	3.05	4.81
TransCanada Corporation	12.7	13.99	14.1	17.56	15.49	12.8	11.93	10.89	8.44	7.42	3.07	12.53
Morneau Sobeco Income Fund	3.41	6.04	6.89	0	...	...	...	...	...	...	3.10	4.09
Morguard Corporation	8.94	2.1	10.1	4.09	3.75	1.65	6.81	8.76	8	5.26	3.10	5.89
Stantec Inc.	5.91	16.23	15.86	15.13	17.27	16.04	16.06	15.4	14.41	14.35	3.20	14.67
The Bank of Nova Scotia	16.87	23.41	21.89	21.11	20.3	17.62	12.85	17.15	17.45	15.46	3.22	18.41
Royal Bank of Canada	17.64	24.86	23.35	18.61	15.88	16.89	15.96	16.47	19.36	15.72	3.22	18.47
Enbridge Inc.	22.69	14.53	14.26	13.9	16.43	17.31	10.11	14.9	15.65	13.35	3.24	15.31
Ritchie Bros. Auctioneers Incorporated	22.53	18.91	16.49	17.44	12.88	16.19	15.53	12.74	12.15	18.68	3.25	16.35
Gold Reserve Inc.	-10.21	-8.21	-7.73	-11.02	-7.34	-6	-5.03	-1.38	-2.09	-3.2	3.29	-6.22
Linamar Corporation	6.34	12.6	13.02	13.73	13.7	6.33	9.66	10.39	15.72	14.71	3.32	11.62
Allied Properties Real Estate Investment T	3.7	2.3	4.14	1.09	9.47	0	...	...	...	...	3.33	3.45
Morguard Real Estate Investment Trust	14.04	5.36	4.02	2.19	5.27	5.97	6.48	8.97	9.16	9.03	3.35	7.05
Astral Media Inc.	14.89	13.03	13.16	11.75	11.31	10.47	10.05	7	4.26	6.36	3.38	10.23
TransAlta Corporation	9.77	13.07	1.81	7.45	5.97	8.67	2.31	7.23	8.14	4.88	3.39	6.93
Anderson Energy Ltd.	-8.34	0.81	-1.81	0.51	-1.79	0	...	...	...	...	3.41	-1.77
Industrial Alliance Insurance and Financial	3.99	15.31	15.66	10.27	13.89	14.32	12.1	13.82	14.36	13.38	3.44	12.71
Home Capital Group Inc.	27.84	29.88	27.36	31.94	31.44	27.35	24.26	23.83	23.24	21.82	3.44	26.80
Provident Energy Trust	0.68	1.87	9.56	7.91	2.52	5.8	3.44	0	...	...	3.45	3.97
Comaplex Minerals Corp.	1.93	3.18	3.83	7.71	6.33	9.91	2.3	5.84	-1.44	0.4	3.46	4.00
Laurentian Bank of Canada	10.35	10.21	7.47	6.32	4.53	12.03	4.72	13.77	14.19	9.59	3.47	9.33
RioCan Real Estate Investment Trust	8.57	1.94	9.84	8.27	9.77	12.66	13.45	13.44	11.23	12.95	3.51	10.21
CGI Group Inc.	15.61	13.26	6.91	8.86	9.49	9.33	8.33	5.82	8.98	16.16	3.53	10.28
Finning International Inc.	6.03	17.28	15.85	11.98	10.06	13.97	15.5	14.1	10.52	8.68	3.56	12.40
Yellow Pages Income Fund	8.98	9.08	7.98	5.69	3.51	0	...	...	...	...	3.58	5.89
First Capital Realty Inc.	3.66	3.26	5.24	3.57	2.55	3.78	2.72	4.17	-7.18	-0.58	3.60	2.12
Winpak Ltd.	9.28	8.03	12.54	9.89	13.23	14.73	20.68	13.99	15.22	12.13	3.61	12.97
IGM Financial Inc.	17.58	22.03	21.39	20.7	19.85	19.78	19.94	15.21	27.53	25.92	3.61	20.99
Cossette Inc.	6.69	12.2	10.12	10.36	14.43	15.46	13.39	14.4	15.55	19.75	3.61	13.24
Goodfellow Inc.	6.97	13.42	14.44	13.43	19.75	9.56	12.2	8.31	11.03	14.09	3.64	12.32
Northern Property Real Estate Investment	7.29	2.77	8.15	7.86	7.63	10.64	0	...	...	...	3.64	6.34
National Bank of Canada	16.58	12.06	19.8	20.66	18.59	16.3	8.22	16.47	15.22	14.66	3.68	15.86
Sun Life Financial Inc.	4.96	14.02	13.58	12.6	11.84	9.06	9.14	12.23	10	2.84	3.69	10.03
UEX Corporation	-6.56	-4.22	-3.73	0.89	-7.44	1.85	0	...	...	...	3.69	-2.74

Magna International Inc.	0.89	8.39	7.7	10.64	13.38	10.99	10.65	12.34	13.45	11.03	3.69	9.95
Bell Aliant Regional Communications Incor	5.94	6.94	0	...	...	...	...	..	..	..	3.75	4.29
Algonquin Power Income Fund	-5.39	6.12	6.23	4.6	4.49	8.42	3.4	2.18	6.29	4.38	3.75	4.07
Canada Bread Company, Limited	9.67	13.69	9.54	14.53	14.27	9.6	13.92	8.57	7.39	2.73	3.78	10.39
CCL Industries Inc.	6.54	13.65	12.71	9.85	13.65	12.39	4.36	4.44	4.75	9.44	3.88	9.18
Mountain Province Diamonds Inc.	...	0.33	-5.17	-6.23	4.43	-5.38	-5.07	-4.3	-8.85	-5.76	3.97	-4.00
METRO INC.	14.66	15.13	15.63	16.1	21.05	23.82	23.91	24.09	22.79	20.79	3.98	19.80
Enghouse Systems Limited	5.25	4.99	10.12	5.85	12.55	11.93	7.97	14.1	14.82	14.89	3.98	10.25
Amica Mature Lifestyles Inc.	...	6.56	5.81	5.35	3.93	-4.3	1.66	10.4	3.15	1.94	4.04	3.86
Silver Standard Resources Inc.	-2.25	-7.91	5.2	-3.04	-1.1	-5.1	-3.89	-9.53	-6.13	-5.7	4.10	-3.95
International Minerals Corporation	...	-0.15	-2.81	-0.41	-0.92	-3.13	1.57	-5.2	-9.32	-10.59	4.19	-3.44
Mediagrif Interactive Technologies Inc.	...	2.56	5.78	11.76	9.89	12.7	8.45	1.84	1.49	6.37	4.24	6.76
Dorel Industries Inc.	11.56	10.07	12.07	14.04	17.82	17.68	21.77	13.22	16.16	22.74	4.29	15.71
Primaris Retail Real Estate Investment Tru	1.74	-5.06	2.13	4.16	7.83	0	..	..	...	...	4.30	1.80
FirstService Corporation	2.79	12.4	14.6	13.24	13.28	13.55	16.52	19.08	16.47	14.84	4.32	13.68
InnVest Real Estate Investment Trust	-0.16	9.51	10.17	4.38	4.45	0.66	0	..	...	...	4.34	4.14
Birchcliff Energy Ltd.	7.05	-4.85	-0.47	2.4	0	...	..	..	...	...	4.35	0.83
Enerflex Systems Income Fund	16.83	15.14	11.61	12.79	11.2	7.61	4.87	20.17	10.93	11.93	4.37	12.31
Delphi Energy Corp.	2.88	-6.57	4.74	6.01	3.34	5.49	0	...	...	...	4.38	2.27
Macquarie Power & Infrastructure Income	-7.24	1.66	3.26	3.66	0	...	...	...	...	...	4.44	0.27
Sino-Forest Corporation	15.53	15.89	20.76	19.44	17.1	14.2	11.67	11.43	19.16	26.25	4.48	17.14
The Forzani Group Ltd.	8.52	13.89	11.62	5.08	8.6	12.68	18.19	17.04	13.01	18.97	4.51	12.76
PFB Corporation	1.64	9.58	13.59	17.58	6.53	8.16	10.92	13.63	8.88	13.99	4.54	10.46
Manulife Financial Corporation	1.93	17.54	16.32	14.09	15.93	17.43	16.17	14.95	15.73	14.03	4.55	14.41
GLV Inc.	6.27	-2.63	0	...	...	...	...	...	...	...	4.57	1.21
Canadian Pacific Railway Limited	10.81	18.35	17.23	12.98	10.79	11.29	15.21	12.25	15.89	2.1	4.60	12.69
FP Newspapers Income Fund	11.35	13.24	12.56	12.55	8.29	10.58	0	...	...	...	4.63	9.81
Pembina Pipeline Income Fund	18.06	16.16	11.14	10.07	7.64	5.98	6.95	5.41	9.85	3.76	4.63	9.50
Canadian Hydro Developers, Inc.	0.19	2.03	2.67	0.37	3.72	3.54	-4.91	7.57	11.38	8.06	4.64	3.46
Accord Financial Corp.	11.54	15.93	18.18	16.88	19.11	12.91	10.54	7.14	20.97	20.82	4.68	15.40
Power Corporation of Canada	5.4	15.52	18.93	16.31	15.93	24	13.66	15.13	18.53	16.64	4.69	16.01
H&R Real Estate Investment Trust	0.12	-1.42	5.93	7.4	9.24	10.43	11.04	10.86	11.14	11.17	4.70	7.59
North West Company Fund	28.41	24.78	21.7	17.91	16	15.92	15.71	14.14	15.59	16.74	4.70	18.69
Canadian National Railway Company	18.28	21.58	21.68	18.75	18.76	11.2	8.7	11.86	13.58	12.11	4.71	15.67
Great-West Lifeco Inc.	6.49	18.69	20.05	20.71	20.52	20.35	22.86	13.7	18.61	17.05	4.71	17.90
BPO Properties Ltd.	9	6.68	7.53	11.31	7.71	9.59	21.6	14.85	6.08	8.43	4.72	10.29
IAMGOLD Corporation	-0.58	-2.39	6.63	5.11	2.98	5.59	3.96	8.91	9.73	13.39	4.72	5.33
Algoma Central Corporation	10.28	15.07	13.25	11.01	8.7	4.56	9.34	14.76	1.1	3.76	4.74	9.20
Trinidad Drilling Ltd.	10.58	11.94	19.47	10.58	12.28	8.55	5.42	9.32	11.1	0	4.78	9.82
Liquor Stores Income Fund	6.45	4.47	11.07	11.56	0	...	...	...	...	...	4.81	6.71
Andrew Peller Limited	-0.13	11.48	10.23	6.85	10.14	12.44	9.82	7.91	6.18	18.65	4.84	9.36
Arbor Memorial Services Inc.	9.87	10.22	10.54	10.69	13.04	19.66	14.51	5.05	7.54	2.2	4.88	10.33
Cogeco Cable Inc.	10.79	8.86	9.14	4.25	-4.64	1.09	0.53	0.99	2.51	7.72	4.90	4.12
Open Text Corporation	...	9.14	4.41	1.14	4.8	7.71	17.1	11.02	7.18	13.76	4.94	8.47
H. Paulin & Co., Limited	-1.32	3.28	9.86	13.12	12.25	9.63	9.49	10.31	14.23	14	4.94	9.49
MacDonald, Dettwiler and Associates Ltd.	10.18	21.31	29.67	21.95	20.69	19.72	19.5	12.92	14.75	27.17	4.94	18.89
Transcontinental Inc.	0.69	10.33	12.19	13.32	14.22	17.5	18.87	14.69	13.7	11.36	4.95	12.69
Alimentation Couche-Tard Inc.	...	15.78	18.6	23.46	24.15	13.34	16.11	16.21	11.09	9.53	5.00	16.47
Brookfield Properties Corporation	21.95	5.05	4.03	8.2	10.2	12.92	10.75	11.64	8.07	7.44	5.04	10.03
Tri-White Corporation	5.73	8.19	16.99	12.43	10.5	5.56	6.23	8.01	20.7	8.2	5.07	10.25
Buhler Industries Inc.	14.1	8.12	4.65	10.06	14.79	17.51	23.15	13.54	14.75	12.59	5.08	13.33
Gennum Corporation	13.82	15.6	12.04	15.73	11.51	14.16	14.41	11.7	23.47	26.58	5.09	15.90
Great Lakes Hydro Income Fund	17.11	0.19	11.31	6.28	10.49	8.25	7.02	5.37	9.55	0	5.13	7.56
Artis Real Estate Investment Trust	-1.85	2.31	-10.27	-6.78	0	...	...	...	...	...	5.13	-3.32
Pengrowth Energy Trust	14.61	12.39	11.59	22.21	11.73	17.1	5.24	11.67	20.53	8.98	5.16	13.61
George Weston Limited	13.36	12.66	1.34	16.65	14.72	19.45	18.27	18.47	17.42	14.02	5.22	14.64
Northland Power Income Fund	15.22	-5.67	7.5	11.88	7.19	6.12	8.23	8.49	7.52	7.03	5.33	7.35
First Uranium Corporation	-6.5	-11.1	0	0	...	...	...	...	...	...	5.42	-4.40
Progress Energy Resources Corp.	10.75	8.83	13.64	12.67	0	...	...	...	...	...	5.45	9.18
Canfor Pulp Income Fund	8.39	10.29	0	...	...	...	...	...	...	...	5.48	6.23
Synex International Inc.	...	2.38	8.12	0.55	2.83	1.7	-6.03	13.46	3.51	7.56	5.49	3.79
Petro-Canada	22.92	24.5	15.94	18.58	21.35	24.73	17.98	18.73	20.59	5.81	5.49	19.11
Phoenix Canada Oil Company Limited	-5.62	1.77	0.59	0.77	1.27	15.25	-1.37	3.4	0.15	-2.59	5.49	1.36
MRRM Inc.	-0.85	0.43	6.92	6.73	12.92	12.6	7.44	6.12	16.42	11.7	5.50	8.04
The Becker Milk Company Limited	6.52	4.34	6.41	5.1	4.21	22.95	6.95	6.15	6.27	6.18	5.51	7.51
Atacama Minerals Corp.	-13.2	2.41	3.36	7.15	-4.96	-3.01	-4.49	-1.23	-3.93	-2.9	5.56	-2.08
Gabriel Resources Ltd.	-0.86	-5.78	-4.52	-4.07	-4.99	-11.32	-7.14	-10.14	-11.63	-20.59	5.58	-8.10
Sportscene Group Inc.	21.1	23.33	26.9	25.46	30.13	21.32	17.86	11.74	14.18	22.42	5.63	21.44
Enerplus Resources Fund	25.47	12.84	20.85	19.25	13.56	14.7	7.84	16.82	14.33	6.95	5.67	15.24
Chartwell Seniors Housing Real Estate Inv	-14.13	-9.19	-2.55	-3.31	0	...	...	...	...	..	5.73	-5.84
Chemtrade Logistics Income Fund	19.04	9.14	1.41	5.48	7.68	6.88	7.67	0	...	..	5.77	7.16
AKITA Drilling Ltd.	6.72	11.5	21.02	21.42	18.29	19.4	16.78	24.53	18.03	8.91	5.78	16.66
Minefinders Corporation Ltd.	-22.13	-12.14	-4.17	-5.11	-3.57	-6.42	-7.27	-4.22	-3.82	-3.47	5.86	-7.23
Ridley Inc.	...	4	5.85	10.37	9.68	9.07	17.66	20.01	3.28	5.43	5.88	9.48
Clearwater Seafoods Income Fund	0	-6.89	0.62	3.39	6.3	12	0	...	..	...	5.90	2.20

Boralex Power Income Fund	-1.82	-9.23	7.6	5.16	6.17	5.57	0	...	...	...	6.00	1.92
Power Financial Corporation	6.52	16.95	22.89	20.16	20.41	30.62	17.33	17.85	18.11	21.32	6.04	19.24
Manitoba Telecom Services Inc.	10.34	11.66	6.62	15.19	27.24	10.03	22.26	12.16	17.68	15	6.19	14.82
Melcor Developments Ltd.	13.75	24.38	27.36	24.58	13.21	13.77	19.8	16	11.91	9.33	6.20	17.41
European Goldfields Limited	0.95	5.79	1.4	-4.85	-15.79	-8.49	-5.44	-2.65	0	...	6.36	-3.23
EPCOR Power L.P.	-8.73	3.6	7.8	10.76	14.72	11.4	10.69	8.1	9.34	9.13	6.44	7.68
Hammond Manufacturing Company Limite	20.12	0.79	5.59	-2.08	0.97	-0.16	5.37	0.88	2.71	9.53	6.49	4.37
Davis + Henderson Income Fund	17.34	18.32	17.01	18.33	15.86	13.56	0	..	..	...	6.54	14.35
ARC Energy Trust	26.01	25.48	24.96	21.56	15.77	23.68	8.05	21.64	27.5	12.14	6.54	20.71
Galleon Energy Inc.	13.58	1.92	4.77	14.03	-0.38	0	..	..	...	...	6.57	5.65
Maple Leaf Foods Inc.	-3.2	-2.16	0.45	9.9	12.41	4.1	11.49	9.53	7.05	16.81	6.65	6.64
Cameco Corporation	14.38	15.17	14.72	9.62	12.73	10.06	2.51	3.1	-4.71	3.72	6.67	8.13
West Energy Ltd.	4.24	-11.64	3.9	3.12	0	...	..	..	...	...	6.68	-0.08
Gammon Gold Inc.	4.98	-19.05	-7.59	-11.38	-11.02	-1.52	-7.81	-8.97	-10.21	...	6.70	-8.06
Quebecor World Inc.	0	0	-0.19	-9.54	5.05	-3.16	11.75	0.02	13.08	4.04	6.73	2.10
Reko International Group Inc.	-7.69	-3.15	6.35	-1.46	-2.31	3.05	8.21	-4.49	2.57	14.89	6.80	1.60
Clairvest Group Inc.	9.38	15.16	7.56	0.89	12.16	5.54	21.38	13.74	-1.14	5.79	6.80	9.05
Paladin Labs Inc.	15.56	11.6	8.29	5.03	5.29	-6.81	10.22	4.04	11.28	17	6.81	8.15
Canadian Apartment Properties Real Esta	-3.86	-8.7	0.12	0.23	1.73	10.75	10.67	10.09	9.8	1.63	6.82	3.25
ZCL Composites Inc.	14.66	15.07	17.82	13.1	15.57	9.77	3.99	10.24	9.36	-5.47	6.86	10.41
E-L Financial Corporation Limited	-6.07	8.54	18.24	16.98	8.67	3.55	4.09	6.48	6.85	5.39	6.87	7.27
AirBoss of America Corp.	-2.24	6.29	11.16	2.81	9.8	-7.96	6.13	5.54	4.98	16.74	6.88	5.33
Noranda Income Fund	19.14	17.84	20.79	19.9	13.85	10.36	12.44	0	...	...	6.90	14.29
The Caldwell Partners International Inc.	-3.71	3.12	5.2	3.39	6.34	5.41	2.7	2.76	16.69	19.93	6.99	6.18
Canadian Natural Resources Limited	31.46	21.72	26.67	13.5	20.91	25.62	13.04	19.71	30.62	12.63	7.02	21.59
Reitmans (Canada) Limited	16.86	24.68	19.96	23.52	22.01	15.4	10.46	12.58	10.19	32.15	7.03	18.78
Shoppers Drug Mart Corporation	17.24	16.96	16.53	16.04	15.77	14.96	13.76	1.96	2.45	0	7.06	11.57
Westshore Terminals Income Fund	23.95	11.22	12.58	21.92	9.57	9.8	7.48	6.33	2.77	3.44	7.09	10.91
EnCana Corporation	27.22	20.35	30.18	18.66	17.28	21.34	13.71	32.23	29.36	12.24	7.09	22.26
Stella-Jones Inc.	19.76	22.01	24.32	21.45	15.92	9.67	11.11	1.54	10.25	12.68	7.10	14.87
Héroux-Devtek Inc.	11.33	11.13	5.69	-0.29	-3.43	-1.8	0.12	14.95	16.06	6.4	7.15	6.02
Consolidated HCI Holdings Corporation	12.92	4.12	6.61	14.22	15.14	20.44	22.67	28.84	16.57	16.51	7.24	15.80
Breaker Energy Ltd.	17.45	2.83	2.32	10.67	0	...	...	...	...	...	7.25	6.65
Equitable Group Inc.	16.52	17.67	19.93	17.02	16.26	0	..	...	...	...	7.26	14.57
Newalta Inc.	11.51	12.62	21.48	20.75	17.25	14.83	0	...	...	...	7.27	14.06
Loblaw Companies Limited	9.58	6.01	-3.87	13.2	19.08	19.08	18.93	16.82	15.69	13.68	7.27	12.82
Hartco Inc.	13.5	8.55	-3.93	-5.26	8.59	8.54	14.31	10.11	-1.77	0	7.29	5.26
TriStar Oil & Gas Ltd.	10.46	-3.68	0	...	...	...	...	...	...	...	7.34	2.26
The Consumers' Waterheater Income Fun	8.79	6.55	14.68	6.59	4.26	-8.63	0	...	...	...	7.34	4.61
Armtec Infrastructure Income Fund	16.55	16.24	17.32	15.3	0	...	...	...	...	...	7.35	13.08
TELUS Corporation	15.99	18.16	16.27	10.08	8.28	4.95	-3.58	-2.25	8.61	8.14	7.35	8.47
MCAN Mortgage Corporation	27.64	15.82	18.35	18.08	16.97	13.73	10.19	14.92	0	...	7.37	15.08
WGI Heavy Minerals, Incorporated	-18.85	-4.8	-12.33	-21.82	-6.27	-1.19	1.54	-5.81	-5.02	-7.48	7.39	-8.20
Atrium Innovations Inc.	18.05	13.4	18.81	16.01	19.86	0	...	...	...	...	7.40	14.36
Genesis Land Development Corp.	7.56	21.71	9.37	11.43	1.22	9.22	7.31	2.08	-5.05	0	7.42	6.49
Enerchem International Inc.	-3.75	-8.31	11.38	8.89	5.2	-0.55	7.01	15.04	-3.32	0.48	7.47	3.21
AGF Management Limited	11.82	17.17	10.77	7.93	8.5	4.92	14.51	26.48	23.24	23.84	7.49	14.92
Exco Technologies Limited	-9.64	3.9	-0.4	7.39	11.43	12.61	13.92	10.12	10.69	14.33	7.57	7.44
Zargon Energy Trust	35.56	15.01	28.69	26.67	17.69	24.63	13.64	23.35	30.01	13.78	7.60	22.90
Vero Energy Inc.	14.47	3.16	0	...	..	...	...	...	...	...	7.61	5.88
Advantage Energy Income Fund	-1.59	-0.59	6.29	19.37	7.09	15.59	6.89	0	...	...	7.62	6.63
Ensign Energy Services Inc.	18.6	21.24	36.32	23.87	19.59	19.06	11.4	26.16	29.22	11.51	7.65	21.70
Eurogas Corporation	-2.22	-2.65	-3.4	-3.78	-1.59	1.36	11.99	4.63	-18.79	0.79	7.76	-1.37
Sherritt International Corporation	-8.98	17.54	16.55	10	11.67	5.45	2.78	2.35	8.26	3.64	7.77	6.93
Ag Growth International Inc.	15.59	9.6	17.18	19.62	0	...	...	...	...	...	7.85	12.40
Celtic Exploration Ltd.	13.63	3.41	21.62	18.06	16.37	10.35	0	...	...	...	7.87	11.92
NuVista Energy Ltd.	14.93	7.9	12.78	21.31	19.68	0	...	...	...	...	7.90	12.77
Silver Wheaton Corp.	2.07	12.9	18.82	12.08	0	...	..	..	...	...	7.91	9.17
Calloway Real Estate Investment Trust	2.56	1.83	1.24	1.67	4.58	11.39	6.22	25.07	0	...	7.92	6.06
Hart Stores Inc.	2.48	7.19	9.49	16.92	13.95	17.44	17.09	14.16	1.71	-5.71	7.92	9.47
Pason Systems Inc.	19.61	21.94	32.73	36.19	34.07	32.84	16.03	34.54	26.31	16.7	7.93	27.10
Newfoundland Capital Corporation Limited	-4.47	20.74	13.77	7.13	12.24	7.9	7.2	-5.58	3.32	4.74	7.96	6.70
West Fraser Timber Co. Ltd.	-6.66	-1.59	19.39	5.9	13.69	3.31	10.33	8.16	12	15.51	7.98	8.00
Biovail Corporation	16	15.04	16.07	7.28	4.02	-3.19	15.43	7.56	12.74	25.69	8.01	11.66
Agnico-Eagle Mines Limited	3.2	8.42	16.92	6.57	9.46	-1.38	3.5	-4.44	-3.83	-10.44	8.02	2.80
Fairborne Energy Ltd.	8.99	4.57	21.76	19.27	8.21	16.56	0	..	...	...	8.05	11.34
IPL Inc.	-3.14	5.35	-2.93	-3.48	7.64	5.14	17.78	14.15	13.21	14.91	8.07	6.86
Inter Pipeline Fund	22.76	-7.07	11.71	8.51	7.9	1.69	3.72	1.54	1.54	-0.13	8.08	5.25
NAL Oil & Gas Trust	30.62	11.75	12.66	26.08	16.33	19.67	8.81	22.16	21.6	4.57	8.09	17.43
GENIVAR Income Fund	15.76	11.97	0	...	...	..	..	..	...	...	8.23	9.24
Harvest Energy Trust	8.27	-1	8.26	19.89	4.25	18.52	0	...	...	...	8.27	8.31
WestJet Airlines Ltd.	17.5	21.96	15.54	3.81	-2.93	12.93	17.92	18.45	21.96	22.01	8.33	14.92
AltaGas Income Trust	21.21	19.53	22.72	18.77	15.54	0	..	..	...	...	8.34	16.30
20-20 Technologies Inc.	-3.47	-7.3	9.26	10.97	10.39	14.65	0	..	...	...	8.41	4.93
Gildan Activewear Inc.	19.59	21.77	22.46	23	20.81	24.78	28.37	0.41	32.34	24.95	8.42	21.85

Groupe BMTC inc.	45.74	30.53	30.12	30.62	37.01	29.95	30.58	18.94	19.78	18.9	8.44	29.22
Superior Plus Corp.	11.37	19.7	-7.95	14.41	14.77	-2.66	10.99	7.12	6.38	2.37	8.50	7.63
Penn West Energy Trust	18.86	3.6	18.09	28.29	15.4	29.85	13.16	24.9	29.87	15.18	8.51	19.72
Nexen Inc.	26.9	21.2	13.91	20.36	29.52	24.51	19.24	24.44	34.68	3.87	8.55	21.86
Velan Inc.	27.48	4.72	7.45	2.44	0.22	-1.14	2.9	7.14	13.04	14.46	8.56	7.87
Pacific Insight Electronics Corp.	...	-3.58	14.09	19.51	9.15	10.68	8.86	10.87	10.44	28.3	8.61	12.04
Suncor Energy Inc.	16.35	27.54	39.4	22.58	23.34	27.76	23.54	13.79	15.21	9.72	8.61	21.92
Cascades Inc.	-5.95	9.68	0.78	-9.92	2.17	5.11	17.23	14.38	10.57	9.16	8.67	5.33
Samuel Manu-Tech Inc.	-2.75	6.27	14.36	19.81	23.26	6.19	12.22	-2.8	8.07	15.56	8.73	10.02
World Point Terminals Inc.	20.92	20.67	15.75	13.69	12.29	15.31	10.03	0.47	8.47	33.23	8.74	15.08
Talisman Energy Inc.	34.91	13.7	22.28	29.56	13.36	20.82	11.45	19.31	24.26	5.6	8.82	19.53
Catalyst Paper Corporation	-23.79	-3.17	-1.57	-2.48	-2.71	-7.7	-11.34	3.64	7.44	4.67	9.03	-3.70
Antrim Energy Inc.	-4.79	-4.4	1.4	-7.72	-20.66	-13.7	6.21	-20.73	-0.55	-11.85	9.05	-7.68
CML Healthcare Income Fund	17.77	18.93	19.91	32.74	47.61	18.41	24.27	22.37	25.86	27.91	9.09	25.58
Cirrus Energy Corporation	-5.38	-5.46	-13.82	-23.22	0	..	...	...	...	...	9.09	-9.58
Mullen Group Ltd.	10.09	-9.29	14.63	23.48	18.88	15.99	10.05	18.21	21.08	12.89	9.18	13.60
The Toronto-Dominion Bank	14.86	19.79	26.12	15.62	18.41	8.55	-1.36	11.3	8.89	31.96	9.46	15.41
Barrick Gold Corporation	5.14	7.54	13.4	8.74	-1.91	2.63	4.15	6.1	-21.35	8.55	9.57	3.30
UTS Energy Corporation	-1.62	26.05	2.1	-2.47	-1.95	-3.56	-4.67	-2.15	-1.42	-9.39	9.57	0.09
Imperial Oil Limited	45.66	41.59	43.38	40.14	33.92	30.61	25.1	28.43	32.42	13.51	9.78	33.47
Tanzanian Royalty Exploration Corporatior	-14.47	-16.03	-18.79	-13.58	-7.77	-15.1	-8.54	-7.77	-40.23	-24.44	9.79	-16.67
Magellan Aerospace Corporation	4.27	-4.53	-2.93	-2.13	-2.16	-7.15	-2.65	13.73	15.04	20.99	9.80	3.25
Harry Winston Diamond Corporation	11	19.83	21.87	18.65	14.52	9.62	-1.58	23.71	0.39	-2.19	9.84	11.58
Boralex Inc.	6.3	9.2	8.61	13.33	-0.29	-2.18	34.18	8.55	12.83	11.48	9.88	10.20
Keyera Facilities Income Fund	27.89	2.48	10.93	9.78	5.92	0	...	...	...	...	9.93	9.50
BCE Inc.	6.25	28.95	14.72	14.52	12.34	15.31	13.6	14.79	4.99	38.14	9.99	16.36
Brampton Brick Limited	-4.71	-3.3	10.42	4.53	13.27	17.33	24.31	18.69	19.34	20.16	10.10	12.00
Pulse Seismic Inc.	1.21	3.25	-5.7	8.11	10.98	9.91	15.21	29.54	20.53	3.81	10.17	9.69
Ivanhoe Energy Inc.	-15.04	-18.42	-11.77	-8.76	-20.31	-29.54	-6.91	-21.92	7.9	-19.17	10.29	-14.39
Canadian Oil Sands Trust	37.69	18.26	22.76	27.61	21.53	20.19	30.65	20.53	0	...	10.35	22.14
Calian Technologies Ltd.	20.6	19.22	14.98	22.08	34.37	19.42	12.75	-0.91	36.35	14.06	10.67	19.29
ATS Automation Tooling Systems Inc.	11.31	3	-20.92	-13.95	5.72	-0.36	0.43	2.34	10.56	10.79	10.69	0.89
SNC-Lavalin Group Inc.	30.89	7.54	16.11	17.23	15.13	13.78	38.95	6.6	6.67	10.75	10.69	16.37
Viterra Inc.	15.71	8.79	-1.62	-2.35	-1.08	-11.24	-20.51	-8.49	-15.21	-1.98	10.77	-3.80
Verenex Energy Inc.	1.1	-9.08	-5.78	-25.72	0	...	...	...	...	...	10.80	-7.90
OPTI Canada Inc.	-29.02	-0.58	-0.72	-0.14	0.08	-0.27	0	...	...	...	10.87	-4.38
Corus Entertainment Inc.	13.3	11.3	3.84	7.94	-2.65	4.61	-16.41	13.28	24.04	1.7	10.88	6.10
Centerra Gold Inc.	17.86	-12.8	8.98	6.81	13.48	0	...	...	...	...	10.91	5.72
Le Château Inc.	28.19	28.03	23.19	24.69	21.7	18.9	15.56	4.05	-5.42	10.84	10.96	16.97
International Road Dynamics Inc.	-3.14	8.51	9.98	7.21	-6.96	5.01	11.07	19.6	31.44	1.46	11.04	8.42
Brookfield Asset Management Inc.	10.47	12.34	22.91	40.7	19.25	12.12	1.42	6.35	8.41	9.8	11.07	14.38
Rogers Sugar Income Fund	18.42	17.75	14.22	-15.51	9.11	6.43	8.19	0	...	...	11.08	7.33
COGECO Inc.	10.61	21	7.43	-6.31	-3.14	2.86	12.46	25.25	3.54	25.06	11.18	9.88
TransGlobe Energy Corporation	16.67	11.43	30.03	31.91	14.55	21.89	26.3	18.82	2.6	-2.39	11.19	17.18
MagIndustries Corp.	-35.08	-19.05	-25.15	-22.8	-31.24	-11.51	-7.79	-9.09	-4.26	-4.18	11.25	-17.02
Petro Andina Resources Inc.	19.79	-5.25	-5.81	-6.52	0	...	...	...	...	...	11.25	0.24
Ballard Power Systems Inc.	16.25	-20.17	-14.65	-16.6	-26.84	-15.97	-17.78	-12.87	-11.13	-12.5	11.27	-13.21
Alamos Gold Inc.	18.31	2.12	1.86	-12.39	-7.5	-12.97	-16.14	0	...	...	11.29	-3.34
ShawCor Ltd.	21.12	19.47	15.95	16.92	-17.56	4.68	0.26	9.35	5.89	9.57	11.43	8.57
Bonavista Energy Trust	35.45	19.91	26.97	27.07	23.5	31.42	0	...	...	...	11.51	23.47
Crescent Point Energy Corp.	28.46	-2.77	10.36	11.97	18.26	0	...	...	...	...	11.57	11.05
The Westaim Corporation	-3.26	-3.34	-37.36	-3.61	-21.16	-26.14	-16.41	-27.86	-10.55	-8.83	11.94	-15.85
Canam Group Inc.	12.39	13.51	13.48	15.83	-4.96	-16.47	-0.35	9.85	21.34	21.58	12.20	8.62
Labrador Iron Ore Royalty Income Fund	45.1	21.78	27.02	26.23	6.47	19.51	4.03	9.91	16.27	10.98	12.20	18.73
International Forest Products Limited	-13.7	-2.94	22.1	5.2	6.9	-7.21	14.51	-9.28	10.71	-11.79	12.21	1.45
Norwall Group Inc.	-18.2	-10.07	-6.04	-11.17	-7.41	-0.9	13.58	14.76	11.64	12.52	12.22	-0.13
Compton Petroleum Corporation	-5.05	15.12	19.16	15.94	16.3	39.45	8.11	29.62	29.19	17.26	12.29	18.61
easyhome Ltd.	10.74	15.67	13.79	9.78	17.2	9.93	9.15	-7.38	-23.16	5.7	12.34	6.14
Jaguar Mining Inc.	-2.65	-28.98	-19.7	-30.51	-13.21	-25.97	0	...	..	...	12.36	-17.32
Storm Exploration Inc.	21.2	8.28	10.54	32.22	0	...	...	...	..	...	12.48	14.45
Torstar Corporation	-22.69	11.33	9.23	14.53	14.65	17.79	21.28	0.5	12.46	13.56	12.49	9.26
Sceptre Investment Counsel Limited	22.11	31.99	24.82	18.03	20.64	19.77	29.1	29.04	45.22	57.32	12.51	29.80
Corby Distilleries Limited	...	14.99	55.51	22.35	29.57	30.53	31.53	43.82	37	46.49	12.53	34.64
Freehold Royalty Trust	46.68	-0.4	12.15	20.68	21.33	20.2	14.43	14.39	17.16	4.58	12.55	17.12
Niko Resources Ltd.	-2.07	-2.66	-6.03	-1.05	25.58	16.38	25.16	22.6	-0.25	9.79	12.68	8.75
Coretec Inc.	-8.1	-10.28	6.5	-11.04	4.76	-13.51	-36.39	-2.56	0	...	12.83	-7.85
Angiotech Pharmaceuticals, Inc.	0	-12.12	2.6	1.86	13.29	-16.8	-13.59	-5.2	-1.94	-32.37	12.96	-6.63
Crew Energy Inc.	-11.14	3	5.77	25.26	18.3	0	...	...	...	...	13.09	6.87
Domtar Corporation	-21.46	2.29	0	...	...	...	...	...	...	...	13.10	-6.39
Precision Drilling Trust	16.63	27.06	49.96	13.01	12.27	11.96	6.19	14.33	12.44	4.08	13.19	16.76
Vermilion Energy Trust	33.16	28.23	29.54	37.31	12.59	16.53	0	...	..	...	13.26	22.48
International Royalty Corporation	...	4.78	6.98	-10.45	-25.4	0	...	...	...	...	13.32	-4.82
Dundee Precious Metals Inc.	-18.97	3.67	21.15	7.1	2.85	18.88	14.43	-0.79	-13.35	-10.82	13.33	2.62
Organic Resource Management Inc.	...	-20.69	-24.55	-28.56	-21.49	-27.06	-28.2	-8.75	-0.39	8.07	13.34	-16.85
Aurizon Mines Ltd.	3.59	4.36	-12.03	-2.05	-7.93	-0.57	-10.11	-28.39	-29.65	10.1	13.35	-7.27

CE Franklin Ltd.	16.89	12.29	25.72	29.02	12.08	0.89	-5.13	-3.13	3.14	-11.13	13.36	8.06
Hanfeng Evergreen Inc.	15.93	14.95	9.54	12.6	28.47	41.71	0	...	...	...	13.60	17.60
Pan Orient Energy Corp.	25.44	5.88	-5.91	0	...	...	...	...	...	...	13.60	6.35
TransForce Inc.	15.9	8.36	27.01	43.83	31.34	21.36	23.42	0	...	...	13.61	21.40
Russel Metals Inc.	24.52	12.33	22.14	25.07	50.72	7.15	12.29	2.92	9.79	14.57	13.62	18.15
Migao Corporation	24.06	17.39	32.18	0	...	..	..	..	...	...	13.68	18.41
Major Drilling Group International Inc.	...	29.32	24.54	19.04	11.65	5.08	3.26	-11.45	-6.03	-0.2	13.85	8.36
Shaw Communications Inc.	31.61	29.43	23.73	5.69	2.03	-3.33	-10.87	-6.6	3.84	1.33	13.92	6.79
Beaumont Select Corporations Inc.	...	11.08	-0.6	41.59	25.02	15.84	0.9	0.75	6.16	4.13	13.98	11.65
Goldcorp Inc.	10.56	2.95	5.29	16.09	9.46	23.04	25.87	37.18	-14.11	9.51	14.08	12.58
Dundee Corporation	-19.62	28.63	12.12	11.03	10.49	18.77	10.87	-11.93	1.24	2.46	14.12	6.41
Baytex Energy Trust	34.01	25.06	34.72	20.74	3.35	9.54	0	..	...	...	14.16	18.20
Phoenix Technology Income Fund	34.03	30.67	36.69	30.24	18.79	15.33	-4.74	10.5	14.74	0	14.25	18.63
MDS Inc.	-37.03	-2.15	2.12	2.87	4.65	5.04	8.09	6.01	11.65	13.71	14.29	1.50
Red Back Mining Inc.	11.82	-32.58	6.1	-7.8	-7.75	-12.16	0	..	...	...	14.44	-6.05
Sandvine Corporation	-14.01	17.1	-0.8	-20.23	0	..	..	...	...	...	14.44	-3.59
Aastra Technologies Limited	4.11	14.15	10.11	11.85	11.67	11.46	21.41	20.46	36.88	51.86	14.50	19.40
Petrobank Energy and Resources Ltd.	32.89	23.04	12.28	9.37	0.55	-17.54	-0.4	0.59	22.52	6.93	14.53	9.02
Helix BioPharma Corp.	-41.88	-57.67	-57.39	-70.86	-43.57	-29.43	-25.24	-31.8	-37.84	-52.72	14.58	-44.84
INSCAPE Corporation	-2.29	8.37	3.32	-5.08	-19.38	0.3	15.03	7.63	27.13	28.45	14.58	6.35
Paramount Energy Trust	10.46	-12.31	-6.31	18.77	-9.6	26.09	0	..	...	...	14.84	3.87
Agrium Inc.	36.71	20.39	2.74	24.54	27.43	-4.04	-1.46	-7.06	8.95	7.53	14.88	11.57
Canadian Imperial Bank of Commerce	-19.77	29.63	27.15	-2.23	19.3	19.15	5.22	16.39	20.75	10.02	14.90	12.56
Teck Resources Limited	7.27	23.28	42.84	33.21	19.89	5.93	1.18	-0.99	5.14	3.13	14.97	14.09
Circa Enterprises Inc.	-22.08	-15.66	10.59	8.57	9.77	-3.21	17.14	15.49	24.39	15.82	15.03	6.08
Danier Leather Inc.	...	23.69	3.42	-10.7	4.44	-10.98	8.27	18.85	26.05	28.83	15.10	10.21
Wall Financial Corporation	16.81	23.82	28.18	31.91	41.79	14.1	6.68	6.71	10.15	-11.49	15.23	16.86
Epsilon Energy Ltd.	-32.88	-3.49	-4.41	0	...	...	...	...	...	...	15.24	-10.20
Quadra Mining Ltd.	6.28	41.12	10.72	-1.95	0	0	0	...	...	...	15.27	8.02
Firan Technology Group Corporation	-1.5	-35.19	9.54	-5.3	-1.2	0	...	...	...	...	15.31	-5.61
Celestica Inc.	-41.36	-0.65	-6.99	-1.99	-28.58	-6.91	-10.16	-1.33	7.85	5.44	15.32	-8.48
Cangene Corporation	13.19	5.36	8.33	-9.98	23.28	40.48	14.29	21.35	20.2	40.75	15.42	17.73
Middlefield Bancorp Limited	-35.43	0.07	19.9	8.43	9.6	3.31	3.03	11.91	12.21	17.52	15.55	5.06
Canfor Corporation	-20.85	-17.83	22.26	5.07	27.19	7.81	0.62	2.27	13.1	16.03	15.63	5.57
Intact Financial Corporation	4.42	15.42	20.85	31.57	40.95	0	...	...	...	...	15.68	18.87
Husky Energy Inc.	28.83	30.22	31.81	28.62	16.27	23.29	15.96	15.5	21.85	69.23	15.70	28.16
Rogers Communications Inc.	21.43	14.44	16.1	-1.39	-2.16	8.19	17.65	-32.34	13.58	0	15.76	5.55
Trican Well Service Ltd.	-10.03	18.28	38.31	45.14	34.2	25.53	10.53	26.95	24.75	11.6	15.89	22.53
Liquidation World Inc.	-28.43	-25.41	2.97	-12	5.22	1.39	4.11	14.37	15.14	14.2	15.93	-0.84
Fairfax Financial Holdings Limited	32.57	31.67	8.27	-17.65	-1.02	10.51	12.3	-11.12	3.94	4.58	16.05	7.41
Central Fund of Canada Limited	-28.88	21.04	30.81	8.89	14.33	-0.9	-1.91	-0.94	-0.83	-1.44	16.18	4.02
Sun-Rype Products Ltd.	-33.35	11.73	16.84	14.28	14.39	14.36	15.63	19.64	23.06	22.65	16.34	11.92
DALSA Corporation	12.78	0.94	6.5	5.85	17.47	12.09	18.93	13.37	-37.87	-1.48	16.43	4.86
Calfrac Well Services Ltd.	4.8	11.79	26.96	29.4	39.27	41.53	0	..	...	...	16.55	21.96
DundeeWealth Inc.	-17.28	9.39	10.43	4.57	6.82	6.29	47.15	-8.43	5.95	6.17	16.55	7.11
Eldorado Gold Corporation	26.37	8.38	1.06	-22.75	-7.74	-33	2.2	-5.05	1.52	8.49	16.65	-2.05
Hillsborough Resources Limited	-31.54	1.59	37.54	4.25	9.32	6.33	-1.34	8.25	0	0	16.68	3.44
Methanex Corporation	13.17	29.53	44.74	17.46	27.29	0.89	2.67	7.21	14.46	-14.53	16.77	14.31
IMAX Corporation	0	0	0	0	0	0	0	0	-46.04	22.12	16.84	-2.39
Third Canadian General Investment Trust	...	13.32	22.13	37.76	24.12	37.51	-6.61	-3.32	2.95	2.16	16.85	14.45
Sears Canada Inc.	22.19	29.97	21.34	61.11	6.98	7.79	3.2	5.94	15.6	15.9	17.06	19.00
Strongco Income Fund	-0.7	14.03	35.54	27.68	14.41	10.63	-18	-12.93	1.18	-5.83	17.13	6.60
Cathedral Energy Services Income Trust	35.23	31.98	52.04	46.81	36.4	26.94	20.57	37.25	62.16	0	17.26	34.94
Bestar inc.	-13.54	1.98	-7.48	1.32	-3.59	2.2	-25.54	4.59	27.3	32.81	17.38	2.01
Kinross Gold Corporation	-16.79	10.59	13.03	-18.28	-4.07	0.29	-10.22	-13.36	-32.64	-42.02	17.45	-11.35
Addax Petroleum Corporation	37.64	33.45	33.16	0	...	...	...	...	...	...	17.50	26.06
AZCAR Technologies Incorporated	15.2	-14.89	-35.3	9.42	1.28	-4.94	-0.35	-30.38	-20.42	10.9	17.61	-6.95
Wescast Industries Inc.	-36.82	-3.24	1.35	-5.69	8.27	1.89	14.72	18.32	20.98	22.99	17.67	4.28
Equinox Minerals Limited	30.6	-8.33	-7.43	-7.94	-21.65	...	-22.15	0	...	...	17.74	-5.27
Peyto Energy Trust	33.23	41.01	42.83	51.48	45.62	51.32	0	...	...	...	17.87	37.93
International Datacasting Corporation	13.56	17.7	3.76	9.59	12.84	-36.2	-27.99	-4.63	4.3	0	17.94	-0.71
Tim Hortons Inc.	26.57	26.68	49.08	36.02	0	...	...	...	...	...	18.00	27.67
Empire Company Limited	10.52	14.01	10.27	16.21	11.41	11.58	11.39	11.48	69.07	13.31	18.06	17.93
Bombardier Inc.	39.49	11.13	9.63	5.46	-5.45	-9.14	-21.49	10.25	28.1	21.61	18.07	8.96
Inmet Mining Corporation	13.31	33.88	49.1	26.53	17.8	52.91	1.57	7.5	3.36	15.35	18.15	22.13
Trilogy Energy Trust	30.91	-11.02	28.65	17.38	0	...	...	...	...	..	18.24	13.18
Wajax Income Fund	37.55	36.41	36.25	18.15	9.79	5.48	-13.76	4.34	-4.81	1.94	18.30	13.13
Livingston International Income Fund	-40.76	-4.82	7.28	15.48	9.38	4.8	0	...	...	..	18.61	-1.23
Extendicare Real Estate Investment Trust	0	0	0	22.29	32	17.66	5.43	-10.77	-15.56	-30.63	18.61	2.04
Greystar Resources Ltd.	-43.68	-31.03	-40.51	-38.34	-49.43	-54.64	-11.9	-12.72	-5.41	-6.54	18.65	-29.42
Gerdau Ameristeel Corporation	-17.38	18.82	22.04	20.04	35.24	0	...	..	...	..	18.72	13.13
Highpine Oil & Gas Limited	8.3	-41.42	0.92	4.17	5.69	0	...	...	..	...	18.72	-3.72
SEMAFO Inc.	23.91	-14.85	-7.79	-18.94	-9.56	-15.85	-2.12	-4.04	-1.42	-51.11	18.72	-10.18
Senvest Capital Inc.	-37.18	3.72	7.77	24.52	22.06	9.71	-18.41	0.96	15.82	11.39	18.84	4.04
United Corporations Limited	-32.62	-9.35	12.75	14.09	10.29	23.06	-20.52	7.24	-5.41	24.53	18.85	2.41

Savanna Energy Services Corp.	-33.38	-9.1	7.87	21.53	18.49	10.6	0	...	...	...	18.89	2.29
Vitran Corporation Inc.	-47.23	7.54	12.39	13.85	13.76	13.83	13.44	4.64	12.62	13.92	18.92	5.88
Intertape Polymer Group Inc.	-31.28	-2.65	-47.08	6.63	2.91	5.42	-18.55	-4.06	11.3	3.42	18.97	-7.39
Canaccord Capital Inc.	-13.05	8.59	28.32	31.82	27.67	38	0	...	...	...	18.99	17.34
TECSYS Inc.	...	8.69	-3.98	-11.07	2.35	3.15	-41.69	-16.81	-44.6	-18.13	19.08	-13.57
Research In Motion Limited	38.59	40.33	28.18	19.19	11.53	4.28	-18.8	-3.2	-1.02	5.07	19.09	12.42
McCoy Corporation	-7.7	16.39	33.02	40.1	22.71	11.42	-14.94	13.1	1.55	-15.41	19.16	10.02
Sirit Inc.	-21.34	-20.95	-55.95	-49.79	5.26	-25.28	-17.59	-40.48	-10.6	-7.77	19.19	-24.45
Garneau Inc.	-51.59	-25.62	4.72	8.74	-2.29	8.12	-15.34	10.75	-13.55	-6.51	19.39	-8.26
Economic Investment Trust Limited	-41.96	-7.18	21.6	20.42	13.32	17.65	-7.33	-1.61	16.04	7.91	19.46	3.89
RDM Corporation	-3.58	22.52	10.02	4.22	2.21	-2.91	2.62	-1.66	-26.23	-47.26	19.50	-4.03
Groupe Aeroplan Inc.	-38.61	-1.18	2.49	0	...	...	...	...	...	...	19.59	-9.32
Apollo Gold Corporation	2.74	8.79	-50.22	-27.4	-21.92	-3.55	0	0	...	...	19.73	-11.70
Martinrea International Inc.	-42.16	9.36	7.4	4.42	2.46	3.52	0	-35.7	-30.09	2.5	19.81	-7.83
EURO Ressources S.A.	52.69	0	0	0	0	0	0	0	0	-28.55	19.81	2.41
CAE Inc.	18.62	18.53	17.15	10.69	-38.81	8.04	19.14	27.58	31.94	25.28	19.85	13.82
MTI Global Inc.	-56.1	-18.83	-2.46	3.27	-2.04	-2.86	2.1	5.95	16.13	5.87	20.07	-4.90
Brick Brewing Co. Limited	-32.26	-9.74	0.49	22.83	14.04	1.07	-23.81	23.79	-13.92	-26.22	20.22	-4.37
The Churchill Corporation	41.59	36	16.52	11.66	-22.29	-11.77	3.15	19.02	29.89	21.87	20.29	14.76
Crew Gold Corporation	-60.65	-7.07	-0.09	-18.97	-14.58	-6.38	-28.74	-45.01	-25.79	3.79	20.36	-20.36
Boardwalk Real Estate Investment Trust	54.06	-29.32	5.78	-0.01	1.44	2.29	3.95	-4.37	9.01	3.99	20.37	4.68
Bronco Energy Ltd.	-25.66	-14.31	-55.28	-13.65	0	...	...	...	...	...	20.82	-21.78
COM DEV International Ltd.	10.88	11.9	29.64	9.29	11.49	-37.69	-1.62	-15.18	-3.88	-30.31	20.87	-1.57
Flint Energy Services Ltd.	-54.7	6.28	9.65	13.93	5.07	7.85	10.61	16.64	14.72	7.08	20.88	3.71
Paramount Resources Ltd.	-13.82	58.54	-3.56	-12.04	6.19	0.5	1.9	24.89	23.03	9.69	20.98	9.33
Northgate Minerals Corporation	2.38	8.44	31.8	16.65	19.71	6.59	-16.12	-13.79	-41.13	9.49	21.01	2.40
Atlantis Systems Corp.	0	-19.63	-6.4	9.94	0.13	60.39	0	0	0	0	21.01	4.44
Aecon Group Inc.	19.53	25.49	8.85	-1.09	-49.73	-11.16	0.2	13.26	13.31	11.32	21.34	3.00
Vector Aerospace Corporation	19.72	11.04	17.76	15.53	5.21	-50.93	-9.26	-10.16	16.28	0	21.39	1.52
Diamond Fields International Ltd.	...	-29.75	-47.78	-77.24	-43.88	-54.51	-37.11	-10.69	-22.72	-10.64	21.59	-37.12
Westport Innovations Inc.	-53.83	-51.05	-111.02	-92.67	-86.35	-92.8	-68.61	-58.9	-56.84	-49.85	21.76	-72.19
Glentel Inc.	15.94	20.05	14.13	17.92	17.09	18.22	21.91	-13.82	-47.23	-0.82	21.86	6.34
Tembec Inc.	-12.92	26	-48.03	-29.16	3.17	0.97	-12.57	6.01	18.7	2.61	22.00	-4.52
Cott Corporation	-37.13	-15.51	-3.61	5.21	17.46	27.33	32.1	22.58	21.67	22.34	22.02	9.24
Grande Cache Coal Corporation	...	-20.16	-11.7	-49.39	-48.47	0	0	0	...	...	22.09	-18.53
TVA Group Inc.	21.47	19.39	-1.69	12.92	20.91	23.66	23.5	-49.46	16.4	19.75	22.41	10.69
Automodular Corporation	-16.33	17.61	4.32	38.74	-36.82	10.24	11.98	16.07	10.7	36.38	22.44	9.29
DiagnoCure Inc.	-39.62	-30.57	-28.84	-11.69	-2.84	-51.34	-49.44	-72.29	-63.71	-57.88	22.48	-40.80
Pacific Rubiales Energy Corp.	7.4	6.72	-69.03	0	0	0	0	0	0	0	22.52	-5.49
Groupe Bikini Village Inc.	-4.18	7.67	24.01	-15.32	0	0	-60.47	-0.48	9.57	9.13	22.68	-3.01
Vista Gold Corp.	-19	-11.44	-6.92	-14.85	-19.58	-14.79	-22.36	-29.67	-68.51	-69.76	22.69	-27.70
Northstar Aerospace Inc.	-30.49	-18.78	-29.01	13.01	20.53	-10.57	37.05	14.57	-13.2	7.88	22.70	-0.90
Mitec Telecom Inc.	...	-24.35	-46.84	-48.24	-43.11	-11.84	-53.27	-60.2	-0.7	-2.15	22.89	-32.30
QLT Inc.	5.31	-41.96	-20.12	-39.61	6.36	8.86	3.98	29.56	2.99	-18.23	22.89	-6.29
Potash Corporation of Saskatchewan Inc.	65.9	25.08	25.72	24.03	13.7	-6.21	2.57	5.91	9.96	-16.66	22.94	14.80
GMP Capital Inc.	10.44	52.63	54.12	41.53	35.35	8.61	0	0	...	...	23.06	25.34
MOSAID Technologies Incorporated	...	8.88	17.31	13.62	44.18	-1.53	-26.89	-32.38	11.23	4.09	23.10	4.28
Winalta Inc.	9.86	14.66	-44.86	-6.04	-8.26	37.86	29.9	-4.33	12.31	20.08	23.47	6.12
Oncolytics Biotech Inc.	-93.82	-53.24	-38	-30.86	-40.87	-41.1	-37.47	-34.41	-26.92	0	23.50	-39.67
Bird Construction Income Fund	78.55	72.84	61.59	45.2	45.73	32.63	24.39	28.89	39.24	0	23.64	42.91
Pacific & Western Credit Corp.	-54.87	3.25	26.75	14.79	12.48	3.48	-11.73	-2.84	10.45	25.48	23.69	2.92
NovaGold Resources Inc.	-43.47	-8.26	-9.14	-2.93	-6.55	-10.78	-12.3	-5.51	53.61	0	23.71	-4.53
TimberWest Forest Corp.	73.55	-14.06	7.35	0.85	11.92	4.71	7.75	9.39	32.33	5.41	23.83	13.92
Kingsway Financial Services Inc.	-61.57	-2.01	14.46	18.62	17.4	12.94	13.83	11.1	10.67	5.53	23.85	4.12
CI Financial Corp.	29.18	44.3	41.7	20.48	18.94	20.4	20.59	-38.69	4.16	-1	23.86	16.01
Air Canada	-63.96	19.98	-5.07	0	0	0	0	0	-20.73	20.71	23.88	-4.91
Western Canadian Coal Corp.	...	-72.5	-7.75	4.99	-15.29	-31.25	-28.67	-30.91	-18.73	-58.27	24.13	-28.71
FNX Mining Company Inc.	-70.16	15.97	11.64	1.37	6.26	-15.06	-15.15	-8.42	-4.35	-13.51	24.15	-9.14
Sprott Inc.	47.59	33.02	0	...	...	...	...	...	...	...	24.38	26.87
Corridor Resources Inc.	9.38	2.44	-0.69	2.88	5.08	-8.35	-17.03	-8.48	-71.14	...	24.50	-9.55
Tekmira Pharmaceuticals Corporation	-44.02	-27.85	0	0	0	-73.62	-52.94	-32.57	-32.87	-38.73	24.54	-30.26
MEGA Brands Inc.	0	-41.17	10.8	24.54	28.08	46.63	0	0	0	...	24.62	7.65
Transat A.T. Inc.	-16.01	27.81	19.98	15.97	24.92	-5.67	3.41	-53.74	16.6	15.56	24.77	4.90
Corriente Resources Inc.	7.98	-8.23	1.1	-6.32	-1.9	-2.63	-8.57	-5.58	-24.27	-79.76	24.93	-12.82
Zarlink Semiconductor Inc.	...	-41.55	9.42	-0.71	-20.89	-27.55	-35.19	-50.19	-56.06	10.06	24.97	-23.63
Sierra Wireless, Inc.	19.17	14.49	8.74	-23.42	12.22	2.35	-60.29	-24.18	-2.55	16.43	25.10	-3.90
High Liner Foods Incorporated	11.21	8.66	7.84	-55.61	10.21	45.77	12.15	7.23	9.84	-11.12	25.30	4.62
Richmont Mines Inc.	2.54	11.45	6.71	-64	1.64	12.59	29.43	2.05	-11.16	-20.38	25.31	-2.92
Glendale International Corp.	-25.35	-8.8	11.29	14.29	48.6	38.56	28.15	15.58	-27.03	25.1	25.49	12.04
Oilexco Incorporated	...	17.63	-4.83	-8.95	-13.52	-15.64	-69.22	-37.47	4.3	-1.7	25.49	-14.38
Parkland Income Fund	22.16	56.31	86.06	44.14	6.29	28.37	25.71	16.73	11.52	3.88	25.56	30.12
Hemisphere GPS Inc.	7.3	-0.42	-7.88	-8.66	11.24	-2.38	-20.1	-49.03	-62.75	15.02	25.62	-11.77
Canadian Superior Energy Inc.	-11.24	-5.77	-7.17	2.4	-2.8	-0.46	-74.37	25.64	7.8	-7.39	25.80	-7.34
Norbord Inc.	-37.06	-11.34	20.29	47.87	48.25	20.25	1.43	1.22	11.07	21.85	25.85	12.38
Western Forest Products Inc.	-23.01	-13.68	15.98	-77.51	0	0	0	0	-19.36	-30.32	26.01	-14.79

Intrinsyc Software International, Inc.	0	0	-59.85	-21.23	-10.71	-27.2	-15.59	-26.97	-76.47	...	26.01	-26.45
Pet Valu Canada Inc.	41.58	50.61	66.31	0	0	0	0	0	0	0	26.19	15.85
WaterFurnace Renewable Energy, Inc.	65.36	49.23	46.96	36.61	30.17	25.39	26.25	31	-29.61	1.73	26.48	28.31
Anvil Mining Limited	-26.44	26.88	49.41	15.77	5.58	44.71	0	...	...	...	26.53	16.56
TMX Group Inc.	37.65	74.56	64.99	67.26	39.5	27.8	16.96	10.12	0	...	26.67	37.65
Gendis Inc.	-26.88	-15.03	-64.07	7.06	-0.76	-7.97	0.29	11.92	38.64	2.59	26.91	-5.42
Pan American Silver Corp.	3.83	15.99	15.12	-10.69	3.69	-8.62	-58.86	-13.68	-60.2	-7.46	27.02	-12.11
Burcon NutraScience Corporation	-94.57	-56.35	-55.58	-70.47	-66.34	-52.8	-88.98	-77.31	-36.28	0	27.35	-59.87
Farallon Mining Ltd.	...	-68.67	-39.14	-65.38	-65.4	-20.8	-10.69	-9.56	-8.67	-2.95	27.60	-32.36
Taseko Mines Limited	22.69	45.68	74.31	0	0	0	0	0	-13.78	-12.07	28.08	11.68
Shore Gold Inc.	-95.67	1.1	-12.18	-2.51	-3.68	-8.25	-25.42	-13.89	-28.58	-11.72	28.19	-20.08
Softchoice Corporation	-20.25	33.63	29.75	33.14	36.43	13.93	75.06	0	...	...	28.27	25.21
Kelman Technologies Inc.	-0.3	-1.93	2.76	-29.97	-18.54	3.94	27.18	31.31	-57.47	-44.83	28.92	-8.79
Patheon Inc.	12.17	-39.1	-72.9	5.68	5.14	10.93	13.05	10.11	13.31	13.11	29.27	-2.85
Daylight Resources Trust	31.2	-18.2	-44.7	14.54	0	...	...	...	...	...	29.39	-3.43
Andean American Mining Corp.	...	-81.2	-56.43	1.84	5.15	-4.95	-5.77	-5.48	-6.82	-19.25	29.56	-19.21
Xenos Group Inc.	16.62	-7.52	-82.04	-8.23	2.31	9.15	1.84	-32.91	-38.21	3.34	29.70	-13.57
Hydrogenics Corporation	-43.48	-52.39	-99.72	-24.53	-35.27	-26.55	-21.55	-3.03	-4.32	0	29.74	-31.08
TLC Vision Corporation	0	-25.09	5.39	3.87	26.93	-9.66	-44.01	-79.08	-17.74	-1.98	29.82	-14.14
Crystallex International Corporation	-8.79	-14.35	-21.75	-32.81	-57.14	-84.29	-49.74	0.05	3.47	7.17	29.95	-25.82
San Gold Corporation	-45.57	-56.99	-70.45	-48.38	0	0	0	0	0	...	29.96	-24.60
Guardian Capital Group Limited	2.83	9.58	11.18	7.32	5.43	3.42	3.79	102.54	13.12	9.31	30.31	16.85
Cardiome Pharma Corp.	-112.03	-126.14	-56.45	-88.39	-53.27	-38.16	-56.75	-86.79	-41.92	-52.19	30.34	-71.21
North American Palladium Ltd.	-91.07	-14.49	-20.85	-27.85	-35.58	13.7	6	3.1	0	0	30.59	-16.70
Fortress Energy Inc.	-5.1	-9.29	9.26	4.02	-4.97	-17.1	-94	-29.72	-22.01	-50.64	30.69	-21.96
Kingsway International Holdings Limited	...	-21.72	24.34	-5.22	7.63	12.55	-56.12	-1.65	37.22	44.59	30.90	4.62
Bonterra Oil & Gas Ltd.	109.76	62.21	67.31	60.1	44.89	35.73	46.82	0	...	...	31.10	53.35
ARISE Technologies Corporation	-73.24	-41.73	0	0	0	0	...	...	...	...	31.31	-19.16
Azure Resources Corporation	...	0	0	0	0	0	-88.5	-30.18	-31.47	14.36	31.41	-15.09
Neo Material Technologies Inc.	18.26	35.45	75.15	0	0	...	...	...	...	...	31.42	25.37
Marsulex Inc.	18.51	17.71	6.44	1.36	4.93	7.26	-7.94	63.79	-65.66	8.42	31.61	5.48
Calvalley Petroleum Inc.	12.72	18.07	18.59	-2.22	20.17	1.59	0	0	-10.56	-87.9	31.62	-2.95
Claude Resources Inc.	-9.28	-9.07	10.58	-8.64	-1.26	5.15	-5.83	-9.13	-101.15	3.4	31.96	-12.32
Ivanhoe Mines Ltd.	-79.78	-108.32	-43.25	-35.35	-28.45	-27.85	-18.95	-55.17	-10.75	-4.83	32.17	-41.27
5N Plus Inc.	...	15.67	61.93	0	...	...	...	...	...	...	32.20	25.87
Canwest Global Communications Corp.	-91.94	1.09	0.42	1.72	16.48	4	1.1	4.41	19.58	19.71	32.46	-2.34
Timminco Limited	-20.11	-24.24	-96.35	-20.85	-10.28	-7.26	15.64	10.45	-51.16	-4.54	32.50	-20.87
Just Energy Income Fund	0	90.09	65.44	34.44	22.11	7.9	10.01	0	...	...	33.00	28.75
Petrolifera Petroleum Limited	7.16	29.16	74.07	0	...	...	...	...	...	...	33.37	27.60
AEterna Zentaris Inc.	-108.69	-23.96	5.06	10.34	-4.67	-23.81	-27.29	-4.65	-16.26	-8	33.53	-20.21
Belzberg Technologies Inc.	0.34	23.81	46.1	37.26	-14.98	-55.93	-46.79	-26.93	0	0	33.68	-3.71
Bankers Petroleum Ltd.	-1.2	-1.84	-1.88	-9.79	-10.65	-7.48	-20.56	-74.06	41.75	50.7	33.95	-3.50
Canadian General Investments, Limited	-62.46	7.39	27.98	27.7	25.48	38.04	-6.38	-1.8	2.68	14.56	34.13	5.32
Wenzel Downhole Tools Ltd.	39.99	10.12	24.72	48.78	14.91	-48.2	-51.35	-9.72	9.61	32.08	34.30	7.09
Wireless Matrix Corporation	...	-4.21	-8.19	1.99	-101.93	-10.54	-12.63	-55.02	-20.8	-56.62	34.33	-29.79
Indigo Books & Music Inc.	14.1	29.96	22.69	24.78	12.82	4.72	1.65	-61.85	-65.92	12.26	34.54	-0.46
Forbes Medi-Tech Inc.	-120.66	-77.93	-76.8	-43.75	-28.8	-5.27	-18.98	-51.07	-22.83	-38.73	34.62	-48.48
High River Gold Mines Ltd.	...	-3.38	12.6	-0.7	-0.16	-41.71	6.92	-83.96	-68.48	-16.12	34.88	-21.67
Great Canadian Gaming Corporation	3.36	8.89	-5.23	8.29	21.49	29.69	72.94	61.19	43	102.49	34.91	34.61
Breakwater Resources Ltd.	-26.21	6.96	66.42	9.69	2.06	6.8	-20.48	-72.31	-6.6	12.26	35.10	-2.14
Medicure Inc.	...	0	-88.71	-56.65	-102.85	-45.18	-60.22	-60.36	-80.1	0	35.81	-54.90
The Brick Group Income Fund	-75.87	1.18	8.08	6.47	0	...	...	...	...	...	35.85	-12.03
First Quantum Minerals Ltd.	3.07	41.28	66.49	65.13	23.27	6.5	-7.59	-52.9	26.15	-0.42	35.86	17.10
New Gold Inc.	-10.59	6.4	0	0	0	0	-89.23	-19.11	40.38	40.92	36.04	-3.12
The Descartes Systems Group Inc.	16.7	25.58	7.88	8.06	-86.5	-33.66	-63.27	-20.55	-12.29	-35.06	36.14	-19.31
Tudor Corporation Ltd.	...	1.37	-106.31	6.46	12.99	-9.02	-19.36	-22.04	8.45	-17.28	36.23	-16.08
Clarke Inc.	-95.64	35.15	12.8	15.86	5.55	8.39	13.06	11.13	13.56	27.34	36.37	4.72
Theratechnologies Inc.	-86.7	-68.06	-55.33	-25.62	-34.37	-37.87	-15.03	38.27	13.78	-23.41	36.48	-29.63
Bayou Bend Petroleum Ltd.	-95.13	-81.98	-35.58	-7.39	-43.16	0	0	0	0	0.62	36.60	-26.26
Questerre Energy Corporation	-8.82	-1.96	-2.16	-20.93	0	0	-106.58	0	...	...	36.68	-17.56
Peace Arch Entertainment Group Inc.	...	-21.74	-40.76	28.09	-18.67	0	0	-99.84	3.08	8.53	36.97	-15.92
HudBay Minerals Inc.	5.33	21.08	92.05	41.17	-12.2	0	...	...	...	...	37.86	24.57
Counsel Corporation	0	0	0	0	0	0	-62.89	-96.7	-12.69	-75.4	38.03	-24.77
Quest Capital Corporation	7.85	8.38	19.35	17	13.96	-2.39	3.07	-92.68	-59.02	-44.27	38.56	-12.88
Inventronics Limited	-24.99	14.23	23.89	-70.47	-97.6	-32.18	-55.82	-17.91	12.44	-27.48	38.96	-27.59
Golden Star Resources Ltd.	-24.62	-7.23	15.14	-4.43	1.27	17.72	15.73	-107.26	-44.73	-49.24	39.27	-18.77
Royal Host Real Estate Investment Trust	-120.34	11.51	14.8	1.58	-3.1	-3.61	0.49	1.37	1.12	-0.48	39.34	-9.67
EXFO Electro-Optical Engineering Inc.	6.04	18.94	4.4	-0.99	-5.87	-37.22	-106.35	-4.92	8.95	43.51	40.28	-7.35
Intermap Technologies Corporation	-10.26	-7.34	-10.96	-10.33	-18.29	15.79	-19.89	0	0	-130.05	40.30	-19.13
Oncothyreon Inc.	43.53	-59.58	-43.75	-66.72	-35.58	-72.86	-81.48	-66.18	-111.01	-71.95	40.71	-56.56
Cinram International Income Fund	-77.85	-94.35	9.29	15.97	18.22	15.42	12.69	6.22	-7.24	4.57	41.10	-9.71
Quebecor Inc.	-29.65	-111.38	-6.73	5.29	7.98	4.62	4.54	-9.01	37.1	30.53	41.38	-6.67
Pacific Rim Mining Corp.	...	-98.16	-53.87	-4.48	-61.15	-55.61	-17.13	-22.24	-124.93	-8.89	41.41	-49.63
Imperial Metals Corporation	29.05	14.32	89.44	78.52	0	0	0	0	-24.05	-43.58	41.67	14.37
Altius Minerals Corporation	...	7.57	60.87	80.87	19.31	-9.82	-23.1	-21.96	-31.98	-42.42	42.48	4.37

Isotechnika Pharma Inc.	-102.49	-129.71	-73.28	-60.33	-35.77	-23.2	-0.88	-31.12	-79.42	0	43.05	-53.62
The Jean Coutu Group (PJC) Inc.	-122.92	-19.65	8.11	6.97	8.96	16.24	16.7	15.73	14.92	15.7	43.20	-3.92
Caledonia Mining Corporation	-18.92	-16.13	10.59	-48.59	-50.7	-74.01	-20.33	-5.81	54.92	-96.76	43.23	-26.37
Burntsand Inc.	-3.28	0.1	-11.84	-24.05	-18.44	-50	-142.7	-18.52	0.17	-1.42	43.45	-27.00
SEAMARK Asset Management Ltd.	0.63	18.83	37.45	62.04	87.3	95.68	117.74	105.45	68.88	0	44.18	61.40
Uranium Participation Corporation	-20.2	-30.08	68.24	0	...	...	...	...	...	...	44.31	4.49
MDC Partners Inc.	7.96	-15.12	-10.72	-5.77	-4.15	5.58	115.77	-63.64	17.67	11.13	44.76	5.87
Mercator Minerals Ltd.	-48.85	-19.79	27.72	4.59	0	0	0	-130.72	-42.19	0	44.79	-20.92
Yamana Gold Inc.	7	4.13	-6.91	-1.73	2.76	2.28	-88.99	-124.35	-24.16	-14.14	45.14	-24.41
Mad Catz Interactive, Inc.	-136.65	8.07	10	-16.68	11.61	3.05	3.9	4.31	-13.79	12.4	45.15	-11.38
Solitario Exploration & Royalty Corp.	...	-23.76	-18.51	-14.93	-23.93	35.8	-22.57	-36.93	58.86	-103.05	45.38	-16.56
SXC Health Solutions Corp.	9.25	10.78	15.82	16.78	9.1	27.52	22.72	-128.38	-21.88	13.29	46.15	-2.50
Bennett Environmental Inc.	-28.96	-74.47	-62.15	-36.73	-26.69	41.04	44.65	26.81	-14.15	54.21	46.26	-7.64
OSI Geospatial Inc.	-16.9	-31.04	-10.01	-127.54	-0.78	3.64	33.16	14.47	17.2	-58.4	46.60	-17.62
Nevsun Resources Ltd.	-19.6	-11.21	-156.9	-11.45	-14.12	-2.63	-3.85	-7.57	-8.52	-39.17	46.64	-27.50
Haemacure Corporation	-97.82	-77.71	-122.08	-38.65	-64.83	-117.57	23.59	-41.29	-87.87	-129.05	47.05	-75.33
Iteration Energy Ltd.	-54.96	-4.79	-2.85	2.97	-1.34	4.33	50.33	-100.62	-30	-93.33	47.20	-23.03
Labopharm Inc.	-127.55	-55.63	0	0	-110.72	-117.84	-40.11	-28.91	-29.63	-37.13	47.41	-54.75
Menu Foods Income Fund	-39.23	-119.14	8.26	-53.81	7.83	6.92	0	...	...	...	47.77	-27.02
Orvana Minerals Corp.	30.64	44.85	42.41	37.36	52.68	-5.76	6.19	-14.03	-15.35	-108.37	47.94	7.08
Denison Mines Corp.	-11.48	11.51	-6.24	-10.46	-14.27	77.68	4.58	-53	-106.2	-56.01	48.55	-16.39
MKS Inc.	21.79	19.12	-12.52	41.47	6.93	-25.85	-18.57	-41.39	-135.62	-8.36	49.00	-15.30
Envoy Capital Group Inc.	-26.28	4.39	-7.26	5.5	-5.92	22.94	-150.16	-4.67	5.63	10.67	49.40	-14.52
Garda World Security Corporation	-78.66	11.29	22.88	63.87	73.74	-1.24	16.75	-12.66	18.74	-71.28	49.49	4.34
Adeptron Technologies Corporation	-19.89	-137.46	23.46	-7.31	-47.79	-23.78	-14.66	-113.74	-7.15	-33.02	49.98	-38.15
Nuvo Research Inc.	-88.95	-130.27	0	0	0	-132.42	-59.46	-60.66	-94.34	-88.06	50.50	-63.42
BELLUS Health Inc.	0	0	0	-159.11	-81.71	-56.65	-76.07	-40.09	-7.16	-25.16	50.98	-44.60
Helijet International Inc.	0	0	0	0	0	-108.53	-71.96	-10.82	75.31	42.52	51.65	-7.35
Orbus Pharma Inc.	0	-107.65	-96.05	-71.1	-37.6	-27.95	-3.71	9.66	44.82	27.39	51.70	-26.22
Uranium One Inc.	-100.73	-0.82	7.95	0	...	...	...	...	...	...	51.70	-23.40
Onex Corporation	-17.94	6.2	17.26	109.06	-61.54	-84.07	-8.89	-7.73	13.88	25.15	52.03	-0.86
GBO Inc.	-7.01	-7.87	9.99	-8.73	0	0	171.77	0	0	37.4	55.14	19.56
MIGENIX Inc.	...	-195.69	-124.92	-71.88	-50.78	-47.13	-38.53	-44.11	-20.93	-24.98	57.06	-68.88
Lundin Mining Corporation	-23.43	-5.44	12.88	14.94	5.67	10.17	-13.48	4.09	-177.32	-18.69	57.21	-19.06
Coalcorp Mining Inc.	...	-11.93	-35.48	-3.04	-130.86	-3.47	-152.1	-116.67	-67.99	-33.33	57.90	-61.65
Turbo Power Systems Inc.	0	-87.14	-150.97	-168.33	-91.48	-47.73	-24.81	-12.38	-16.78	-71.65	58.21	-67.13
Sulliden Exploration Inc.	...	-6.78	-3.37	-2.72	-7.93	-19.8	-40.13	-169.99	-107.32	-14.65	58.43	-41.43
KnightHawk Inc.	0	0	0	0	0	0	-184.41	-14.69	7.85	5.51	58.56	-18.57
Bioniche Life Sciences Inc.	...	-117.75	-93.4	-181.75	-72.93	-31.63	-24.55	-17.84	-11.95	0	60.39	-61.31
Pinetree Capital Ltd.	-109.36	-21.69	76.52	61.86	-8.8	42.69	-0.21	110.91	0	0	61.47	15.19
Norsat International Inc.	28.93	32.63	-123.3	-101.1	6.47	-115.5	-60.77	-112.42	-111.83	-38.03	62.89	-59.49
ConjuChem Biotechnologies Inc.	0	0	0	0	0	-153.24	-129.9	-74.58	-129.6	-86	64.33	-57.33
Connacher Oil and Gas Limited	-5.6	9.46	2.7	1.17	-9.16	28.15	15.43	-127.86	-143.28	-106.66	65.18	-33.57
Vasogen Inc.	-102.2	-120.06	-233.3	-200.62	-121.3	-59.18	-44.91	-33.9	-36.92	-92.11	68.04	-104.45
Absolute Software Corporation	...	0	0	-187.84	-147.06	-125.69	-88.24	-54.63	-32.53	0	70.35	-70.67
Ambrilia Biopharma Inc.	-106.64	-45.48	-8.27	-239.67	-191.61	-91.28	-55.48	-62.78	-50.81	-83.5	70.75	-93.55
Spectral Diagnostics Inc.	-31.64	-26.8	128.73	-153.5	-102.51	-33.5	-73.72	-76.74	-71.06	-60.1	73.32	-50.08
Polyair Inter Pack Inc.	0	-227.43	-29.13	-51.23	-2.62	16.23	20.11	8.57	17.04	14.55	75.25	-23.41
True Energy Trust	-4.51	-5.01	-52.06	6.21	20.66	17.02	1.58	-239.2	4.19	-16.6	77.36	-26.77
Silvercorp Metals Inc.	...	51.07	46.5	-41.15	-7.83	-62.87	-127.41	-33.99	-162.94	-143	78.34	-53.51
Wi-LAN Inc.	-4.01	19.99	97.02	-102.27	-18.96	-18.8	-219.14	-97.81	-39.24	-37.39	84.23	-42.04
Axia NetMedia Corporation	...	9.5	27.31	77.54	140.78	-147.48	-72.1	-39.98	-50.39	-19.23	84.79	-8.23
Destiny Resource Services Corp.	14.79	2.05	59.19	73.73	0	0	0	100.99	-181.7	-150.75	90.94	-8.17
Ainsworth Lumber Co. Ltd.	-212.66	-141.08	-30.46	42.81	74.17	112.33	-31.2	-35.8	15.64	26.6	97.75	-17.97
Avcorp Industries Inc.	-30.78	-29.18	25.05	-334.03	-68.73	-37.34	-43.28	13.66	-53.47	-36.79	100.56	-59.49
Thompson Creek Metals Company Inc.	28.07	44.22	-17.42	-108.68	185.91	-224.02	-87.66	-134.23	-24.31	-28.44	112.19	-36.66
St Andrew Goldfields Ltd.	-17.56	-418.25	-274.74	-47.73	-85.63	-29.5	-18.99	-20.01	-42.22	-9.98	137.76	-96.46
Kirkland Lake Gold Inc.	...	-4.37	-13.9	-15.24	-88.59	-114.33	-54.65	-67.5	-142.07	-567.41	174.75	-118.67
01 Communique Laboratory Inc.	-53.07	0	0	-567.07	0	-129.73	-90.29	-94.54	-13.39	108.15	182.46	-83.99
Response Biomedical Corp.	-153.24	-127.37	0	0	0	0	0	0	0	-738.51	231.24	-101.91
Genoil Inc.	769.39	0	-779.92	-370.84	-180.62	-82.68	-54.52	-46.36	0	0	383.96	-74.58
ProMetic Life Sciences Inc.	-1,383.95	-266.64	-209.28	-142.71	-67.55	-61.21	-53.23	-57	-72.74	-39.38	410.67	-235.37
BAM Investments Corp.	2.31	1	13.17	-12	-17.98	-43.26	-32.89	-19.48	11,505.31	0	3642.17	1139.62

APPENDIX C

DISCOUNTED CASH FLOW ESTIMATES FOR US UTILITIES

The DCF Model

The standard alternative to risk premium models is the discounted cash flow model. This model infers the required rate of return by replicating the actions of an investor in valuing the firm's securities. To do this we need to define the costs and benefits attached to an investment. The cost is simply the price of the security (P_0, price at time zero) and the benefits the stream of cash inflows expected at time t in the future (C_t). However, since the investor can always invest in alternative investments, future expected cash flows are not of equal value. As a result future cash flows are "discounted," or reduced in value, to reflect this "opportunity cost." This is the basic idea behind using the discounted cash flow model,

$$P_0 = \sum_{t=1}^{\infty} \frac{C_t}{(1+K)^t}$$

where K is the discount rate or investor's required rate of return.

Once we estimate the stream of future cash inflows, we can equate them to the current price and solve for the investor's required rate of return. For example, this is the standard way of valuing bonds. At the end of every business day investment banks simply take the coupon payments on a bond and its terminal value, and use the last trading value for the bond to solve the above equation for the bond's "yield to maturity." This yield to maturity is then published in the newspaper as an objective measure of the investors' required rate of return for a default free security. I already use this DCF estimate as part of my risk premium estimates. However, we can take this a stage further and estimate the DCF required return on equity directly using this same procedure.

The expected equity cash flows are the future expected dividends. Unlike the stream of cash flows on a bond the dividends are not contractual and are more difficult to forecast, particularly for individual stocks. Consequently the DCF model is only used for low risk dividend paying stocks or the market as a whole, where the expected dividends can be assumed to grow at some long run average growth rate *g*. In this case, each dividend is expected to grow at the rate *g*, so we can substitute $d_1 = d_0 * (1+g)$ into the valuation equation to get:

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

where the stock price is equal to the expected dividend per share, divided by the investor's required rate of return, minus the dividend growth expectation, g. The advantage of this formulation of the problem is that we can easily rearrange the equation to obtain,

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

which states that the investor's required rate of return can be estimated as the expected dividend yield plus the expected growth rate in dividends. This is the direct analogy with the yield to maturity on a bond. This formulation of the model is often called the Gordon (or dividend discount) model after Professor Emeritus of the University of Toronto Myron Gordon.

Further it is straightforward to show that increased dividends primarily come from increased future earnings, which are generated by the firm retaining some of its current earnings for re-investment. If we set *X* as the earnings per share and denote b as the fraction of earnings retained within the firm, then *(1-b)X* is the dividend and *bX,* the retained earnings.[1] Provided the assumptions of the DCF model hold, it is straightforward to show that dividends and earnings will then grow at a long run growth rate estimated as the product of the firm's retention rate *(b)*

1 This assumes that the only change in shareholder's equity comes from retentions, that is, everything flows through the income statement.

and its return on common equity *(r)*. Note that while *K* is the return that investor's require, r is the actual return on equity (*ROE*) the firm is expected to earn.

An example may help to make these assumptions clear. Suppose, as in Schedule 1, the firm's book value per share is $20 and its return on equity expected to be 12%. In this case, its earnings per share are expected to be $2.40 and with a 50% dividend payout rate, its dividends per share and retained earnings are both expected to be $1.20. Moreover, since $1.20 has been retained and reinvested within the firm, next period's book value per share increases to $21.20. As a result, the firm is expected to earn $2.544 in the following year, i.e., 14.4 cents more. This additional 14.4 cents comes from earning the 12% return on equity on the $1.20 of retained earnings. The increase in earnings per share, dividend per share and retained earnings is 6% each year and is calculated directly as the product of the firm's return on equity of 12% and its retention rate of 50%. Moreover, the value of the firm's common stock can be calculated from equation (1), which also increases at this 6% rate, since only the dividend per share is expected to change.

The importance of Schedule 1 is in showing some of the implications of the dividend growth model. First, note that if the investor's fair rate of return is 10%, the stock price in Schedule 1 is $30, determined as the expected dividend of $1.20 divided by the discount rate minus the growth rate (or 0.04). This price exceeds the book value of $20 by 50%. This is because the firm's return on equity (*r*) is 12% and the investor's required or fair rate of return (*K*) is only 10%. This is the reason why economists look at market-to-book ratios to infer the investor's opportunity cost. If market-to-book ratios exceed one for a regulated company, most economists immediately assume that the firm's return on equity exceeds the return required by stock holders, implying that the regulator should lower the firm's allowed rate of return. In our example the *ROE* exceeds the required rate of return by 2% which results in a market to book ratio of 150%.

Second, it is the return on equity that drives the growth in both dividends per share and earnings per share, provided that the dividend payout is constant. If the dividend payout is gradually

increased over time, then it is possible to *manufacture* a faster growth rate in dividends than earnings per share, from the same underlying level of profitability.

For example, in Schedule 2 the same data is used as in Schedule 1 except that the dividend payout starts at 50% and then increases by 2% per year. By the end of year 5 earnings per share have only risen to $2.99 instead of the $3.03 in Schedule 1, because less money has been reinvested within the firm. As a result, there is less capital to generate earnings. Thus the earnings in Schedule 2 only grow at a 5.6% compound growth rate, down from the 6% of Schedule 1. Conversely, since more of the earnings are being paid out as dividends, dividends per share are up to $1.73 instead of $1.52. This is a 9.6% compound growth rate, rather than the 6% in Schedule 1.

In the short-run, Schedule 2 demonstrates that the growth in dividends per share can be artificially manipulated by increasing the dividend payout. This is not sustainable in the long run, since the dividend payout cannot be increased indefinitely. Moreover, the manipulation can be detected by performing the basic 'diagnostic' check of tracking the behaviour of the firm's dividend payout over time, and the firm's return on equity. However, if the analyst is not aware of the change in the dividend payout, estimating the fair rate of return by adding this manipulated dividend growth rate to the expected dividend yield will overstate the investor's required rate of return. It is important in this case to base the estimate of the investor's required rate of return on a long run sustainable growth rate, estimated from the underlying growth in earnings and dividends and the two components of growth.

The third implication of Schedule 1 is that the DCF estimate using the historic growth rate is appropriate only when the assumptions of the model hold. This means that non-dividend paying firms, firms with highly fluctuating earnings and dividends, and firms with non-constant expected growth cannot be valued accurately using the formula. Usually these assumptions hold for regulated utilities, so the DCF estimate is particularly appropriate for use in determining the fair rate of return for a regulated utility. However, for non-regulated firms, these assumptions are frequently violated. As a result, estimating the investor's required rate of return by using the

formula $K=d_1/P_0 + g$, is tenuous and subject to significant measurement error.

Circularity

When we apply the DCF model to estimate a fair return we estimate the dividend yield and future growth rate. In the example in Schedule 1 the dividend is forecast to be $1.20 which with a $30 stock price means a 4% dividend yield. When this is added to the sustainable growth rate of 6% we get back the investor's fair rate of return of 10.0%. However, it is sometimes alleged that this DCF estimate is circular, since the ROE used to forecast the future growth rate of 12% differs from the investor's required or fair rate of return estimated at 10%. The allegation is that if a regulatory body were to accept the 10% estimate and reduce the allowed ROE then future growth will drop and with it the stock price. As a result there is an inconsistency between he forecast ROE and the DCF fair return estimate. However, this inconsistency or circularity is false.

Note that there will always be a difference between the forecast ROE and the investor's fair return whenever the market to book ratio differs materially from 1.0. However, this does not affect the estimate produced by the DCF model. Suppose for example the ROE was decreased to 10%, after the fair return is correctly estimated at 10% using the DCF model, what happens? In this case the forecast earnings per share drop to $2 from $2.40 and with the same 50% payout the dividend is cut to $1.0 and the forecast growth rate drops to 5% (50% retention times the 10% ROE). The stock price will then also drop and using the same DCF equation the market price will fall back to its book value of $20.

$$P_0 = \frac{\$1}{0.10 - 0.05} = \$20$$

However, at the new price the dividend yield now increases to 5% ($1/$20) so that with the new lower growth rate of 5% we again estimate the investor's fair return accurately at 10%.

Investors will be far from happy that the allowed ROE has been cut from 12% to 10%, but that does not invalidate the use of the DCF model to estimate their fair or required rate of return of 10%. Similarly if the regulator for some reason increases the allowed ROE to 14% then the dividend would increase to $1.40 and the forecast growth to 7%. In this case the stock price would increase to $46.67 and the dividend yield drops to 3.0%, so again the dividend yield plus growth correctly estimates the investor's fair rate of return of 10.0%.

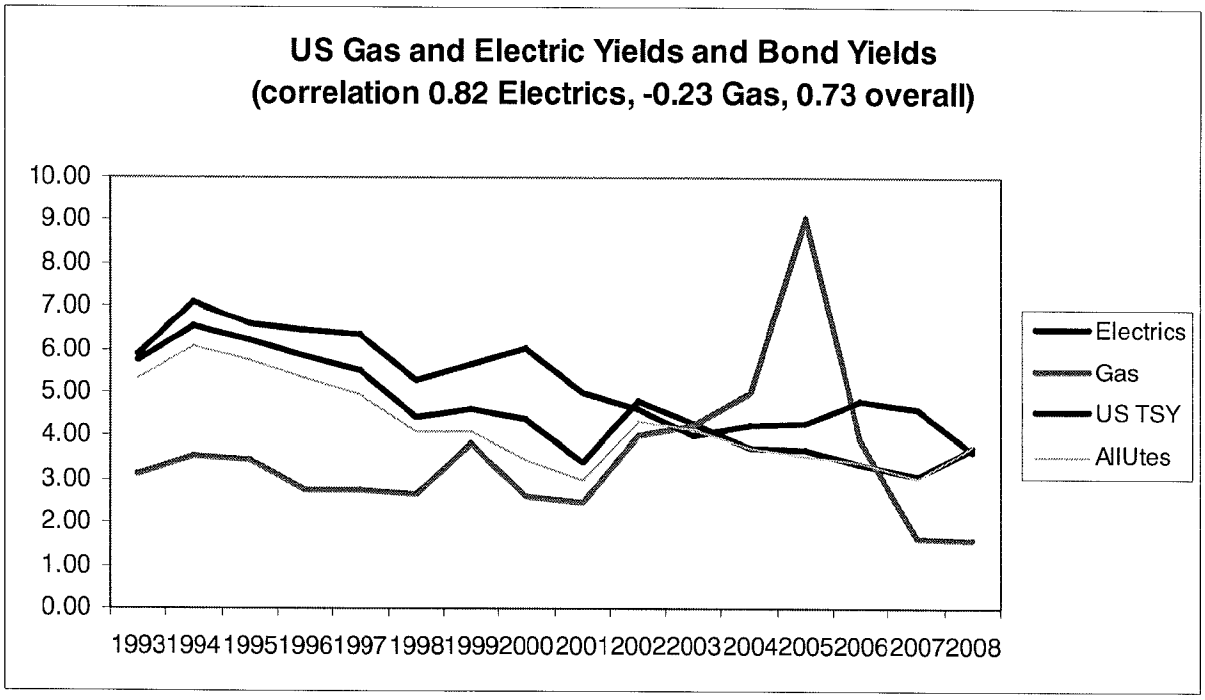
The fact is that the DCF model simply reverse engineers the forecast cash flows to extract the investor's fair rate of return; it says nothing about whether or not the investor would be happy if the firm earned that rate of return on its book value. Further proponents of this circularity argument often apply the DCF model based on analyst growth estimates and yet these same analysts have to get their forecast growth rates from somewhere and invariably they are based on future profitability, that is ROEs. Moreover, even if they are not explicitly based on a forecast ROE, one is always implicit in a growth forecast. For example if an analyst's growth forecast of 7% is used, then with a 50% dividend payout this means by definition the analyst is forecasting an ROE of 14%. It is impossible to ignore the result that any forecast growth rate carries with it a forecast ROE.

Standard and Poors US Utility data

In Schedule 3 is a description of the utilities included in Standard and Poors 2009 Analyst Handbook. Of interest in this appendix are the traditional utilities (5510) and not the multi-utilities and independent power producers. These traditional utilities include the standard Electric and Gas utilities. Data for these utilities is included in Schedule 4 where data specific for Electric and Gas utilities is in Schedule 5. Note that the S&P data includes the firms that at the time were classified into these groups so whereas there are only 3 utilities currently included as gas utilities, in 1993 there were 13 and the data for that year is for those 13 firms.

The schedules provide the basic data needed for a DCF analysis. The data includes dividends, earnings, book value per share, average market values and the return on equity. From this it is possible to calculate several pieces of useful information. First, is the average payout of dividends, which is in the fourth column and its inverse, the retention ratio. Clearly, utilities as low risk and low growth investments have relatively high payouts: in only one of the 31 years is the payout less than 50% and the average payout is 72%. This is biased high by the very large payout in 2002 when some utilities suffered serious problems. However, the median is still very high at 70%. Note that the payout tends to increase during recessions, such as those of the early 1990s and 2000s when earnings were depressed and dividends not cut proportionately. This indicates that US utilities are much more sensitive to the business cycle than Canadian utilities, which are only indirectly affected through changes in the long Canada bond yield.

The very high dividend payout means that the growth potential for these utilities is low, which reduces the error in using the DCF model. It also means that utilities are quintessentially dividend or income stocks. The following graph is of the yield on the ten year US government bond against the dividend yield of the utilities index, as well as for the Electrics and Gas utilities separately. The dividend yield is positively related to the yield on US government bonds; in fact the correlation is 0.82 for the Electrics and 0.73 overall. The drop in the correlation is because of the limited number of gas utilities since 2004, which introduces significant measurement error. The graph indicates that income investors react in a similar way to utility stocks as to government bonds, which makes them good candidates for the DCF model.



The average dividend yield on the utility stocks is 5.88% over this long period compared with the average US government bonds of 7.50%. The problem is that this difference ignores the fact that utilities are riskier than government bonds, while the latter offer no growth potential, since the nominal bond promises a fixed series of interest payments. To partially offset the lack of growth the dividend yield can be grossed up by the average inflation rate for the year. This can be viewed as either comparing the dividend yield to the real yield on the US bond or as simply assuming that utility stocks are good hedges against inflation. In this case the grossed up dividend yield averages 10.38% whereas the median is 8.59%. The big difference between the average and the median (middle number) is that dividend yields were already very high in the 1980s when inflation was also high and bonds underperformed. Regardless subtracting the average US long bond yield from the grossed up dividend gives an average utility risk premium of 2.88%.

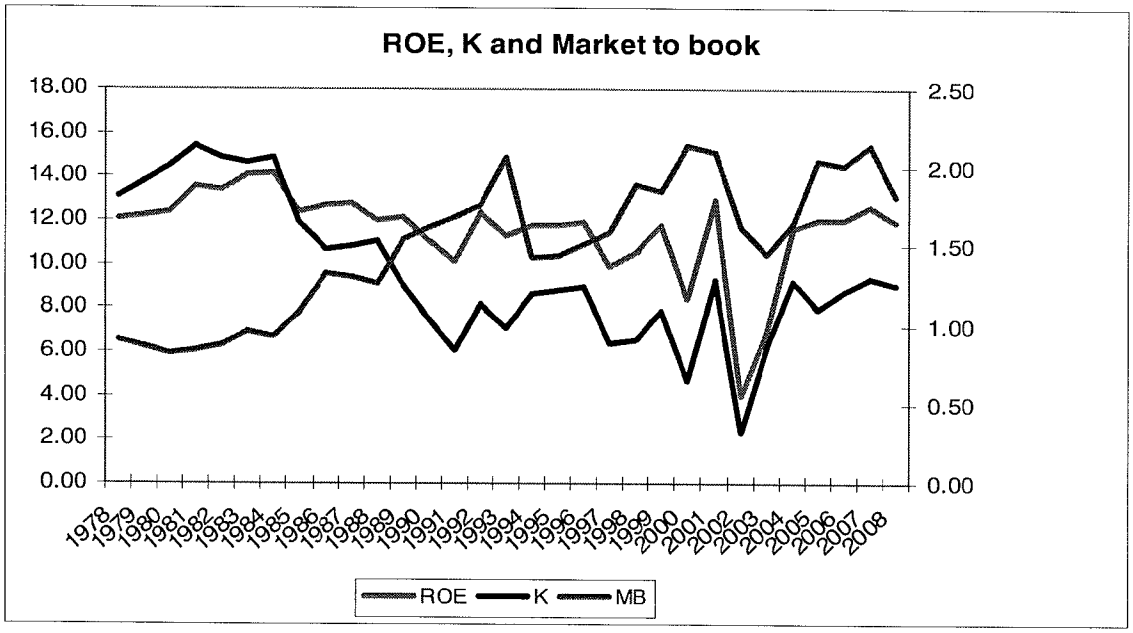
An alternative is to estimate utility growth rate by assuming that each year the utility is expected to earn its current ROE in the future so that its earnings will grow by the retention rate times this ROE. For example, in 1978 the retention rate was 36.87% and the ROE 12.09% implying future earnings growth of 4.46%. This is the *g (B*ROE)* in column, which is known as the sustainable

growth rate. For 1978 the dividend yield for the S&P Utilities was 8.24% (column 8), so that the sum of the expected dividend yield plus this growth rate was 13.06%, which is the estimate of the required rate of return in column 10. In 1978 the average long US Treasury yield was 8.41% (10+ years) implying that the utility risk premium was 4.65%.

Column 11 gives the market to book ratio for these utilities, which in 1978 was 0.91, implying that at that time the utilities were not expected to earn their fair rate of return. During this period utilities were under significant pressure as inflation was rampant and most of these utilities were on historic test years. This implied significant regulatory lag that exposed utilities to inflation risk. Consequently this estimate is consistent with a market to book ratio marginally below 1.0 and an ROE less than the investor's required rate of return. Subsequently, two factors have largely removed this risk: the decline in inflation and the adoption of forward test years. It is not obvious that utility risk premiums were adjusted downwards as a result of the adoption of a forward test year[2] or the removal of this risk. However, we would expect to see a reduction in their risk premium as a result of the removal of these risks.

One way of testing this is to look at how the stock market reacted to the actual ROE and my estimate of the required rate of return, the standard way of doing this is to look at the market to book ratio, which is the average market price divided by the book value per share. This data is graphed below

2 By applying the ROE to an average of the current and future shareholder's equity, the firm will over-earn unless the ROE applied to an historic test year is adjusted downward.



Note that as just discussed in this earlier period utilities were under pressure, as can be seen from the fact that their actual ROEs were below my estimate of their fair ROE which I denote by "K." This is confirmed by the fact that their market to book ratios were below 1.0. As my estimate of the required return drops in the mid 1980s it falls below the actual ROE and the market to book ratio increases. This is consistent with basic financial theory and common sense, that when an investor receives more than they require they want more and bid up the stock price accordingly. Between 1978-1984 the actual ROE averaged 13.14%, whereas my estimate of the required rate of return averaged 14.45%. The "under-earning" by these US utilities is apparent in an average market to book ratio of 0.89. In contrast, since 1985 these utilities have averaged an ROE of 11.09%, that is, a decrease of 2.05%, however, my estimate of the required rate of return fell even more by 6.31% to 8.14% so the market to book ratio increased substantially to an average of 1.68. In this case regulatory lag worked in favour of the utilities, since the ROE did not fall in line with the required or fair rate of return.[3]

Over this whole period the average utility risk premium is 2.09% and the median 2.21%. However, the *br* growth rate is sensitive to the actual earnings which affect the retention rate and

3 It also reduced the incentive for utilities to request a rate hearing.

may not capture the full amount of growth expectations. To check for this the last two columns estimate the utility risk premium with two alternative growth expectations. URP2 assumes that the expected ROE is the long Treasury yield plus 5.0%, which avoids the problem of fluctuating earned returns. URP3 also assumes that the retention rate is a constant 30.3%, which is the median rate over the whole time period. In this way we avoid the problem of declining retention rates as earnings have been squeezed. These assumptions tend to be conservative. URP3 assumes a higher ROE than was often earned, while assuming a constant retention rate allows both the higher dividend yield from a higher payout, without penalising growth expectations. Both of these assumptions would tend to increase the estimate of the average utility risk premium. The average URP2 is 2.17% with a median value of 2.68% and the average URP3 is 2.40% with a median value of 2.44%.

One problem with the data in Schedule 3 is that it includes all firms classified as regular utilities by S&P, including some that had serious financial problems as a result of energy trading. In Schedule 5 is the same data for a smaller sample of Electric and Gas utilities since 1993. The data is obviously similar since Schedule 4 includes all the firms in Schedule 5. Using the same approach as before the risk premium for the electric utilities is 2.42%-3.05% based on the median values whereas it is 0.68-2.49% for the gas utilities. These estimates may be marginally low as for the last few years the retention rates for the electric utilities have increased, possibly due to their significant investment programs. Further it is difficult to place much reliance on the gas utility data since there are so few firms and the data is volatile.

From the data in Schedules 4 and 5, I derive the following conclusions:

- Risk premiums of the order of 2.21-2.68% for a typical US utility over ten year US government bond yields for the period 1978-2008 seems reasonable based on the median results.
- For the more stable US electric utilities the risk premium for the period 1993-2009 is quite similar at 2.29-2.96%.

- Overall a US risk premium over ten year government bond yields seems to be in the 2.25-3.0% range. To this would be added a small flotation cost allowance for financial flexibility of the order of 0.50%.
- This range of risk premiums would be higher than that needed for Canadian utilities, all else constant, since the risk premium in Canada is estimated over the 30 year Canada bond yield, which is generally higher than the ten year yield by 10-60 basis points. The Canadian utilities also seem to have more regulatory protection and have lower risk.

SCHEDULE 1

YEAR	BEGINNING BOOK VALUE PER SHARE	EARNINGS PER SHARE	DIVIDEND PER SHARE	RETENTIONS PER SHARE
1	20.00	2.40	1.20	1.20
2	21.20	2.54	1.27	1.27
3	22.47	2.70	1.35	1.35
4	23.80	2.86	1.43	1.43
5	25.24	3.03	1.52	1.52

ASSUMPTIONS: Return on Equity = 12%
Dividend Payout = 50%
Cost of Equity = 10%

SCHEDULE 2

YEAR	BEGINNING BOOK VALUE PER SHARE	EARNINGS PER SHARE	DIVIDENDS PER SHARE	RETENTIONS PER SHARE
1	20.00	2.40	1.20	1.20
2	21.20	2.54	1.32	1.22
3	22.40	2.69	1.45	1.24
4	23.70	2.83	1.59	1.25
5	24.90	2.99	1.73	1.26

ASSUMPTIONS:			
	Return on Equity	=	12%
	Dividend Payout	=	50% + 2% p.a.
	Required Return	=	10%

Utilities (55)
Utilities (5510)
Electric Utilities (551010)
Electric Utilities (55101010)
Allegheny Energy (AYE)
American Electric Power (AEP)
Duke Energy (DUK)
Edison Int'l (EIX)
Entergy Corp. (ETR)
Exelon Corp. (EXC)
FirstEnergy Corp. (FE)
FPL Group (FPL)
Pepco Holdings, Inc. (POM)
Pinnacle West Capital (PNW)
PPL Corp. (PPL)
Progress Energy, Inc. (PGN)
Southern Co. (SO)
Gas Utilities (551020)
Gas Utilities (55102010)
Equitable Resources (EQT)
NICOR Inc. (GAS)
Questar Corp. (STR)
Multi-Utilities (551030)
Multi-Utilities (55103010)
Ameren Corporation (AEE)
CenterPoint Energy (CNP)
CMS Energy (CMS)
Consolidated Edison (ED)
Dominion Resources (D)
DTE Energy Co. (DTE)
Integrys Energy Group, Inc. (TEG)
NiSource Inc. (NI)
PG&E Corp. (PCG)
Public Serv. Enterprise Inc. (PEG)
Sempra Energy (SRE)
TECO Energy (TE)
Wisconsin Energy (WEC)
Xcel Energy Inc (XEL)
Water Utilities (551040)
Water Utilities (55104010)
Independent Pwr Producers & Engy Traders (551050)
Independent Pwr Producers & Engy Traders (55105010)
AES Corp. (AES)
Constellation Energy Group (CEG)
Dynegy Inc. (DYN)

S&P US Utility Data

	EPS	DPS	PAYOUT	RETAIN	ROE	g (B*ROE)	YIELD	US TSY	K	MB	URP	URP2	URP3	CPI
1978	6.7	4.23	63.13	36.87	12.09	4.46	8.24	8.41	13.06	0.91	4.65	5.18	4.22	7.6
1979	6.99	4.53	64.81	35.19	12.23	4.31	9.06	9.44	13.76	0.86	4.31	5.16	4.38	11.3
1980	7.25	4.8	66.21	33.79	12.38	4.18	9.87	11.46	14.47	0.82	3.01	4.52	3.88	13.5
1981	8.22	5.24	63.75	36.25	13.57	4.92	10.01	13.84	15.42	0.84	1.58	3.68	2.44	10.3
1982	8.42	5.52	65.56	34.44	13.38	4.61	9.86	13.91	14.92	0.88	1.01	3.10	2.23	6.2
1983	9.28	5.9	63.58	36.42	14.13	5.15	9.04	11.11	14.65	0.97	3.55	4.33	3.25	3.2
1984	10.11	6.33	62.61	37.39	14.19	5.31	9.08	12.44	14.87	0.93	2.43	3.76	2.40	4.3
1985	9.47	6.74	71.17	28.83	12.40	3.58	8.03	10.62	11.89	1.08	1.26	2.27	2.51	3.6
1986	10.08	7.03	69.74	30.26	12.73	3.85	6.56	7.68	10.67	1.33	2.99	2.97	2.97	1.9
1987	10.42	7.42	71.21	28.79	12.77	3.68	6.88	8.38	10.80	1.31	2.42	2.61	2.82	3.6
1988	10.07	4.65	46.18	53.82	12.00	6.46	4.31	8.85	11.05	1.27	2.20	3.24	-0.17	4.1
1989	10.41	7.88	75.70	24.30	12.15	2.95	5.89	8.50	9.02	1.55	0.52	0.87	1.72	4.8
1990	9.63	8.27	85.88	14.12	11.07	1.56	5.86	8.55	7.51	1.62	-1.04	-0.67	1.65	5.4
1991	8.65	8.43	97.46	2.54	10.12	0.26	5.84	7.86	6.11	1.69	-1.75	-1.67	2.10	4.2
1992	10.48	8.49	81.01	18.99	12.4	2.35	5.71	7.01	8.20	1.76	1.19	1.11	2.54	3
1993	7.63	6.49	85.06	14.94	11.28	1.69	5.34	5.87	7.12	2.07	1.25	1.18	2.94	3
1994	8.23	6.5	78.98	21.02	11.78	2.48	6.05	7.08	8.68	1.43	1.60	1.66	2.85	2.6
1995	8.58	6.48	75.52	24.48	11.79	2.89	5.74	6.58	8.79	1.44	2.21	2.16	2.87	2.8
1996	9.18	6.54	71.24	28.76	11.95	3.44	5.31	6.44	8.93	1.51	2.49	2.34	2.52	3
1997	7.55	6.48	85.83	14.17	9.87	1.40	4.94	6.35	6.40	1.59	0.05	0.27	2.19	2.3
1998	8.18	6.39	78.12	21.88	10.52	2.30	4.12	5.26	6.51	1.90	1.25	1.19	2.09	1.6
1999	9.03	6.23	68.99	31.01	11.78	3.65	4.09	5.64	7.90	1.85	2.26	1.89	1.81	2.2
2000	7.12	6.14	86.24	13.76	8.4	1.16	3.45	6.03	4.64	2.14	-1.39	-1.01	0.87	3.4
2001	9.79	5.21	53.22	46.78	12.94	6.05	3.01	5.02	9.25	2.10	4.23	2.82	1.12	2.8
2002	3.36	4.97	147.92	-47.92	3.99	-1.91	4.33	4.61	2.34	1.62	-2.27	-5.08	2.75	1.6
2003	5.97	4.27	71.52	28.48	6.9	1.96	4.16	4.02	6.21	1.45	2.20	2.82	2.99	2.3
2004	8.75	4.8	54.86	45.14	11.62	5.25	3.76	4.27	9.20	1.64	4.93	3.83	2.40	2.7
2005	8.52	5.5	64.55	35.45	11.99	4.25	3.56	4.29	7.96	2.05	3.67	2.68	2.18	3.4
2006	10.15	5.82	57.34	42.66	12.02	5.13	3.42	4.79	8.72	2.02	3.93	2.95	1.69	3.2
2007	11.97	6.18	51.63	48.37	12.62	6.10	3.04	4.63	9.33	2.14	4.71	3.21	1.42	2.8
2008	11.61	6.64	57.19	42.81	11.94	5.11	3.77	3.67	9.07	1.81	5.40	3.95	2.82	3.8
Average			**72.14**	**27.86**	**11.58**	**3.50**	**5.88**	**7.50**	**9.60**	**1.50**	**2.09**	**2.17**	**2.40**	**4.21**
Median			**69.74**	**30.26**	**12.00**	**3.68**	**5.71**	**7.01**	**9.02**	**1.55**	**2.21**	**2.68**	**2.44**	**3.20**

URP assumes actual br growth, URP2 assumes that the expected ROE is the Treasury yield plus 5.0% and URP3 also assumes retention at the median retention rate. Source data is from Standard & Poors Analyst's Handbook 2009 and 2000 editions

S&P Gas and Electric Utility Data

ELECTRIC	EPS	DPS	PAYOUT	RETAIN	ROE	g (B*ROE)	YIELD	US TSY	K	MB	URP	URP2	URP3
1993	7.95	7.11	89.43	10.57	11.25	1.19	5.73	5.87	6.99	1.59	1.11	1.07	3.16
1994	8.45	7.05	83.43	16.57	11.71	1.94	6.55	7.08	8.62	1.37	1.54	1.61	3.17
1995	9.23	6.97	75.51	24.49	12.36	3.03	6.23	6.58	9.45	1.39	2.87	2.66	3.19
1996	9.07	6.96	76.74	23.26	11.64	2.71	5.86	6.44	8.73	1.43	2.29	2.24	2.90
1997	7.63	6.64	87.02	12.98	10.16	1.32	5.49	6.35	6.88	1.49	0.53	0.69	2.58
1998	8.52	6.5	76.20	23.80	11.05	2.63	4.45	5.26	7.19	1.82	1.93	1.73	2.26
1999	9.31	6.24	67.02	32.98	12.36	4.08	4.60	5.64	8.87	1.69	3.23	2.64	2.16
2000	6.06	6.36	104.95	-4.95	7.04	-0.35	4.40	6.03	4.04	1.80	-1.99	-2.20	1.68
2001	10.58	5.42	51.23	48.77	13.63	6.65	3.41	5.02	10.28	1.88	5.26	3.44	1.37
2002	7.31	5.93	81.12	18.88	10.18	1.92	4.82	4.61	6.83	1.63	2.22	2.11	3.10
2003	8.44	5.29	62.68	37.32	10.61	3.96	4.31	4.02	8.44	1.51	4.43	3.81	3.00
2004	11.12	5.77	51.89	48.11	12.37	5.95	3.74	4.27	9.91	1.68	5.64	4.09	2.23
2005	10.22	6.85	67.03	32.97	11.86	3.91	3.69	4.29	7.75	2.04	3.46	2.58	2.17
2006	12.35	6.99	56.60	43.40	12.68	5.50	3.37	4.79	9.06	2.13	4.27	2.97	1.48
2007	14.82	7.85	52.97	47.03	12.81	6.02	3.09	4.63	9.30	2.20	4.67	3.13	1.31
2008	15.27	8.57	56.12	43.88	12.83	5.63	3.75	3.67	9.59	1.92	5.93	4.03	2.67
average			**71.25**	**28.75**	**11.53**	**3.51**				**1.72**	**2.96**	**2.29**	**2.40**
Median			**71.27**	**28.73**	**11.79**	**3.47**				**1.69**	**3.05**	**2.61**	**2.42**
GAS													
1993	6.11	3.43	56.14	43.86	11.55	5.07	3.15	5.87	8.37	1.93	2.50	2.19	0.75
1994	7.21	3.82	52.98	47.02	12.29	5.78	3.57	7.08	9.56	1.78	2.48	2.38	0.37
1995	5.25	4.02	76.57	23.43	8.28	1.94	3.45	6.58	5.45	1.75	-1.13	-0.33	0.58
1996	9.75	4.36	44.72	55.28	13.75	7.60	2.78	6.44	10.59	2.14	4.15	2.84	-0.02
1997	6.25	5.01	80.16	19.84	8.19	1.62	2.74	6.35	4.41	2.15	-1.94	-1.30	0.00
1998	5.89	5.36	91.00	9.00	7.85	0.71	2.69	5.26	3.41	2.32	-1.85	-1.63	0.69
1999	7.4	9.34	126.22	-26.22	6.57	-1.72	3.84	5.64	2.05	1.99	-3.59	-4.70	1.62
2000	18.7	8.43	45.08	54.92	12.96	7.12	2.61	6.03	9.91	2.18	3.88	2.80	0.09
2001	9.87	8.16	82.67	17.33	7.33	1.27	2.47	5.02	3.77	2.38	-1.25	-0.77	0.63
2002	13.45	8.58	63.79	36.21	13.69	4.96	4.01	4.61	9.17	2.15	4.56	3.02	2.50
2003	14.77	7.23	48.95	51.05	13.82	7.06	4.24	4.02	11.59	1.57	7.58	5.02	3.14
2004	13.37	9.92	74.20	25.80	9.84	2.54	4.99	4.27	7.66	1.43	3.38	3.23	3.74
2005	10.42	19.06	182.92	-82.92	10.14	-8.41	9.05	4.29	-0.12	2.03	-4.41	-3.64	7.90
2006	8.26	8.89	107.63	-7.63	9.59	-0.73	3.94	4.79	3.18	2.62	-1.61	-1.63	2.30
2007	16.54	4.39	26.54	73.46	17.95	13.19	1.63	4.63	15.03	2.92	10.40	4.19	0.03
2008	19.61	4.21	21.47	78.53	18.46	14.50	1.60	3.67	16.33	2.48	12.66	4.84	0.66
average			**73.81**	**26.19**	**11.39**	**3.90**				**2.12**	**2.24**	**1.03**	**1.56**
Median			**68.99**	**31.01**	**10.85**	**3.75**				**2.15**	**2.49**	**2.29**	**0.68**

APPENDIX D

INTERNATIONALISATION AND ITS IMPACT ON THE MARKET RISK PREMIUM

I: The Trend in International Investment

The importance of international investment has increased dramatically over the last thirty years. The world used to be characterized by currency restrictions, investment controls and very limited international investing opportunities. Now most currencies are freely convertible, investment restrictions have largely been removed, securities are cross listed and there has been increased coverage of international stocks by financial advisors. This latter coverage has been enhanced by international collaboration between investment banks and the growth of some major international investment banks.

These changes have been mirrored in Canada's international investment position. In Schedule 1 is a graph of the inbound and outbound "equity" investment in Canada by both direct foreign investment (FDI) and investment in stocks (portfolio investment). FDI consists of investment by corporations in foreign assets, whereas portfolio investment is investment by institutions and individuals in foreign securities. In both cases, the investment involves claims on foreign income, but only FDI involves control. For both series investment has been deflated by dividing through by nominal gross domestic product (GDP). The data is that tracked by Statistics Canada since 1990. Several conclusions are obvious:

- There has been increasing international investment both in and out of Canada since 1990;
- FDI is significantly more important than portfolio investment, normally of the order of 2-3X as large;
- The importance of foreign portfolio investment has increased proportionately more than FDI,
- All values for international investment both in and out of Canada have plateaued since the peaks in the early 2000s with a slight indication that portfolio investment

has marginally declined.[1]

The data underlying Schedule 1 clearly indicates that Canadians are investing more abroad than in the 1990s. With the removal of the 30% restriction on foreign investment in tax advantaged pension plans (including RRSPS) this trend was expected to increase. However, in practice it appears that there has been no sudden explosion in foreign investing by Canadians over the last five years. However, it is of interest to see where this investment has gone. Schedule 2 graphs the share of outward investment going to the US and elsewhere, whereas the graph in Schedule 3 tracks the inward share from the US. Again there are several conclusions:

- For outward investment in 1990 over 60% of FDI and 80% of Canadian portfolio investment was going to the US;
- The trend since then has been for the US to lose its share of outward Canadian investment;
- By 2008 the US share of Canadian outward portfolio investment and FDI was barely 50%;
- For inward investment the picture is completely different; the US remains by far the dominant investor with 90% of portfolio investment in Canadian stocks and still almost 60% of inward FDI despite some recent very prominent non-US acquirers.

The picture that emerges from looking at the composition of Canadian FDI and portfolio investment in stocks is that Canadian investors have diversified away quite dramatically from the reliance on the US that was typical in 1990. If an external risk return yardstick is relevant it is clear from the data that this is no longer the US. In contrast, Canada seems to have trouble attracting interest from non-US investors.[2] However, what is clear is that the internationalisation of the world's capital markets is affecting Canadian investors and there is a more global perspective than prior to 2000.

II: The Impact of Internationalisation on the Required Rate of Return

If markets are increasingly becoming global, or international, the key question is: how is the risk

1 The pick up in March 2009 is mainly due to a decline in GDP.

return trade-off and the market risk premium affected? To understand this we have to understand that there are several effects at work.[3] First, prices are determined by a different set of investors, it is no longer purely Canadian investors that are determining the prices of Canadian securities and vice versa for the US and elsewhere. Cohn and Pringle show that for normal utility functions describing investor behaviour, the price of risk will fall as markets become more integrated. Second, all stocks should become less risky. This is because purely domestic factors get diversified away in an international portfolio and as a result, the total market risk is smaller.[4]

This means, for example, that if a cabinet minister resigns in disgrace in the UK and the UK market is off 3%, an internationally diversified portfolio would be much less affected. This is a domestic risk that would be priced in a domestic portfolio, but not an internationally diversified portfolio. In the limit, as portfolios become internationally diversified, they become much less risky. Finally, the systematic component of risk should also fall as markets become more international. As a result, holding everything else constant, the market risk premium for an internationally diversified portfolio is much smaller than for the same securities held by their respective domestic investors alone.

Cohn and Pringle summarise the above three components with the statement (page 111)

> "These two effects both operate in the direction of reducing the required return E(Rt) and concomitantly raising the price of individual securities.

Further they conclude (page 116)

> "The relatively high ex post returns provided by internationally diversified portfolios of securities may well be related to market imperfections. If current restrictions on international capital flows, to say nothing of other market imperfections, were removed, returns on internationally diversified portfolios would be expected to decline relative to the risk-free rate of interest. More importantly, the equilibrium rate of exchange of risk

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[2] It could be that non-US investment comes through by way of US investment funds or is channelled through the US.
[3] R. Cohn and J. Pringle, "Imperfections in International Financial Markets: Implications for Risk and the Cost of Capital to Firms," *Journal of Finance,* March 1973, pp 59-66, is the classic reference.
[4] B. Solnick, "The Advantages of International Diversification", *Financial Analyst's Journal*, July-August 1974, showed that an internationally diversified portfolio was about half as risky as a simple US diversified portfolio.

and return should decline for most countries, non-diversifiable risk should decline for most projects, and the resulting reduction in the risk premium component of the cost of capital to firms should improve the efficiency of real capital allocation."

As the quote from Cohn and Pringle indicates financial theory tells us that investors should diversify internationally. The reason for this is **not** that returns are necessarily higher, since the returns are themselves determined by investors buying the shares. Instead the motivation is that the risks are lower. The action of investors diversifying internationally will then push up share prices, causing higher short run returns, but once the new higher level of stock prices is determined equilibrium expected returns are then lower. This is the same phenomenon that occurs when market interest rates fall. In this case, the returns to higher coupon bonds go up, until their price increases, such that their expected returns are lower to reflect the lower market interest rates.

It is important to note that financial theory indicates that risk premiums ***decline*** as portfolios are internationally diversified: they do not increase. In particular, as Canadian and foreign investors diversify internationally, there is no reason to believe that the Canadian risk premium will increase. In fact, except for pathological cases, this is flatly contradicted by financial theory. Further, the above conclusions point out that the evidence on the realised US market risk premium is also biased high, since US investors will no longer have to bear a large part of the US market risk, since it is unique to the US. Consequently this risk will be diversified away in an internationally diversified portfolio causing US risk premiums to fall.[5] Because capital markets are becoming more diversified internationally, it follows that the market risk premium in the future will be lower than the historic estimates from any and all national markets.

An example may help the above intuition. The expected return on the market as a whole is determined by the capital market line:

$$E(R_m) = R_F + MPR\sigma^2$$

[5] There is also an obvious "survivor bias" to U.S. equity returns, since the emergence of the U.S. as the dominant superpower was no means expected at the time that most U.S. data series start.

where the expected return on the market is equal to the risk free rate plus the market price of risk (*MPR*) times the variance of the market portfolio. In contrast to the pricing of securities, the relevant measure of risk for the market as a whole is the variance of its rate of return or its dispersion. The market risk premium is then just the

$$E(R_m) - R_F = MPR * \sigma^2$$

or the market price of risk times the variance or risk of the overall market. As Cohn and Pringle indicate the *MPR* should fall as markets become more global, but for convenience I will ignore this.

For the US we can infer the average pricing of risk from the fact that since 1926 (Appendix F) the realized market risk premium has been 5.61% and the standard deviation of the annual rates of return 20.56%. Hence, if these were the values that investors expected, the US market price of risk was

$$MPR_{US} = \frac{E(R_m) - R_F}{\sigma^2} = \frac{.0561}{.04229} = 1.32$$

If we use the same data for Canada we get

$$MPR_{CAN} = \frac{E(R_m) - R_F}{\sigma^2} = \frac{.0455}{.0357} = 1.27$$

The above estimates indicate that the realized market risk premium in Canada has been very slightly lower than what we would expect simply from the lower risk of the Canadian market. Alternatively it could be that the Canadian market price of risk has been lower due to the policies followed by the Canadian government. However, for ease of exposition I will assume that the true market price of risk is 1.3 and that the actual estimates simply reflect estimation error.

If we assume that the Canadian and US markets are completely segmented and then suddenly open up and become integrated, we can solve for what might happen to the market risk premium.[6] We can then determine a new risk premium for Canada as follows:

$$WorldMRP * \beta_C$$

For the world market risk premium we can estimate the variance of the new combined US-Canada capital market:

$$\sigma^2 = \left(\frac{V_{US}}{V_C + V_{US}}\right)^2 0.2056^2 + \left(\frac{V_C}{V_C + V_{US}}\right)^2 0.189^2 + 2 * \rho * \left(\frac{V_{US}}{V_C + V_{US}}\right)\left(\frac{V_C}{V_C + V_{US}}\right) 0.2056 * 0.189$$

This is simply the variance of a portfolio of two securities with correlation ρ.

If we assume the correlation between the US and Canadian markets is 0.85 and the values of the US and Canadian markets are 11 to 1 based on approximate GDP and size differences, then the standard deviation of the new integrated market portfolio is 20.21%. If the new market price of risk stays at 1.3 then the new world market risk premium is 5.31%.

As might be expected by merging the US and Canadian markets, with a constant market price of risk the new market risk premium is in between the US 5.61% and the Canadian 4.55%, with the US market assumed to be ten times larger the new average is closer to the US than the Canadian value. However, what is not obvious is the impact of the correlation coefficient. If the markets are perfectly correlated, because for example the underlying real economies are already integrated and both stock markets respond to the same phenomena, even if segmented, then the market risk premium would be 5.42%. In contrast if the markets are totally uncorrelated then the new risk premium would be 4.65%. Clearly the less correlated the two markets then the lower the market risk premium of the new integrated market. But the market risk premium for the new integrated market will be in between that of the US and Canada.

[6] Obviously this is a simplification since there have always been capital flows between the US and Canada

In Schedule 4 is a graph of the correlation coefficient estimated over the prior ten year market returns for the US and Canada.[7] What is clear is that the US and Canadian markets used to be very highly correlated. A correlation coefficient of 0.90, as was common up until the early 1970s, indicates that the markets were highly correlated. It is for this reason that standard investment advice was to diversify into markets ***other than*** the US! After the oil price shocks of the early 1970s this high correlation between the US and Canadian equity markets started to break down and there has subsequently been a large amount of volatility in the correlation with significant declines in the late 1990s due largely to the internet bubble and recently a significant increase as the US credit crunch has hit markets all around the world.

The instability in the correlations across markets is not a new phenomenon. In Schedule 5 are two tables from Coaker ("Emphasizing low correlated assets: the volatility of correlation," Journal of Financial Planning 2007). He looked at the correlation across a wide range of asset classes from a US perspective in Table 1 and then in table 2 reported the volatility (standard deviation) of these coefficients. The message is that some of these correlations are highly volatile, particularly those between US equities and bond returns and the returns from emerging market stocks. The problem is that it all depends on what happens in the sample period.

Of particular importance at the moment is the world-wide credit crunch emanating from the US sub-prime crisis. By allowing Lehman Brothers to fail leading to the collapse, takeover or bailout of many of the leading US financial institutions, including Washington Mutual, National City, AIG, Wachovia, Citigroup and Bank America, the US injected a degree of fear into the financial markets not been seen for over 70 years. This fear in turn led to a collapse in interbank lending that affected almost all the major banking centres around the world and triggered a huge stock market sell-off.

In Schedule 6 is the year to date performance of the major markets around the world as of

[7] The correlation is based on non foreign exchange adjusted returns, adding in exchange fluctuations would tend to lower the correlation coefficient.

October 24, 2008. The losses in US$ ranged from just over 32% in Japan to over 50% in Germany, Hong Kong and Spain; emerging market stocks performed even worse with Russia's losing 75% before they closed the exchange. What this indicates is that extreme events such as the stock market crash of October 2008 (and again November 2008) tend to cause markets to move together as US hedge fund capital is repatriated to the US. During this market turmoil the US$ actually increased as capital was returned to the US to meet margin requirements and mutual fund redemptions. This in turn made the performance of these foreign markets even worse.

However, events like October-November 2008 are not usual. They arose as a result of serious policy mistakes by the US government and do not reflect a normal trading market. Going forward it is difficult to see why the correlation coefficient would not revert to its pattern over the period 1970-2007 where as a "petrocurrency" the Canadian market reflected its commodity price exposure. For example, if the correlation is 0.60 this would put the integrated market risk premium at 5.1 %, lower than that in the US but higher than that in Canada.

For the Canadian market risk premium we need the Canadian beta with respect to this new integrated market risk premium. This can be calculated as

$$\beta = \left(\frac{V_C}{V_C + V_{US}}\right) + \left(\frac{V_{US}}{V_C + V_{US}}\right)\rho * \frac{\sigma_C}{\sigma_W}$$

Where the first value is the weight on the Canadian market, assumed to be (1/11), and the second that on the US, assumed to be (10/11).[8] The intuition of the new beta is simply that the first term indicates the exposure to the Canadian part of the new market index and the second is the exposure to the US part. Using the previous values for the risk of the Canadian and world markets the Canadian market beta is 0.59 and the Canadian market risk premium 0.59*5.1% or 3.00%, for a decrease compared to the 4.55% as a segmented market. Conversely the US beta

8 This also assumes that these weights do not change, that is the values of the US and Canadian markets

with respect to the new integrated market is close to 1.0, since most of the new market is simply the US, but due to the decline in the integrated market risk premium the US market risk premium also declines.

The above example highlights the key theoretical result that market risk premiums normally decline when markets are integrated. How much the market risk premium is affected depends on the relative size and risk in the two markets and how correlated they are. In the extreme case where the Canadian and US markets are uncorrelated, then the Canadian market risk premium drops to less than 0.38%. The gains mainly flow to Canadian investors, since it is the smaller market and US investors do not benefit from the same diversification gains as Canadian investors. Conversely in the pathological case where the markets are perfectly correlated, the Canadian market risk premium increases to 5.0%. In this case, Canadian risk is now measured relative to a riskier market portfolio, whereas US risk is measured relative to a less risky one since it now includes the Canadian one. But of course the US and Canadian markets are not and have never been perfectly correlated, since the composition of the markets is different and there are different systemic political, tax and economic factors at work.

When we add in the tendency for the market price of risk to also fall on the integration of markets, it is clear that financial theory indicates that the Canadian market risk premium falls as Canadians invest abroad and capital markets become globalised. Except in pathological cases ***it runs counter to financial theory to increase the Canadian market risk premium to account for the gains that Canadians realise by investing internationally.*** It is more appropriate to reduce both the Canadian and the U.S. market risk premium estimates to account for international diversification.

III Actual Market Integration

The prior discussion is a stylised discussion of what happens when capital markets become globalised and more integrated. However, I place no emphasis on this discussion except to point

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change in the same proportion.

out the obvious fact that market risk premiums tend to fall as markets get more integrated and not increase, and that, all else constant, the historic results from both the US and Canada ***over estimate*** current risk premiums. This last point is even stronger than indicated from the prior discussion, since Canadians are diversifying into markets other than the US, where the correlation is even lower than with the US market. Consequently the effect of declining market risk premiums is stronger.

However, in my judgment markets will never become completely integrated just as they have never been completely segmented. We have already seen the North American Free Trade Agreement becoming a political football in the recent US presidential elections and there is no guarantee that the US will continue to allow foreign investment and control of its industries to pass to non-residents.[9] If the US lurches towards protectionism it is likely to ripple through to other countries as well.

In my judgment the true description is that the Canadian market has been and will continue to be partially segmented from both the US and other capital markets. This is because Canadian stocks will always remain the cornerstone of any Canadian portfolio for several reasons:

i. First, most investment portfolios are for retirement purposes and will normally involve Canadian dollar living expenses. Consequently, foreign stocks are inherently riskier, since they involve additional foreign exchange risk. The recent increase in the value of the Canadian dollar, for example, has hurt investors investing in the US;

ii. Second, the direct purchase of foreign securities involves relying on foreign securities law, since the Ontario Securities Commission, for example, only regulates information flows to securities sold to residents of Ontario.

iii. Third, the purchase of foreign securities is often more expensive, since transactions costs, brokerage fees etc, are generally higher since trades frequently go through a domestic and a foreign broker.

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9 The investments by sovereign wealth funds into Citigroup and Merril Lynch have raised concerns of foreign influence over US financial institutions while the award of a refuelling contract to Airbus over Boeing has raised all sorts of protectionist cries in Congress.

iv. Fourth, evaluating foreign securities is inherently more complex since accounting standards differ across countries: one dollar earnings per share or a 10% return on equity can mean a variety of different things, depending on whether it is for a German, American or Canadian company.[10] As a result, it is very difficult to work out whether Manulife, for example, is more profitable than Metropolitan Life.[11]

v. Finally, there are a variety of legal and tax impediments to foreign investing and there is always the lingering fear that foreign investors will be treated differently than local investors in the event of serious financial troubles.

The above barriers are all getting smaller. The cross listing of securities, creation of ADRs (American Depository Receipts),and ETFs (exchange traded funds), multilateral jurisdictional disclosure (MJDS) in terms of issue procedures, the normalisation of international accounting standards, and the acceptance of foreign disclosure rules for domestic sale of securities have all served to weaken the barriers to international investment. However, other tax restrictions remain, and are unlikely to be reduced any time soon, since they are frequently enshrined in bilateral tax treaties that take years to negotiate. The result is that the Canadian market will always be partially segmented from world markets in general and the US market in particular. The result is what some financial economists call the "home bias" to investment portfolios: residents of all countries have a disproportionate amount of their wealth invested in their domestic market.

This means that Canadian investors look to foreign securities simply to fill the "holes" in their Canadian stock portfolios. As is well known, the TSE300 (TSX Composite) is not as broadly based as the S&P500 index as its composition tends to be more influenced by the business cycle and temporary valuations. For example in Schedule 7 is the TSX Composite composition as of 2001, where at that time tech hardware and telecommunication made up 54% of the market value of the index compared to 23.5% in the all world index. This market weight reflected Nortel directly in tech hardware and indirectly though BCE in telecom. Conversely the Canadian market was light in terms of consumer durables, hotels and pharmaceuticals. Canadian investors

[10] For example in Manulife's initial public offering in the fall of 1999, its Canadian dollar earnings, according to Canadian generally accepted accounting principles (GAAP), were about 50% higher than its Canadian dollar earnings calculated according to US. GAAP.

[11] This accounting difference also explains why US return on equity data cannot be easily compared with that for Canadian companies, unless there is reconciliation for the differences in GAAP. This problem will disappear once the US adopts International Financial Reporting Standards (IFRS) and drops its own generally accepted accounting principles (GAAP)

therefore should seek out the stocks for which there are no good domestic substitutes. Notably the Canadian market share of utilities was similar to the all world index. Therefore it may have made more sense to buy Merck than a US pipeline or utility stock. This is because we have several first tier Canadian utility and pipeline stocks, but we have relatively few quality pharmaceutical stocks. When we add in tax preferences, Canadian investors should be investing in the tax advantaged stocks of firms that represent economic activity not available in Canada.[12]

By 2005 this composition effect had changed as the internet bubble burst and Nortel collapsed. This time the business cycle effect led to financials, energy and materials making up 73% of the index relative to just 39% in the world as whole.[13] However, the message is the same: buy the foreign stocks to round out what is missing in Canada.

These effects have a direct impact on utilities. Why would a Canadian investor, for example, sell Canadian utilities to buy shares in a US utility, when they can buy shares in a Canadian one, be protected by the OSC's disclosure rules, make direct comparisons of its financial statements with other Canadian firms and receive a significant tax advantage as well? In my view the continued relaxation of international investment barriers will lead to the diversification of Canadian investment portfolios, but this will not lead to significant selling pressure on tax advantaged Canadian stocks, like utilities. As a result, I can see almost no impact of international diversification trends for the utility and pipeline sector's fair ROE, except for the tendency for the overall market risk premium to decline.

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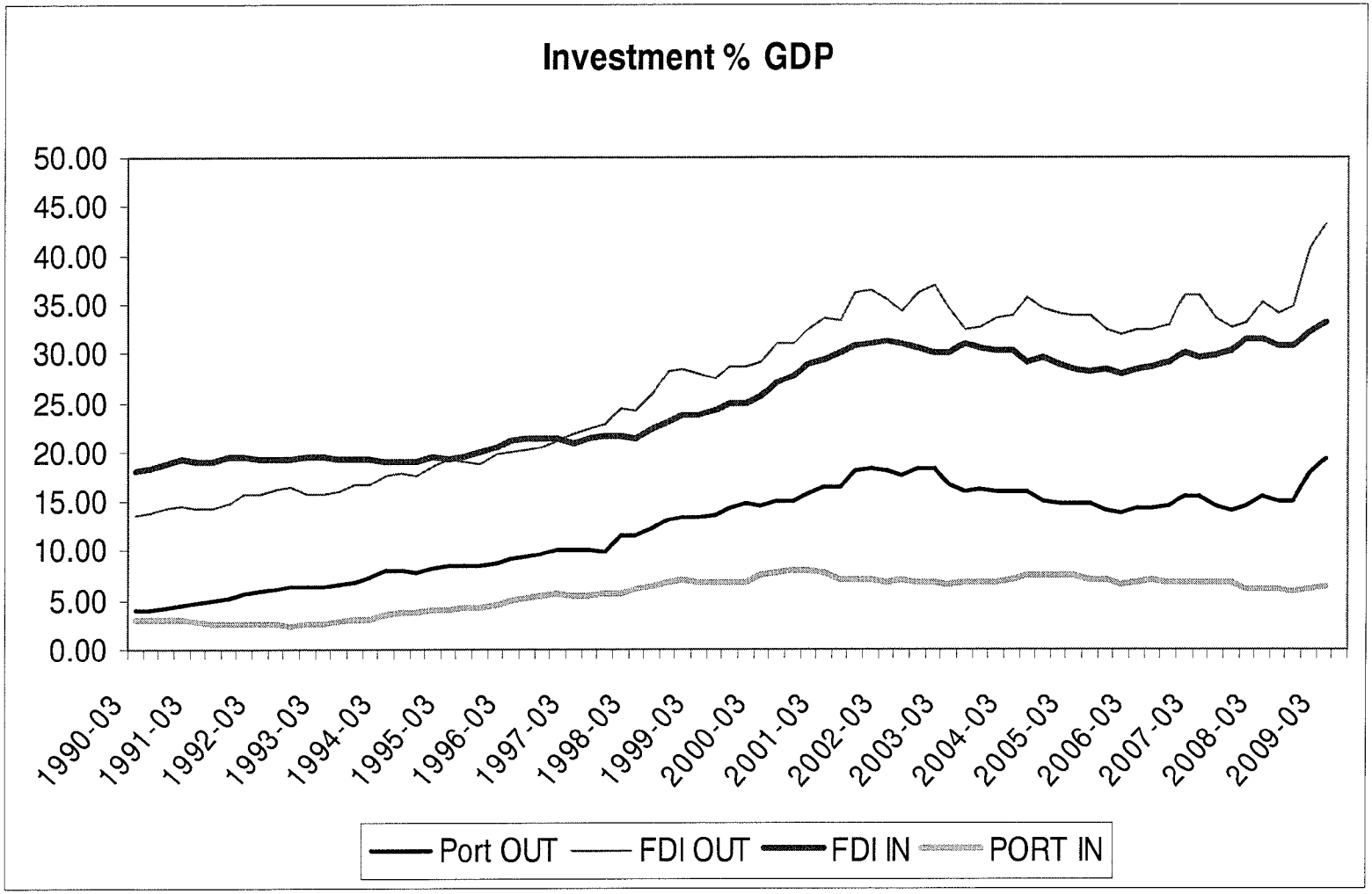
[12] Tax advantaged primarily means high dividend paying stocks. These arguments were first made by Laurence Booth, "The Dividend Tax Credit and Canadian Ownership Objectives" *Canadian Journal of Economics*, May 1987.

[13] Enbridge and TransCanada were included in the energy component so the "utility" share is under weighted.


Investment % GDP
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
1990-03
1991-03
1992-03
1993-03
1994-03
1995-03
1996-03
1997-03
1998-03
1999-03
2000-03
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2005-03
2006-03
2007-03
2008-03
2009-03
Port OUT
FDI OUT
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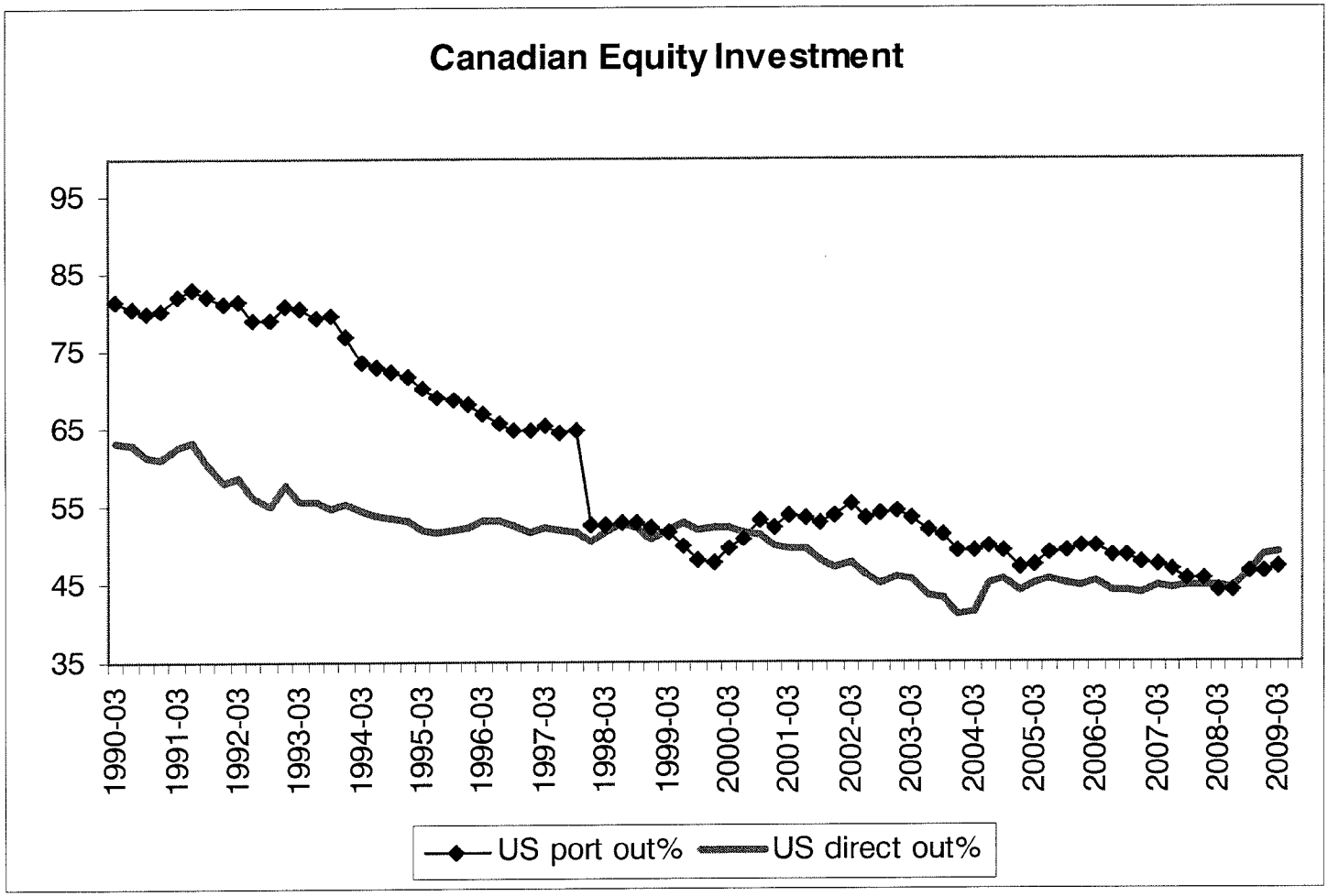
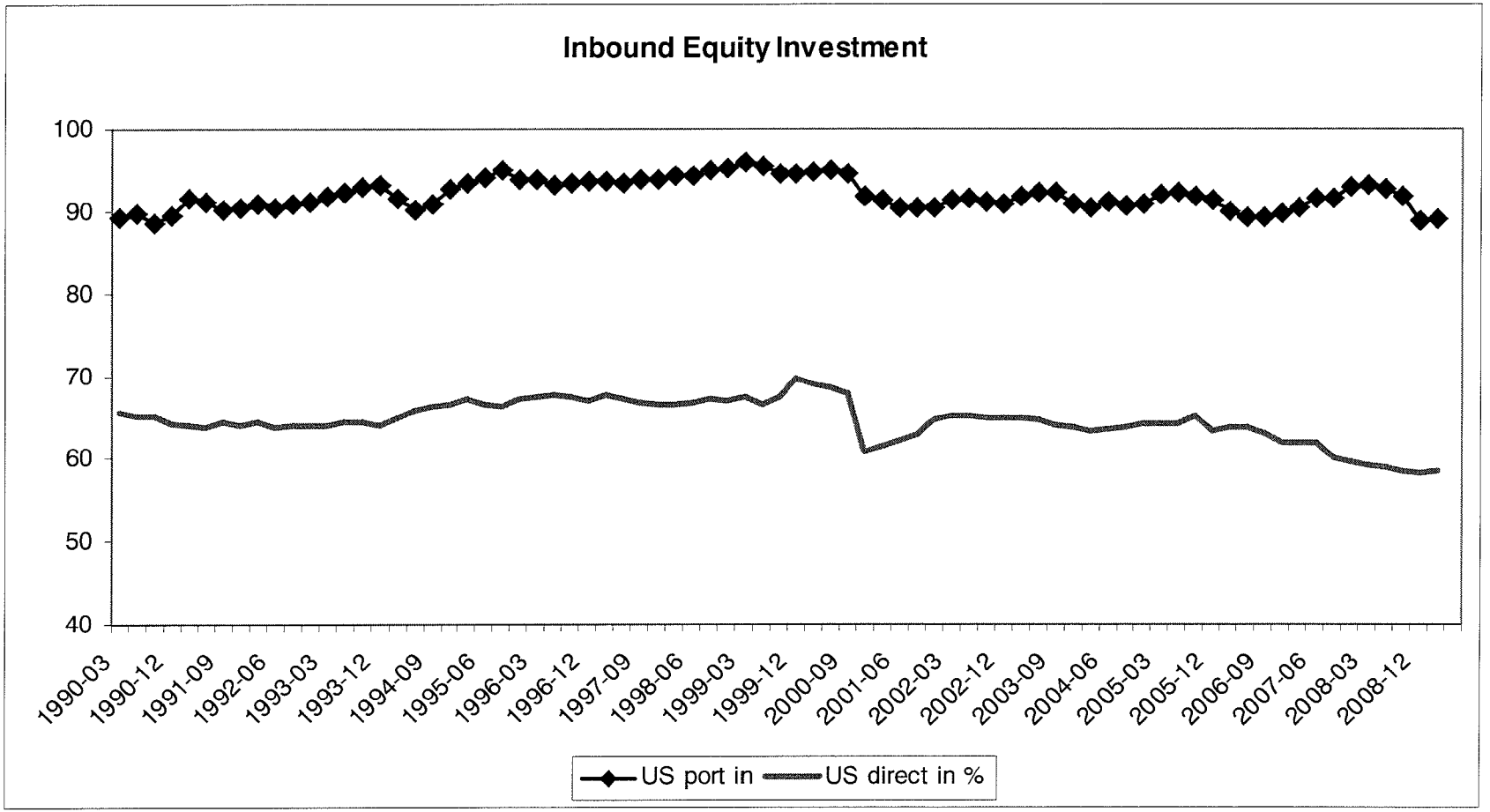
PORT IN


Canadian Equity Investment
95
85
75
65
55
45
35
1990-03
1991-03
1992-03
1993-03
1994-03
1995-03
1996-03
1997-03
1998-03
1999-03
2000-03
2001-03
2002-03
2003-03
2004-03
2005-03
2006-03
2007-03
2008-03
2009-03
US port out%
US direct out%


Inbound Equity Investment
100
90
80
70
60
50
40
1990-03
1990-12
1991-09
1992-06
1993-03
1993-12
1994-09
1995-06
1996-03
1996-12
1997-09
1998-06
1999-03
1999-12
2000-09
2001-06
2002-03
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2004-06
2005-03
2005-12
2006-09
2007-06
2008-03
2008-12
US port in
US direct in %

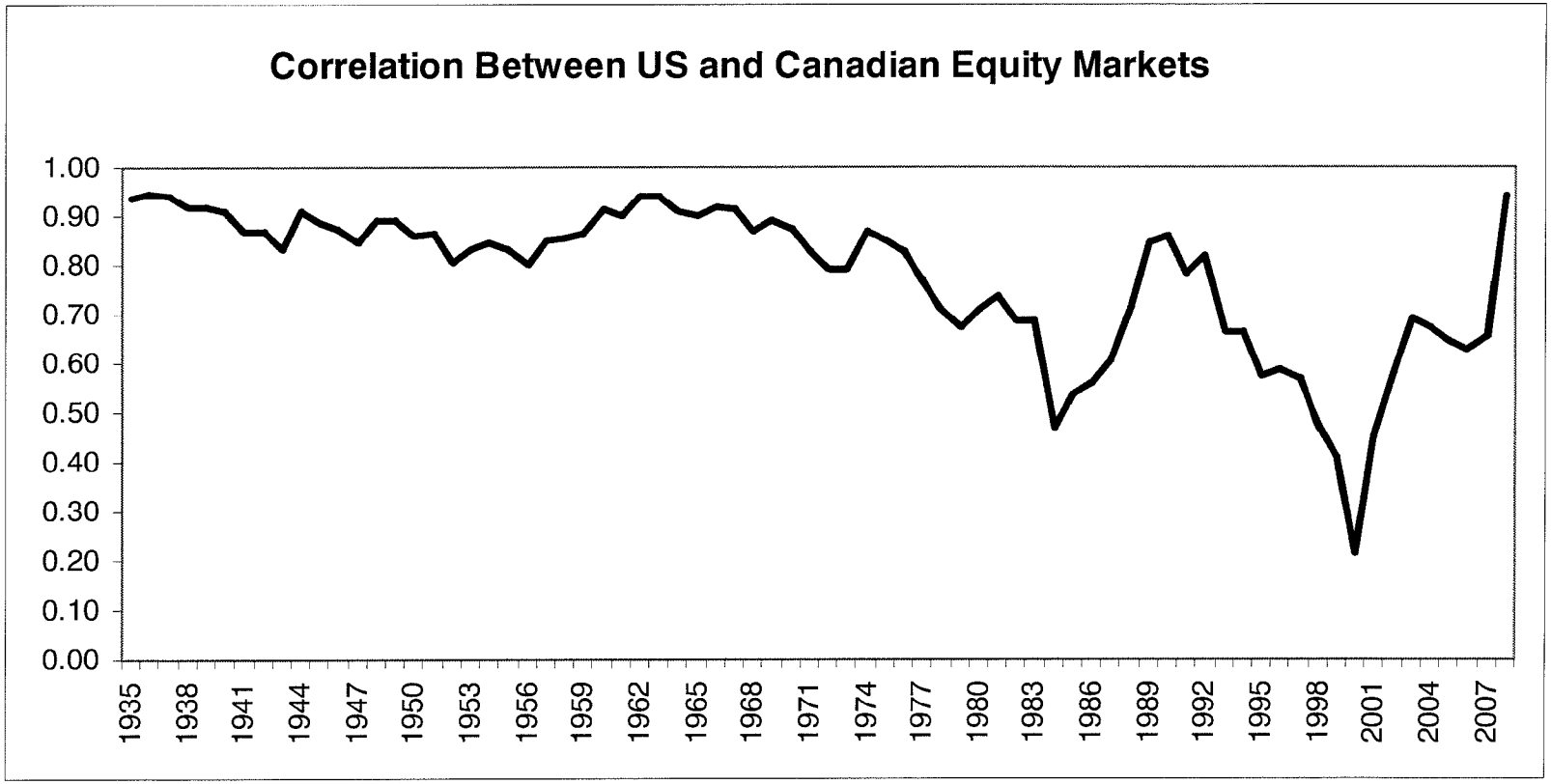

Correlation Between US and Canadian Equity Markets
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1935
1938
1941
1944
1947
1950
1953
1956
1959
1962
1965
1968
1971
1974
1977
1980
1983
1986
1989
1992
1995
1998
2001
2004
2007

Table 1: Long-Term Correlations

	S&P 500	Large Growth	Large Value	Mid-Growth	Mid-Blend	Mid-Value	Small Growth	Small Blend	Small Value	Int'l Stocks	Emerg. Mkts.	High Yields	U.S. Bonds	Global Bonds	Cash	Real Estate	Natural Res.	Long-Short
S&P 500		.96	.92	.86	.93	.87	.79	.79	.78	.55	.59	.50	.23	-.03	.02	.52	.01	-.01
Large Growth	.96		.81	.92	.91	.75	.84	.78	.72	.53	.57	.48	.19	-.03	.00	.45	.00	.22
Large Value	.92	.81		.72	.91	.96	.70	.80	.82	.51	.54	.49	.24	-.05	.03	.60	.05	.30
Mid-Growth	.86	.92	.72		.93	.73	.94	.91	.77	.54	.60	.50	.02	-.04	.00	.40	.04	-.33
Mid-Blend	.93	.91	.91	.93		.93	.91	.93	.91	.55	.63	.54	.20	-.06	.04	.59	.17	-.04
Mid-Value	.87	.75	.96	.73	.93		.70	.79	.89	.51	.54	.52	.11	-.05	-.03	.63	.07	.29
Small Growth	.79	.84	.70	.94	.91	.70		.98	.87	.50	.62	.51	.06	-.08	.00	.52	.19	-.25
Small Blend	.79	.78	.80	.91	.93	.79	.98		.95	.47	.63	.55	.15	-.10	.00	.65	.10	.06
Small Value	.78	.72	.82	.77	.91	.89	.87	.95		.49	.58	.57	.14	-.12	.02	.71	.19	.15
Int'l Stocks	.55	.53	.51	.54	.55	.51	.50	.47	.49		.56	.34	.13	.44	-.01	.36	.09	-.02
Emerging Mkts	.59	.57	.54	.60	.63	.54	.62	.63	.58	.56		.44	-.06	.00	-.02	.31	.09	-.05
High Yields	.50	.48	.49	.50	.54	.52	.51	.55	.57	.34	.44		.28	-.01	.00	.43	-.04	.08
U.S. Bonds	.23	.19	.24	.02	.20	.11	.06	.15	.14	.13	-.06	.28		.38	.34	.14	-.14	.06
Global Bonds	-.03	-.03	-.05	-.04	-.06	-.05	-.08	-.10	-.12	.44	.00	-.01	.38		.03	.03	.13	-.09
Cash	.02	.00	.03	.00	.04	-.03	.00	.00	.02	-.01	-.02	.00	.34	.03		-.02	-.12	.09
Real Estate	.52	.45	.60	.40	.59	.63	.52	.65	.71	.36	.31	.43	.14	.03	-.02		.08	.27
Natural Res.	.01	.00	.05	.04	.17	.07	.19	.10	.19	.09	.09	-.04	-.14	.13	-.12	.08		.05
Long-Short	-.01	-.22	.30	-.33	-.04	.29	-.25	.06	.15	-.02	-.05	.08	.06	-.09	.09	.27	.05	

= .80 to .99 = .60 to .79 = .40 to .59 = .39 to Negative

Table 2: Standard Deviation of Correlations

	S&P 500	Large Growth	Large Value	Mid-Growth	Mid-Blend	Mid-Value	Small Growth	Small Blend	Small Value	Int'l Stocks	Emerg. Mkts.	High Yields	U.S. Bonds	Global Bonds	Cash	Real Estate	Natural Res.	Long-Short
S&P 500		.02	.06	.08	.04	.08	.12	.10	.11	.18	.17	.12	.27	.17	.20	.20	.24	.22
Large Growth	.02		.11	.03	.04	.16	.08	.09	.14	.18	.15	.12	.25	.16	.22	.23	.26	.25
Large Value	.06	.11		.19	.09	.01	.21	.17	.11	.17	.17	.15	.28	.16	.16	.17	.20	.20
Mid-Growth	.08	.03	.19		.03	.20	.03	.03	.11	.19	.16	.10	.27	.13	.17	.25	.20	.30
Mid-Blend	.04	.04	.09	.03		.10	.05	.04	.05	.19	.17	.09	.28	.14	.16	.19	.23	.22
Mid-Value	.08	.16	.01	.20	.10		.23	.20	.09	.18	.17	.15	.32	.15	.17	.16	.20	.08
Small Growth	.12	.08	.21	.03	.05	.23		.01	.09	.17	.15	.12	.21	.14	.15	.23	.23	.30
Small Blend	.10	.09	.17	.03	.04	.20	.01		.05	.18	.15	.10	.21	.13	.14	.19	.21	.33
Small Value	.11	.14	.11	.11	.05	.09	.09	.05		.17	.12	.09	.23	.13	.16	.12	.21	.21
Int'l Stocks	.18	.18	.17	.19	.19	.18	.17	.18	.17		.19	.14	.21	.18	.18	.17	.26	.19
Emerging Mkts	.17	.15	.17	.16	.17	.17	.15	.15	.12	.19		.14	.18	.11	.17	.14	.15	.23
High Yields	.12	.12	.15	.10	.09	.15	.12	.10	.09	.14	.14		.30	.16	.23	.16	.15	.21
U.S. Bonds	.27	.25	.28	.27	.28	.32	.21	.21	.23	.21	.18	.30		.18	.19	.19	.17	.18
Global Bonds	.17	.16	.16	.13	.14	.15	.14	.13	.13	.18	.11	.16	.18		.17	.15	.21	.17
Cash	.20	.22	.16	.17	.16	.17	.15	.14	.16	.18	.17	.23	.19	.17		.15	.20	.22
Real Estate	.20	.23	.17	.25	.19	.16	.23	.19	.12	.17	.14	.16	.19	.15	.15		.23	.17
Natural Res.	.24	.26	.20	.20	.23	.20	.23	.21	.21	.26	.15	.15	.17	.21	.20	.23		.19
Long-Short	.22	.25	.20	.30	.22	.08	.30	.33	.21	.19	.23	.21	.18	.17	.22	.17	.19	

= .01 to .09 = .10 to .19 = .20 and higher

Source: William Coaker, "Emphasizing low correlated assets: the volatility of correlation," Journal of Financial Planning, 2007.

Schedule 6

Index or Exchange	Last Trade Date	1Day Change	1 Day %	1 Month %	6 Month %	YTD %	2006 $b Value
United States Composite (US Dollar)	**213.40** 10/24/2008	-7.52	-3.40%	-27.53%	-37.17%	-40.46%	18,039
Japan Composite (US Dollar)	**82.39** 10/24/2008	-2.74	-3.21%	-22.00%	-32.07%	-35.54%	4,422
United Kingdom Composite (US Dollar)	**149.79** 10/24/2008	-11.63	-7.21%	-35.44%	-48.66%	-52.51%	3,441
Canada Composite (US Dollar)	**278.25** 10/24/2008	-4.74	-1.67%	-40.46%	-48.15%	-49.61%	1,636
Germany Composite (US Dollar)	**218.89** 10/24/2008	-14.62	-6.26%	-39.40%	-51.88%	-56.28%	1,426
Hong Kong Composite (US Dollar)	**186.44** 10/24/2008	-10.10	-5.14%	-31.80%	-51.39%	-57.97%	1,361
Spain Composite (US Dollar)	**388.93** 10/24/2008	-26.01	-6.27%	-34.22%	-50.24%	-51.93%	1,146
Switzerland Composite (US Dollar)	**374.65** 10/24/2008	-10.44	-2.71%	-22.21%	-32.06%	-34.35%	1,111

Table 1: Morgan Stanley Industry Composition (March 2000) (Percentage of total market value)

	Canada	U.S.A.	Europe	Far East	ACWI
Energy	7.3	4.6	7.3	0.3	4.9
Materials	7.1	2.6	3.7	4.5	4.0
Capital Goods	3.7	8.0	4.9	8.7	6.8
Commercial Services	0.1	1.2	1.0	1.7	1.1
Transportation	1.8	0.7	1.4	3.3	1.3
Autos	0.6	1.4	1.9	9.5	2.7
Consumer Durables	0	0.8	1.9	10.1	2.5
Hotels & Restaurants	0	0.9	0.9	0.7	0.8
Media	10.4	5.0	3.4	1.2	4.1
Retail	0.4	6.1	1.7	2.0	3.8
Food & Drug: Retail	1.0	0.8	1.7	0	1.0
Food, Beverage & Tobacco	0.3	2.7	3.7	2.2	3.0
Household & Personal	0.1	1.6	0.8	1.0	1.2
Health Care	0.4	1.6	0.4	0.7	1.0
Pharmaceuticals	0	7.4	8.1	4.3	6.6
Banks	9.5	4.7	11.7	10.1	8.2
Diversified Financials	1.0	4.5	1.7	7.8	4.0
Insurance	0.3	2.8	6.8	0.7	3.7
Real Estate	0	0.2	0.6	3.1	0.8
Software	0.1	11.0	2.5	3.7	6.7
Tech Hardware	36.7	22.3	9.0	14.3	16.8
Telecommunications	17.3	6.5	19.4	7.7	11.6
Utilities	2.0	2.5	5.3	2.5	3.5

Sector breakdown
S&P/TSX Composite Index vs. MSCI World Index

	Canada	World
Financials	33%	25%
Energy	25%	9%
Materials	15%	5%
Industrials	6%	11%
Telecommunications Services	6%	4%
Consumer Discretionary	5%	12%
Information Technology	5%	12%
Consumer Staples	3%	8%
Utilities	1%	4%
Health Care	1%	10%

Source: TSX, MSCI, as of November 30, 2005

Compared to the global economy, Canada's economy is dominated by Financials and Resources companies.

APPENDIX E

ESTIMATION OF THE MARKET RISK PREMIUM

Introduction

In this appendix I estimate the market risk premium by examining realised rates of return on different broad classes of securities over long periods of time.[1] The reason for doing this is that if the underlying relationship generating these returns has remained reasonably constant then these realised returns can be used as a forecast of the market's future requirements. The differences between these returns can then be used as an estimate of the market risk premium. In analysing the actual data, however, we first need to be aware of some methodological problems, since raw data by itself is of little use. The three methodological problems I will discuss are 1) estimation procedures, 2) the relevant time period and 3) the rationality of the estimates.

Estimation Procedures.

Suppose an investor puts $1,000 into an investment. If the investment doubles, i.e., a 100% return, to $2,000 and then halves, i.e., a -50% return, to $1,000, we can calculate two rates of return. The ***arithmetic*** rate of return would be 25% i.e., the average of +100% and -50%. The arithmetic rate of return is the average of the two per period rates of return. However, it would be difficult to convince an investor, who after two years only has the same $1,000 that he started with, that he has earned an average rate of return of 25%. Quite obviously, the investor is no better off at the end of the two periods than he was at the start! To counterbalance this potentially misleading statistic, most mutual funds advertise geometric or ***compound*** rates of return. This compound rate of return is often called the true rate of return. It is calculated as the nth root of the terminal value divided by the initial value, minus one. In our case, there are two periods, so that n=2 and the compound rate of return is

[1] This appendix covers similar material to that covered in Laurence Booth "Equities Over Bonds: But By How Much?" Canadian Investment Review, Spring 1995 and "Equity Risk Premiums in the US and Canada," *Canadian Investment Review* (Spring 2001). The latter paper is available for download from Professor Booth's web site http://www.rotman.utoronto.ca/~booth

calculated as $(1/1)^{1/2}$ which is 1, indicating a zero rate of return. This gives the common sense solution that if you started and finished with $1,000, then your rate of return is zero.

Both the arithmetic and compound rates of return are normally calculated when evaluating investments. If we need the best estimate of *next* period's rate of return, this is the arithmetic return. If we need the best estimate of the return over several periods, the arithmetic return becomes less useful and more emphasis is placed on the compound return. If we want the best estimate of the annual rate of return earned over a long period of time, this is the compound rate of return, since this indicates the long run expected change in wealth. Moreover, if we ignore intervening periods, then the arithmetic return over a very long period is the compound rate of return, that is, the difference between the arithmetic and compound returns is essentially the definition of the period over which the investment is held.

What causes the two rates of return to differ is the uncertainty in the per period arithmetic rates of return. If the arithmetic rate of return is constant, then both rates of return are identical. However, the more uncertain the arithmetic rate of return, the larger the discrepancy between the two estimates. For instantaneous rates of return the following equation approximately describes their relationship:

$$\textit{Compound rate of return} = \textit{Arithmetic return} - (var/2)$$

In the previous example, there is a large amount of uncertainty, that is, high variance (var), so that the difference between the arithmetic return and the geometric return is very large. Moreover, as we estimate over a longer and longer period, the estimated compound rate of return earned on an investment approaches that of the compound return. In estimating the market risk premium, I believe that the correct time period for calculating arithmetic rates of return is a **one**-year holding period. The reason for this is primarily because most regulated firms are regulated on the basis of annual rates of return and rates are almost always expressed as annual percentages.

In addition to the arithmetic and compound rates of return we also estimate the arithmetic rate of

return by means of an ordinary least squares regression model. This is a statistical technique that estimates the annual rate of return by minimising the deviations of the annual values around the estimate. Ordinary least squares (OLS) is the standard technique for estimating economic models and is commonly used for estimating other annual growth rates, such as the growth rate in dividend growth models.

(B) Time period

There is a problem in estimating the market risk premium over a short period of time, since the stage in the business cycle will bias the results. For example, if the period is restricted to end in a bull market, the recent realised returns will be high, raising the overall realised risk premium. This 'business cycle' problem is well known in comparable earnings tests, but it is also evident in realised risk premium tests. In particular, it makes the use of the compound rate of return estimated over short periods suspect. This timing problem is also evident in analysing bond returns, since bond returns vary inversely with interest rates. This means that estimating a bond return over a period when interest rates have been increasing tends to understate the bond investor's expected rate of return. This is because the realised rate of return will be lower than expected, because of the losses caused by increasing interest rates. This in turn will overstate any estimate of the market risk premium. Conversely, estimating bond returns over a period of declining interest rates will have the reverse effect, as capital gains will cause the realised rate of return to exceed that expected. It is important therefore, to capture a full interest rate cycle; otherwise realised rates of return may not be valid predictors of the market risk premium

In Schedule 1 are the results of a study of realised Canadian risk premiums over the longest time period for which there is data available. The data is taken from an annual "Report on Canadian Economic Statistics, 1924-2007," March 2008, compiled on behalf of the Canadian Institute of Actuaries extended to include 2008 data. Over the entire period 1924-2008 an investment in equities would have earned an average total rate of return of ***10.38%*** using the OLS estimate, ***9.64%*** using the geometric mean estimate, and ***11.31%*** using the arithmetic return estimate. The corresponding return

estimates for the long Canada bond are **5.68%, *6.22%*** and **6.55%**, producing corresponding **market risk premium estimates of *4.70%*, 3.42% and *4.76%*.**

The standard deviations for the equity and Canada bond returns were 18.66% and 8.69% respectively, indicating the higher average risk of equities than bonds. Consequently, there is a larger difference between the arithmetic and geometric returns for equities than bonds. For example half the equity return variance (of 0.1866^2 or 3.48%) is 1.74%, which is approximately the 1.55% difference between the arithmetic (11.31%) and geometric (9.64%) returns. For bonds half the variance is 0.38%, which is again approximately the difference between the arithmetic and geometric bond returns.

From this data alone one would conclude that over annual investment horizons equities outperform Canada bonds by 4.70-4.76% on annual investment horizons, but that as the time period lengthens this out-performance drops to 3.42%, which is the approximate risk premium someone would have earned by buying in 1923 and selling at the end of 2008 right after the serious stock market crash of 2008.

To determine whether or not these realised risk premium estimates are **unbiased**, we can graph the yields on 91 day Treasury Bills, long Canadas and the CPI inflation rate. From the graph in Schedule 2 we can see that the yields on T. Bills and long Canadas were very stable from 1936, despite an extremely volatile inflation rate. During this period fixed income investors were not able to adjust their yields since interest rates were effectively controlled. Then about 1950, yields started to trend upwards with the rate of inflation, as well as becoming more volatile, as the bond market was decontrolled. Interest rates then peaked in the early 1980s before beginning a long period of declining rates that ended in the mid 1990s.

What the graph vividly shows is that the behaviour of interest rates has not been constant over the full period 1924-2008. For this reason, Schedule 1 also includes rate of return estimates for two sub-periods from 1924-1956 and for 1957-2008. For the earlier period the market risk premium estimate

is 4.66%, 6.82% and 8.85% for the OLS, geometric and arithmetic returns respectively. For 1957-2007 the corresponding estimates are 1.69%, 1.25% and 2.16%, indicating a significant difference over the two periods. Also note that the standard deviation of the equity series declined from 21.25% for the earlier period to 16.58% for the latter period, indicating a slight decrease in equity market risk. In contrast, the standard deviation of the long Canada bond returns increased from 5.20% to 10.04%, indicating the dramatic post war increase in volatility in the long-term bond market as the tools of Canadian monetary policy changed.

(1) Evolution of Canadian Monetary Policy

Prior to the early 1950's interest rates were controlled to stimulate the economy and did not vary very much, partly because the Canadian markets were very illiquid. It was not until the 1953-4 reforms introduced by the Bank of Canada, that an active secondary market in shorter-term Canada bonds even developed. Prior to that period the tools of Canadian monetary policy were primitive. It is quite obvious from the graph in Schedule 2 that the long Canada yield pattern changed in the early 1950's, as these changes in the Canadian markets were introduced. After being stable at around 3% from 1936-1955, long yields, in particular, started edging upwards.

Note also that since the reforms of 1953-4, the volatility of yields has increased. Part of the reason for this is that in the earlier period the realised rate of inflation was between around 2.0%, whereas in the latter period it has been twice that at around 4.0%.. Fixed income securities are more sensitive to inflation, since their coupons by definition are fixed. As a result their real return varies with the level of inflation. The volatility of inflation and the changed nature of monetary policy is most evident in the behaviour of Treasury bill yields. The yield on 91 day T. Bills became increasingly volatile after the 1953-4 reforms, reaching record highs of over 20% for a short period in 1981. This increase in Treasury Bill return volatility from 0.57% in the earlier period to 3.86% in the latter period mirrors that of long Canadas, where the variability increased from 5.20% to 10.04%. Essentially, between these two periods the risk of investing in long Canadas effectively doubled.

From 1950 until 1981 the trend in long Canada yields was upwards. This means that investors in long Canada bonds suffered losses as the prices of their existing bonds (with low interest rates) dropped in comparison to the newer bonds being issued at ever increasing yields. As a result, the returns from holding long Canada bonds **understated** what investors expected to earn, causing biased high estimates of the market risk premium. This overestimation peaked in 1981 as losses from holding long Canada bonds peaked. After that point, long Canada yields decreased causing huge capital gains. As a result, the investor's expected return for long Canada bonds is **overstated** by looking at realised returns, which causes a downward bias to the estimated market risk premium.

(2) Canadian Equity Market Data.

If long Canada yields are affected by the reforms of 1953-4, the equity market data is also of doubtful validity prior to 1956, since before that time there is **no** consistent Canadian equity market data. The CIA data comes from splicing together the following series:

(1)	1924-1946	Urquhart & Buckley "Corporate Composites"
(2)	1946-1956	TSE Corporates
(3)	1956-1995	TSE300

The Urquhart and Buckley series does not include all Canadian companies or sectors and does not include dividend data. Dividend yields for 1926-1933, for example, are obtained by taking US dividend yields from the S&P Index and subtracting 0.17% based on a yield difference existing between 1956-1965! The only consistent data is that produced by the TSE, which has pushed its TSE300 (now the TSX Composite) index back to 1956. Splicing these series together is the best that can be done in the circumstances, however it is not ideal and some skepticism of the quality of the data prior to 1956 is in order.

Additionally, for some time it has been government policy to Canadianise the ownership of Canadian industry. This policy has been muted of late as foreign ownership has been allowed to increase, but there has still been an increase in the number of Canadian firms for Canadians to invest in. This plus the natural maturing of the Canadian economy has resulted in a more diversified equity market,

which has decreased the overall riskiness of the Canadian equity market since the 1930's. Note again that the equity returns have decreased in volatility from 21.25% to 15.58%. Also some sectors that are now very important to the Canadian economy, such as the oil and gas sector and the pipelines, barely existed prior to the late 1940's.

These changes have clearly affected the relative returns on debt and equity securities. They have also affected their relative riskiness. One way of looking at the relative riskiness of equity versus debt securities is to look at the variability of the equity return divided by that on long Canadas. This is shown in the graph in Schedule 3, where variability is measured as the standard deviation of returns over the prior ten-year period. In the earlier periods, equities were four or five times as risky as bonds, since from the earlier graph of interest rates we know that bond yields and thus bond prices were quite stable. However, this relationship changed during the period of interest rate volatility in the 1970s and 1980s when equities were only slightly more risky than the bond market. As a result the equity risk premium was squeezed. More recently as the yields on long Canada bonds have stabalised, the risk in the bond market has declined and the riskiness of equities relative to bonds has increased. By the end of the period equity risk had increased to ttriple that of the bond market, significantly more than for the period of the 1980s and 1990s when equity market risk barely exceeded that in the bond market.

(C) Rationality of the estimates

In the above estimates, the "market risk premium" is estimated as the difference between the estimated return on equities and that on long Canada bonds over a particular period. An alternative is to estimate it each year. This is what has been done in the graph in Schedule 4. Starting in 1924-1928 the realised market risk premium was estimated using each of the three techniques and then updated each year with the new data. The instability in the 1920s is evident: the estimates are very high, since the equity market performed so well, and then in the 1930s it declines precipitously as a result of the great stock market crash. However, it stabilises by the late 1950s, before beginning its long gradual decrease as a result of the structural changes referred to above. Note that since over eighty years of

data are now available, the impact of any one-year is very small and the market risk premium is "stuck" around 5.0%. However, it is apparent that the realised market risk premium has been **declining** almost continuously since the mid 1960's. The main reason for this is that as more data becomes available the importance of the prewar period in the calculations gets smaller and smaller.

An alternative to the above approach is to work backwards. That is, start in the five-year period 2002-2008 and then go back in time. This is what is in the graph in Schedule 5. Note that whereas the previous graph always includes the period 1924-1928, this graph always includes the last five year period. In this case the last five years are 2003-2008, which includes the recent stock market crash. However, as we work back through time and add in progressively older data the influence of the recent bull market recedes. When we get back to the 1950's we finally get the market risk premium consistently above 4.0%.

Changes in the Market Risk Premium

In Schedule 6 is the earned risk premium (using arithmetic returns) for various holding periods. If we look at the last row we have the earned risk premium for various start dates finishing in 2008, this is essentially a subset of the data graphed in Schedule 5. Note for example, that the most recent ten-year period has an earned risk premium of 0.9%, as this period goes back successively by adding an extra ten years of data the earned risk premium drops to -1.75% and then increases until for the sixty year period 1948-2008 it reaches 4.60%.

The fact that estimates of the market risk premium do change over time indicates that some adjustments are in order. In my judgement the riskiness of the equity market is relatively stable. In fact, going back as far as 1871, there is substantial evidence that the real return on US equities has been constant at just under 9.0%.[2] However, there is ***no*** support for the assumption that either bond market risk or average bond market returns have been constant. As Schedule 1 shows, from 1924-1956, there was very little movement in nominal interest rates, as monetary policy was subordinate to

[2] See Laurence Booth, "Estimating the Equity Risk Premium and Equity Costs: New Ways of Looking at Old Data", *Journal of Applied Corporate Finance*, Spring 1999.

fiscal policy. As a result, the standard deviation of annual bond market returns was only 5.20%. In contrast from 1956-2007, monetary policy became progressively more important and interest rates much more volatile. As a result, the standard deviation of the returns from holding the long Canada bond increased substantially. ***Effectively bond market risk doubled, while equity market risk was much the same.***

However, what is crucial for the investor is whether this risk is diversifiable. That is: is the bond market beta positive? In Appendix F I show that bond market betas in both the US and Canada have been very large, particularly during the period since 1991, when governments had severe financing problems and flooded the market with Canada bonds. This indicates that both the bond and equity markets have been partly moved by a common factor: interest rates. This is why adding long Canada bonds to an equity portfolio during the 1990's did not reduce portfolio risk to the extent that it did in the 1950's. It also explains why adding an "average" risk premium to a long Canada yield that had increased substantially due to this risk produced excessive estimates of the fair rate of return throughout the late 1980s and much of the 1990s.

Essentially, with a "risky" long Canada bond we are estimating the market risk premium as the expected return difference between two risky securities. If both the Canada bond (C) and an equity security (j) are priced by the Capital Asset Pricing Model, the required or "fair" return on each is as follows:

$$E(R_j) = R_F + MRP\beta_j$$
$$E(R_C) = R_F + MRP\beta_C$$

For both the return is expected to be equal to the risk free (R_F) rate plus the market risk premium (*MRP)* times the relevant beta coefficient. The "market" risk premium of the equity market relative to long Canada bonds is then simply

$$E(R_j) - E(R_C) = MRP(\beta_j - \beta_C)$$

What this means is that even if an individual security's risk is unchanged, its risk premium over the

long Canada bond will get smaller as the long Canada bond itself gets riskier.

In Appendix F, I show how the beta on the long Canada bond was close to zero until the estimation period 1987-1991; since then it has been positive, peaking in 1995-6 at almost 0.60. It was this increase in bond market risk that caused risk premiums to shrink throughout the 1990's. In fact it is quite clear that with a Canada bond beta of say 0.50, a low risk utility in the mid 1990s, with a similar beta, did not require a risk premium at all. This conclusion was reinforced by the observation that the Canada bond income (interest) is fully taxed, whereas the utility income would predominantly come as dividend income, which is preferred by every single taxable investor in Canada.

In Schedule 7 are the results of a regression analysis of the real Canada bond yield against various independent variables. The real Canada yield is defined as the nominal yield reported by the Canadian Institute of Actuaries minus the average CPI rate of inflation, calculated as the average of the current, past and forward year rates of inflation. The regression model explains a large amount of the variation in real Canada yields, and four variables are highly significant. The two "dummy" variables represent unique periods of intervention in the financial markets. Dum1 is for the years from 1940-1951, which were the "war" years, when interest rates were controlled. The coefficient indicates that government controls reduced real Canada yields by about 5.4% below what they would otherwise have been. This of course was the objective of the war-time controls. Similarly, Dum2 is for the years 1972-1980, which were the oil crisis years, when huge amounts of "petrodollars" were recycled from the suddenly rich OPEC countries back to western capital markets, where they essentially depressed real yields. The sign on Dum2 indicates that, but for this recycling, real yields would have been about 3.6% higher. These dummy variables are included because during these two periods real yields were depressed by special "international" factors.

The remaining two independent variables capture the risk and endemic problem of financing government expenditures. Risk is the standard deviation of the return on the long Canada bond over the preceding ten years. In earlier periods when monetary policy was not used, interest rates barely

moved and the returns on long Canada bonds were very stable. As a result the risk of investing in them was very low. Through time the investment risk attached to long Canadas has increased. The coefficient on the bond risk variable indicates that for every 1% increase in volatility, real Canada yields increased by about 23 basis points. That is, the effective 5% increase in the standard deviation of bond market returns between the two periods 1924-1956 and 1957-2006 has been associated with about a 115 basis point increase in real Canada yields between these two periods. This is the extra risk premium required by investors to compensate for the higher risk attached to investing in long Canada bonds. Absent any increase in equity market risk, the result is a 115 basis point reduction in the market risk premium between the two periods.

The deficit variable is the total amount of government lending (from all levels of government) as a percentage of the gross domestic product. As governments increasingly ran deficits, this figure became a very large negative number, indicating increased government borrowing. For 1992, the number was about -9.1%, a record peacetime high, indicating that government net borrowing was 9.1% of GDP and was flooding the markets with Canada bonds. For 1997, this deficit turned into a surplus, which increased every year until 2000 when the surplus hit almost 3.0% of GDP. The coefficient in the model indicates that for every 1% increase in the aggregate government deficit, real Canada yields have increased by about 27 basis points. That is, increased government borrowing by competing for funds has driven up real interest rates. At the peak of the government's financing problems in 1992 a 9% deficit was adding almost 2.5% to the real Canada yield relative to what would be produced with a balanced budget. When these two effects are added together it is easy to see why there was very little "extra" risk for low risk equities over bonds in the early 1990s.

The effect of increased interest rate risk and government "over borrowing" are clearly two sides of the same coin. Their effect was to crowd the bond market with risky long Canada bonds that could only be sold at premium interest rates, frequently to non-residents. This driving up of Canada bond yields reduced the spread between Canada bond yields and equity required rates of return and the market risk premium. It is this deficit and risk phenomenon in the government bond market that created the narrowing market risk premium, and the large Canada bond betas in the mid 1990's.

The behaviour of the Government of Canada bond yield has important implications for the ROE adjustment formula used by many Canadian utility commissions. In my judgment at the time that the adjustment formula were introduced in Canada by the BC Utilities Commission, The Manitoba PUB and the National Energy Board the utility risk premium over these risky long Canada bonds was very low since the yield on these bonds was relatively high due to their interest rate risk. If we take their beta as having declined from 0.50 to 0, then with a 5% true market risk premium over a riskless long Canada bond, then the implication is for a decline in real yields of about 2.50%.

In Schedule 8 is a graph of the real yield produced directly from the real return bond. Unfortunately this data is not available for earlier periods since these bonds did not exist. However, we can see directly the huge decline in the real yield over the last ten years as governments have got their budgets under control and uncertainty in the bond market has declined. For the period 1991-2000 the real yield was 4.0-4.5% whereas more recently it has been 1.50-2.0% or a decline of 2.50% consistent with bond betas of 0.50 and a 5.0% true market risk premium.

In 1994 the National Energy Board introduced its formula ROE with a forecast long Canada yield of 9.25% and a utility risk premium of 3.0%. This allowed ROE then adjusted by 75% of the change in the forecast long Canada bond yield or conversely the utility risk premium changed by 25% of the change in the forecast long Canada bond yield. If the forecast long Canada bond yield is 4.25%, for arithmetic simplicity, then this 5.0% drop in the long Canada bond yield has increased the utility risk premium by 1.25%. With a utility beta of 0.50 this again implies a 2.50% increase in the market risk premium since the early 1990s.

For 2008 government in aggregate had a minor surplus but this is not expected to continue into 2009 as the current recession has caused a drop in tax revenues and increased support payments. In addition government has embarked on some moderate counter cyclical fiscal policy. However, I do not see any significant impact on long term Canada interest rates which remain around the 4.0% level similar to where they were in the late 1950s. Accordingly I discount much of the recent stock market performance and place the market risk premium at **5.00%.**

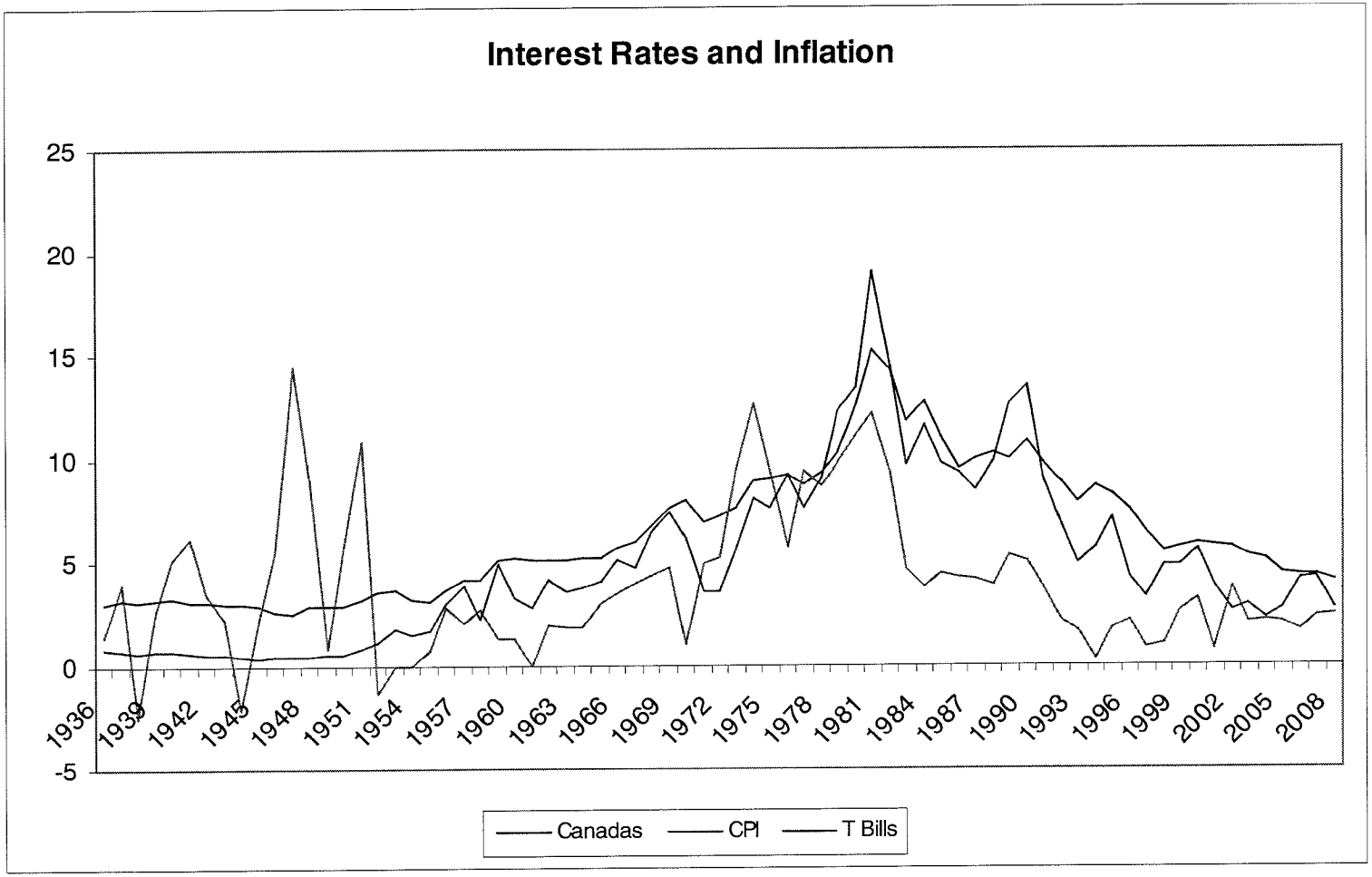
SCHEDULE 1

ESTIMATED ANNUAL RETURNS[1]

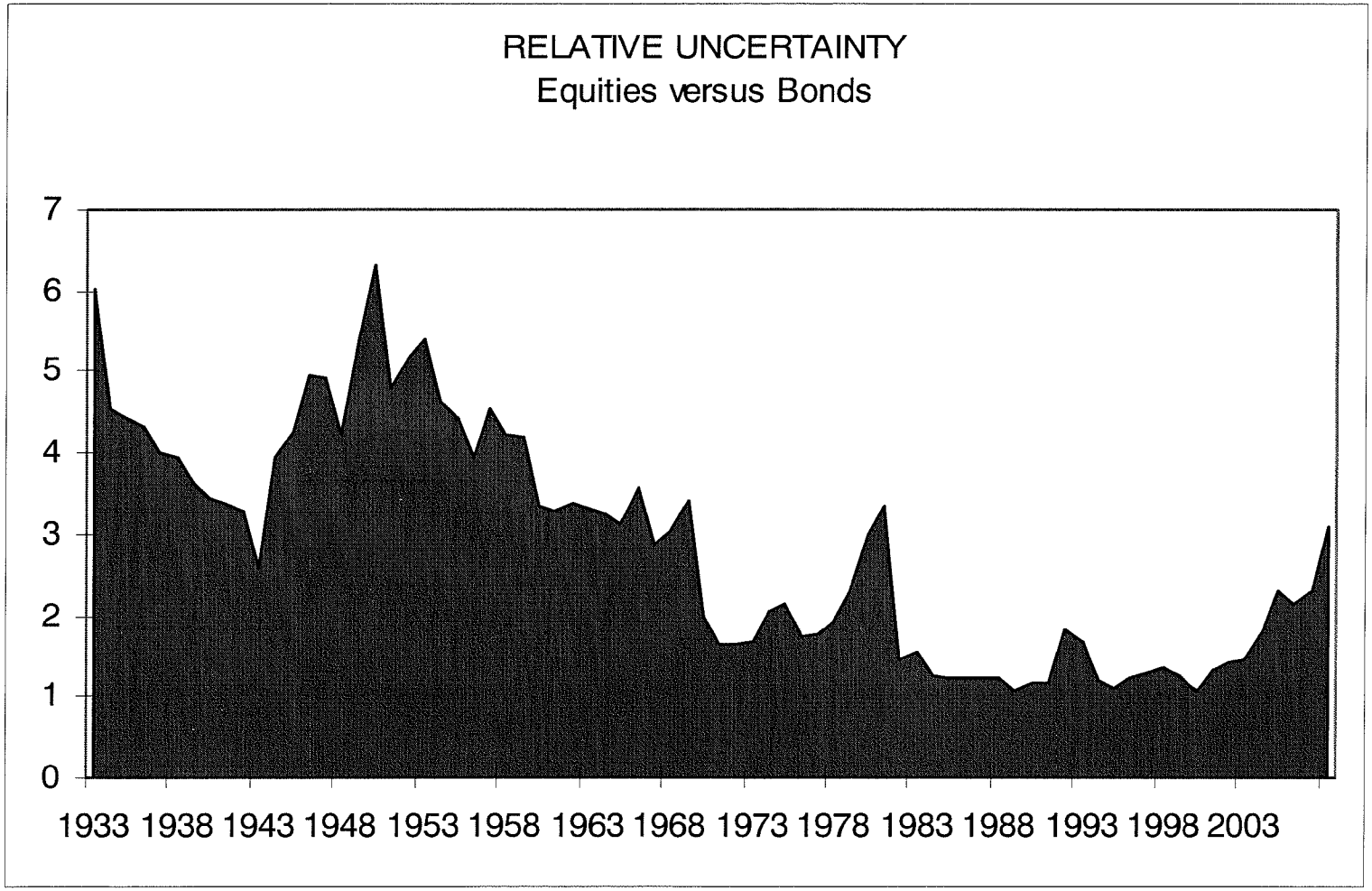
	OLS Estimate[2]	Arithmetic Mean	Geometric Mean	Standard Deviation
1924-2008				
CPI	3.84	3.09	3.01	4.07
Long Canadas	5.68	6.55	6.22	8.69
Equities	10.38	11.31	9.64	18.66
Treasury Bills	5.80	4.91	4.82	4.23
Excess Return over Bonds	***4.70***	***4.76***	***3.42***	
1924-1956				
CPI	1.85	2.18	1.41	4.80
Long Canadas	4.13	4.15	4.02	5.20
Equities	8.80	13.00	10.84	21.25
Treasury Bills	0.68	0.84	0.84	0.57
Excess Return over Bonds	***4.66***	***8.85***	***6.82***	
1957-2008				
CPI	4.85	4.09	4.04	3.12
Long Canada	8.62	8.08	7.63	10.04
Equities	10.32	10.24	8.89	16.58
Treasury Bills	7.89	6.70	6.63	3.86
Excess Return over bonds	***1.69***	***2.16***	***1.25***	

1. Using data from the Canadian Institute of Actuaries, "Report on Canadian Economic Statistics" March 2008 and updated with 2008 data.
2 OLS stands for the ordinary least squares regression estimate

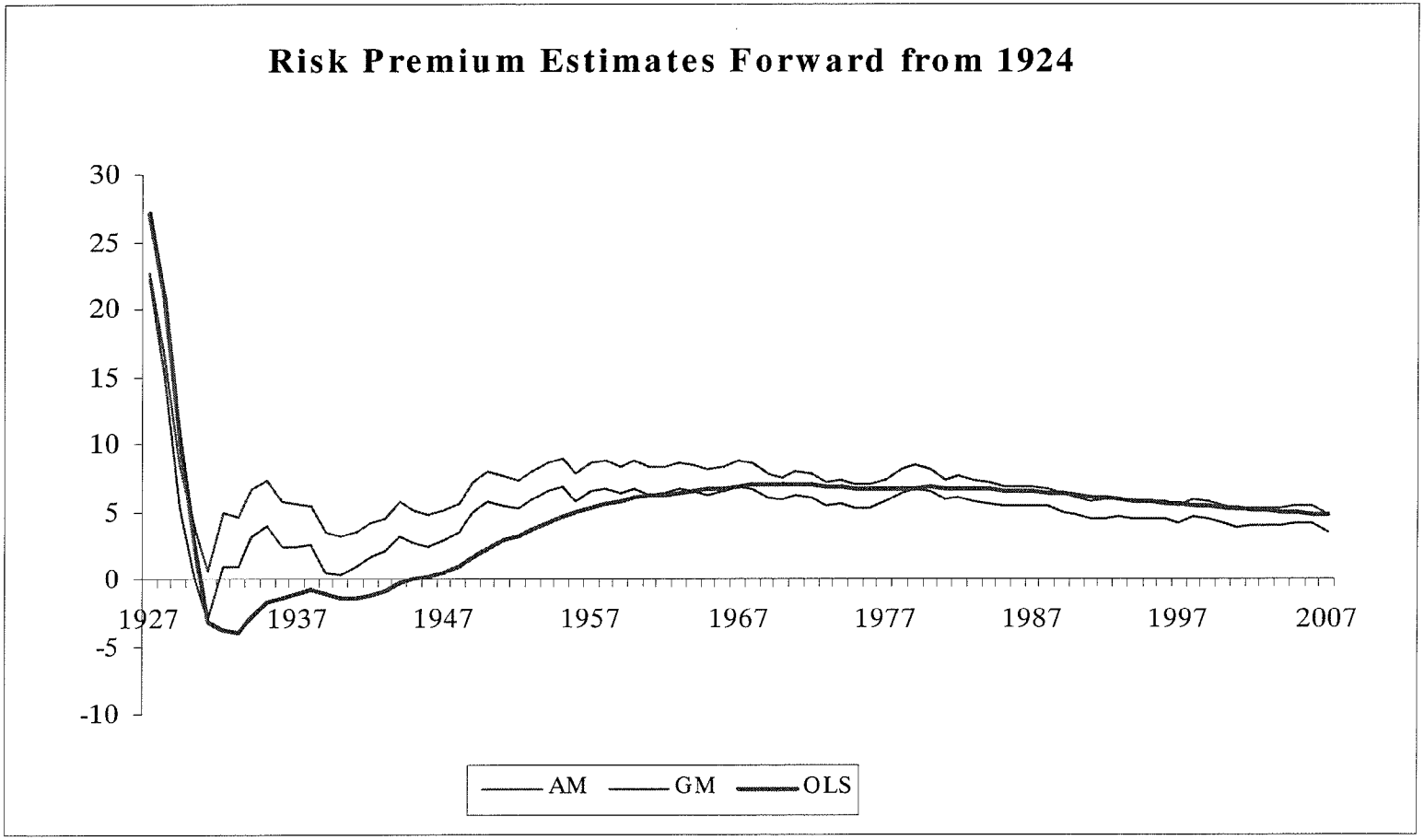
SCHEDULE 2


Interest Rates and Inflation
25
20
15
10
5
0
-5
1936
1939
1942
1945
1948
1951
1954
1957
1960
1963
1966
1969
1972
1975
1978
1981
1984
1987
1990
1993
1996
1999
2002
2005
2008
Canadas
CPI
T Bills

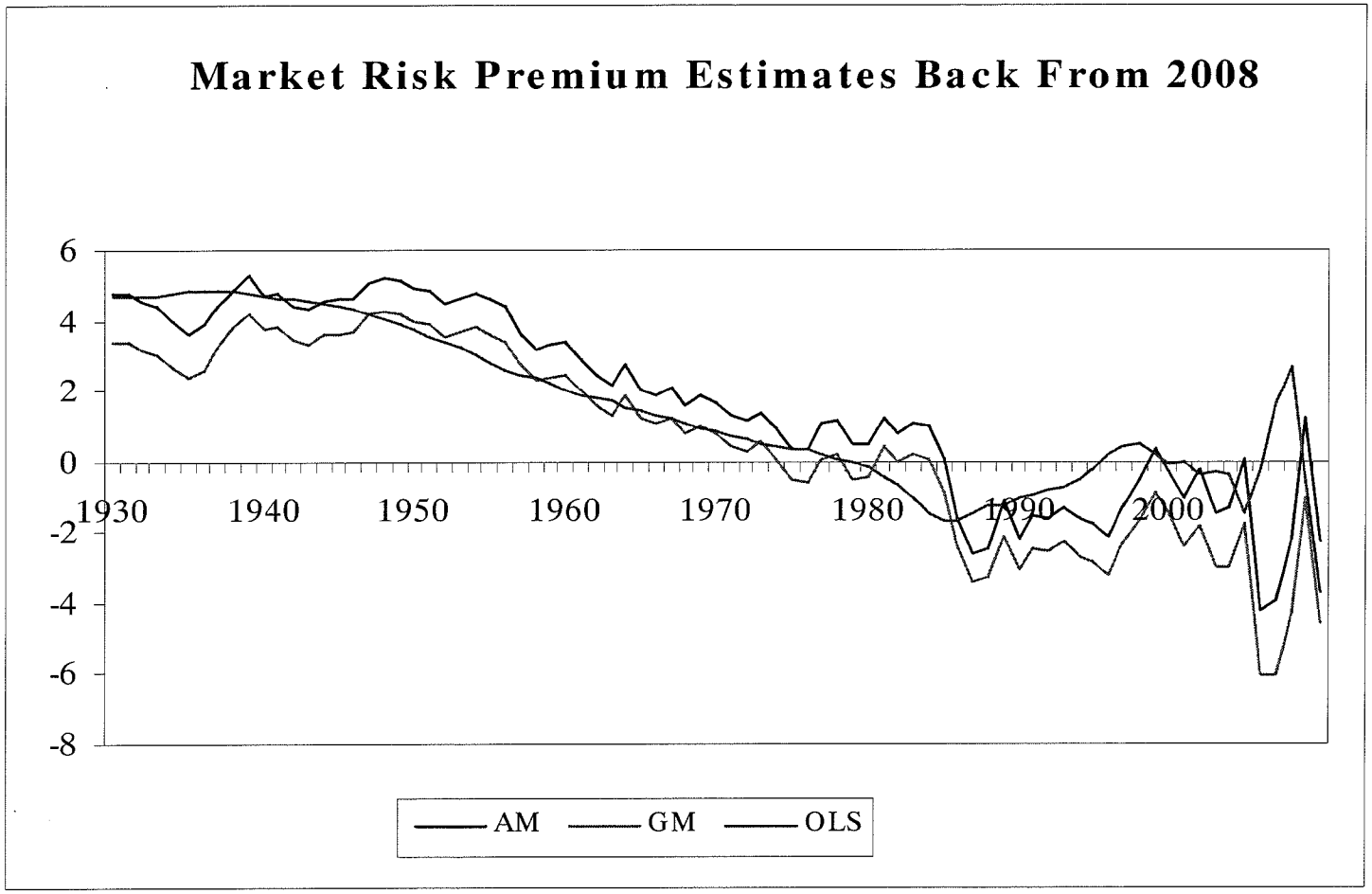
SCHEDULE 3


RELATIVE UNCERTAINTY
Equities versus Bonds
7
6
5
4
3
2
1
0
1933 1938 1943 1948 1953 1958 1963 1968 1973 1978 1983 1988 1993 1998 2003

SCHEDULE 4


Risk Premium Estimates Forward from 1924
30
25
20
15
10
5
0
-5
-10
1927
1937
1947
1957
1967
1977
1987
1997
2007
AM
GM
OLS

SCHEDULE 5


Market Risk Premium Estimates Back From 2008
6
4
2
0
-2
-4
-6
-8
1930
1940
1950
1960
1970
1980
1990
2000
AM
GM
OLS

SCHEDULE 6

Earned Risk Premiums for Different Holding Periods

Start dates on the horizontal and ending dates on the vertical. For example, an investor would have earned a 2.53% arithmetic risk premium investing from 1958-1998.

	1928	1938	1948	1958	1968	1978	1988	1998
1938	-3.02							
1948	0.76	4.55						
1958	5.89	10.98	17.41					
1968	6.91	10.22	13.05	8.70				
1978	5.80	8.00	9.15	5.03	1.35			
1988	5.44	7.13	7.78	4.57	2.50	3.65		
1998	4.15	5.34	5.50	2.53	0.47	0.03	-3.59	
2008	3.64	4.59	4.60	2.04	0.37	0.05	-1.75	0.09

SCHEDULE 7

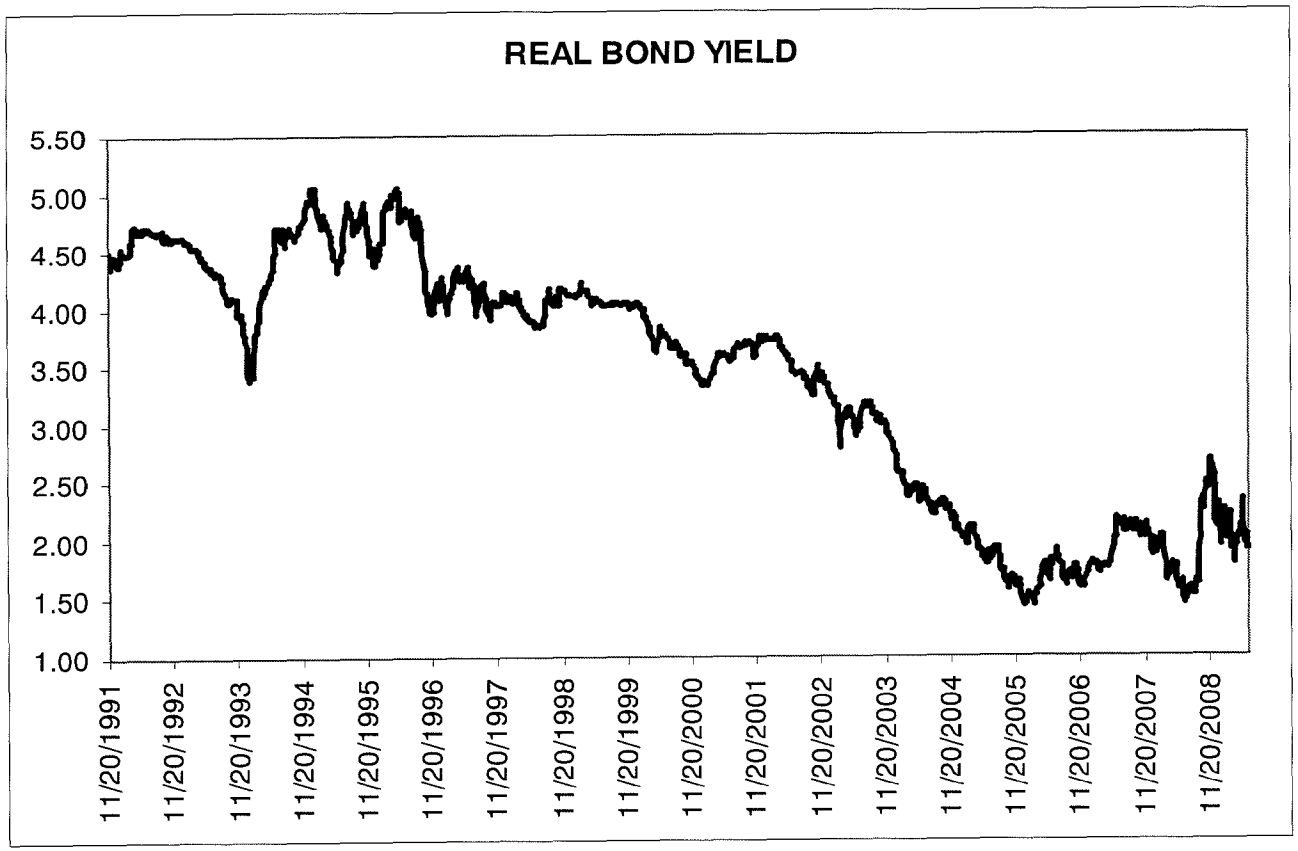
FACTORS INFLUENCING THE REAL CANADA YIELD

Dependent variable: Long Canada yield minus the average CPI inflation rate for the past, current and forward year.

Independent variables:

	Coefficient	T-Statistic
Constant:	1.39	
Risk: standard deviation of return on long bond index for prior ten years.	0.23	4.86
Deficit: aggregate government lending as a % of GDP.	-0.26	-8.53
Dum1: dummy variable for years 1940-51	-5.36	-12.72
Dum2: dummy variable for years 1972-80	-3.64	- 8.80
Adjusted R^2 of the regression Seventy two years of data 1936-2008	85.8%	

SCHEDULE 8


REAL BOND YIELD
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
11/20/1991
11/20/1992
11/20/1993
11/20/1994
11/20/1995
11/20/1996
11/20/1997
11/20/1998
11/20/1999
11/20/2000
11/20/2001
11/20/2002
11/20/2003
11/20/2004
11/20/2005
11/20/2006
11/20/2007
11/20/2008

APPENDIX F

US MARKET RISK PREMIUM ESTIMATES

The main source of data on the U.S. market risk premium comes from the seminal work of Ibbotson and Sinqufield, who calculated holding period return data from December 1925 for common equities, long term government bonds, treasury bills, and the consumer price index. For our purposes we will calculate the risk premium of equities over long bonds in the same way as in Appendix E. For comparison purposes, I also present the equivalent Canadian estimates. These estimates differ from those in Appendix E, since the time periods differ slightly. Schedule 1 gives the estimates of the average realized excess return of equities over long bonds for the overall period 1926-2008.[1]

Like the Canadian data in Appendix E including 2008 data dramatically lowers the experienced market risk premium since the S&P500 total return for 2008 was – 37% while the decline in the long US Treasury bond yield from 4.35% to 3.18% generated very large capital gains from holding US government bonds. The result is that the US common equities on average earned between 9.61-11.66% and long Treasuries 5.06-6.05% per year, depending on the estimation method. The excess return of common stocks over long term government bonds was then in the range 5.61-6.07% for annual holding periods (OLS & AM), declining to 3.95% as the holding period is lengthened (GM).[2] For Canada, the results are almost identical to those in Appendix E, with the excess return of Canadian equities over long Canadas in the 4.54-4.70% range for annual holding periods declining to 3.20% as the holding period lengthens. In both cases the OLS estimate is not as sensitive to the poor equity market performance in 2008 as the simple arithmetic average.

[1] US Data for 1926-1995 are the Ibbotson and Sinquefield with 1996-2008 data updated from S&P and the 20 year bond yield maintained by the Federal Reserve Bank of St Louis (FRED).

[2] AM, GM and OLS stands for arithmetic mean, geometric (compound) mean and the ordinary least squares estimate of the mean respectively.

Based on annual holding periods the US realised equity risk premium is higher than the Canadian equivalent. Given the "higher" quality of the US data as well as the volatility of the estimates, many put greater faith in the US estimates, even for the Canadian market. This is also frequently justified by the doubt expressed at the "higher risk"[3] Canadian market having a lower realized market risk premium, as well as the increasing integration between the two capital markets, which "presumably" will move Canada closer to the US experience.

However, the difference between the US and Canadian arithmetic mean risk premiums for the overall period of 1.07% (5.61%-4.54%) is split between a difference in the average equity return of 0.56% and a difference in the average government bond return of 0.51%, that is approximately equally between the equity and bond markets.

- The difference between the equity market returns can partly be explained by the previous effects of Canadian government policy to deliberately segment the Canadian equity market from that in the US,[4] as well as by the historically lower risk of the Canadian market.
- The difference in the returns on Canadian and US government bonds reflects the pivotal role of the US government bond market in the world capital market as the US $ remains the world's reserve currency. We saw this importance amplified yet again when the US government intervened in the Fall of 2008 to support the bonds issued by the two US government mortgage agencies Fannie Mae and Freddie Mac, where a principal bond holder was the Government of China. In contrast, all layers of government in Canada had to issue bonds during an era of significant government financing problems.

The difference in the average realised returns between the US and Canada is consistent with known institutional differences, which are unlikely to completely disappear. The data does, however, emphasise that the realised risk premium is just the difference between the realised return on equities minus that on bonds. However, from Appendix E we know that a "break" occurred in the capital markets in the mid 1950's. Although the exact dates are somewhat

[3] Note, however, that the standard deviation or variability of the S&P500 equity returns was 19.96% or 1.60% higher than that for the Canadian market. Over this whole period US equities were ***more*** risky than Canadian equities.

[4] The dividend tax credit only applies to dividends from Canadian corporations; foreign withholding taxes apply to foreign source income, while portfolio restrictions have existed in tax-preferred plans.

arbitrary, there are good reasons for putting the split at 1956/7. First, changes in monetary policy freeing up interest rates to reflect market movements started around then; second, at least in Canada the availability of quality data begins in 1956 and finally the incidence of personal taxes on investment income became much more important in the post war period.

Schedule 2 gives the estimates for both the US and Canada for the two sub periods 1926-1957 and 1957-2008. For the earlier period the realised return on equities was around 9.0-13.0% in both the US and Canada with the lower estimate coming from the least squares regression estimate that takes into account the massive volatility in the equity market at the time of the "Great Crash." US equity returns then dropped in the post 1956 period largely due to the 2008 crash to average in the 9.32-11.14% range. However, the decrease in equity market risk from 25% to 17.72% has caused the arithmetic return in the US to decline more than the compound return while the OLS return has increased. Following the discussion in Appendix E, this is because the arithmetic return is approximately the compound return plus half the variance. So even with a similar compound returns the arithmetic return has fallen due to the decline in risk.

Also it is not frequently recognised that the reason the US data starts in 1926, rather than 1924 in Canada, is simply that the original authors of the data wanted a complete business cycle prior to the great stock market crash of 1929. As a result, the start date for the data is inherently biased, both in terms of volatility and the average realised return estimates.[5] Note also that similar to Canada, the realised return on the long US Treasury bond more than doubled from 3.38 to 7.64% (arithmetic estimates) as the standard deviation (variability) of those annual bond returns more than doubled, from 4.93% to 10.55%. Again changes in the bond market have had a direct impact on the risk premium of equities over bonds.

For Canada equity market returns also declined between the two periods. The arithmetic return declined from 12.55% to 10.24% and the compound rate of return from 10.30 to 8.87%. Similar

[5] This is discussed in more detail in Laurence Booth, "Estimating the Equity Risk Premium and Equity Costs: New Ways of Looking at Old Data," Journal of Applied Corporate Finance, Spring 1999.

to the US, equity market, risk declined from 22% to 16.9%. In looking at equity market returns, the major differences are that in the earlier period the US equity market was riskier than in Canada, whereas more recently this difference has narrowed; while Canadian equity returns have been lower probably due to the impact of government policy. Similar to the US, long Canada bond returns almost doubled from about 4.0% to 8.0%, as the variability in the long Canada bond return also almost doubled from 5.41% to 10.10%

The data in Schedule 2 is very important. First, it highlights the fact that the main reason for the decline in the equity market risk premium is **not** to be found in the equity market. Until 2008 the general conclusion was that equity market risk in both the U.S. and Canada had declined and was less than in the earlier period: that is, we would never have the equivalent of the Great Crash and the Great Depression again. However, policy mistakes by the US government have lead to a suspicion that all that changed was US regulatory protection; and its removal over the last twenty years has caused the same underlying risks to reassert themselves as the US again has triggered a world wide recession.

Another way of looking at the data is in Schedule 3, which looks at what has caused the decline in the market risk premium. In the U.S. the market risk premium has declined by 2.17-6.48%, whereas in Canada the decline has been 3.22-6.39%. For both the US and Canada average bond market returns have increased significantly regardless of the estimation method and account for most of the decrease in the market risk premium. The upshot from this analysis is that even if the equity market had performed the same between these two periods the equity market risk premium would have fallen by about 4.0% due to the increase in bond market returns and risk. To understand this we can look at the risk faced by a bond market investor.

The graph in Schedule 4 gives the relative uncertainty of the equity market to the bond market for both the US and Canada. In both cases uncertainty is measured by the standard deviation of annual returns over the prior ten years. As is very clear, like Canada, the US equity market was much more volatile than the bond market until the mid1950s. Until then equity markets were

about four times as volatile as the bond market and frequently more. After the mid 1950's, however, the increasing uncertainty in the bond market caused the differences in risk to become less pronounced. During the 1980s and 1990s the bond market has been almost as risky as the equity market as monetary policy and high inflation caused significant bond market risk and higher returns. However, in both the US and Canada relative stability in the bond market has caused the relative riskiness of the equity market to increase; a trend compounded by the 2008 stock market crash.

The graph in Schedule 5 gives the beta for the US and Canadian bond markets. In both cases the betas are estimated using annual holding periods over the prior ten-year period, so that 1935 measures the bond beta from 1926-1935. As monetary policy became more important we would expect interest rate risk to become more pronounced and bonds to share some of the same risk characteristics as equities. This is what Schedule 5 shows. Until the 1970's bond market betas could be safely ignored, since interest rate volatility had little impact on the equity market. As a result there should have been little risk attached to investing in bonds. However, bond market betas started to dramatically increase in the mid 1980's, reaching a peak of about 0.57 for Canada and 0.70 for the US. These were the periods when government deficits and inflation dominate the capital market so interest rates were constantly changing. Recently bond market betas[6] have declined significantly in both the US and Canada so that there is little evidence of significant systematic risk premiums in bond returns.

The decline in the bond beta is not the only way of measuring the risk in the long government bond. In Schedule 6 is the break-even inflation rate (BEIR). The BEIR is the difference between the yields on the nominal bond and the real return bond which is affected by inflationary expectations. If inflation turns out to be above the *BEIR*, then looking back it would have been better to have been in the real return bond and vice versa. There are risk differences between the two bonds, so we would expect the *BEIR* to be equal to the expected inflation rate plus this risk

[6] The bond market betas are based on a simple regression of the bond market return against the equity market return. Estimating the betas over five years of monthly data produces the same types of estimates, see J. Petit "Corporate Capital Costs, Journal of Applied Corporate Finance, Spring 1999 Figure 4.

premium. The real return bond was introduced at the time that the Bank of Canada, with the support of the Government of Canada, moved to a 1-3% inflation target with a mid-point of 2.0%. What is clear from Schedule 6 is that the *BEIR* was well above the 2% inflation target until the late 1990s, which is when government, in aggregate, in Canada started to move into budgetary surplus. Since that time the *BEIR* has exceeded the 2.0% inflation target by about 20 basis points. This *BEIR* would support the bond beta estimates that the risk premium in the long Canada bond has declined significantly which would imply an increase in the market risk premium.

My conclusion from comparing the US and Canadian data is that over this very long period 1926-2008, in both cases the experienced market risk premium declined mainly due to increased returns in the bond market. This means that estimates of the market risk premium using US data are affected by the same interest rate phenomena as are Canadian estimates. As a result, these US estimates are similarly biased unless adjustment is made for known risk factors. In my judgment recent estimates post 1956 from the US of 3.19-3.35% and from Canada of 1.69-2.16% are both biased low. In both cases they reflect bond market risk that has now largely dissipated, particularly in Canada. In my judgment a reasonable current estimate of the market risk premium is 5.0%. This is significantly higher than the statistical evidence of the experienced market risk premiums in the US and Canada since 1956 and the Canadian evidence since 1926. However, it reflects the diminished risk in the bond market as reflected in current yields.

In terms of US versus Canadian market risk premium estimates I see no economic or financial reason why they should be the same. We would expect US market risk premiums to be higher due to the lower yields normally earned (all else constant) on US bonds given the role of the US$ as the major reserve currency and higher returns on US equities due to their higher risk. However, of this difference of about 1.0%, half may be disappearing as the markets become more integrated, which would support a 5.0% market risk premium estimate that is 0.46% higher than that actually earned in Canada from 1926-2008.

Annual Rate of Return Estimates 1926-2008

	U.S.			CANADA		
	S&P Equities	Long US Treasury	Excess Return	TSE Equities	Long Canadas	Excess Return
AM	11.66	6.05	5.61	11.10	6.56	4.54
GM	9.61	5.67	3.94	9.41	6.21	3.20
OLS	11.13	5.06	6.07	10.44	5.74	4.70
Volatility[1]	20.56	9.19		18.90	8.84	

1 1. Volatility is the standard deviation of the returns over the whole period.

SCHEDULE 2

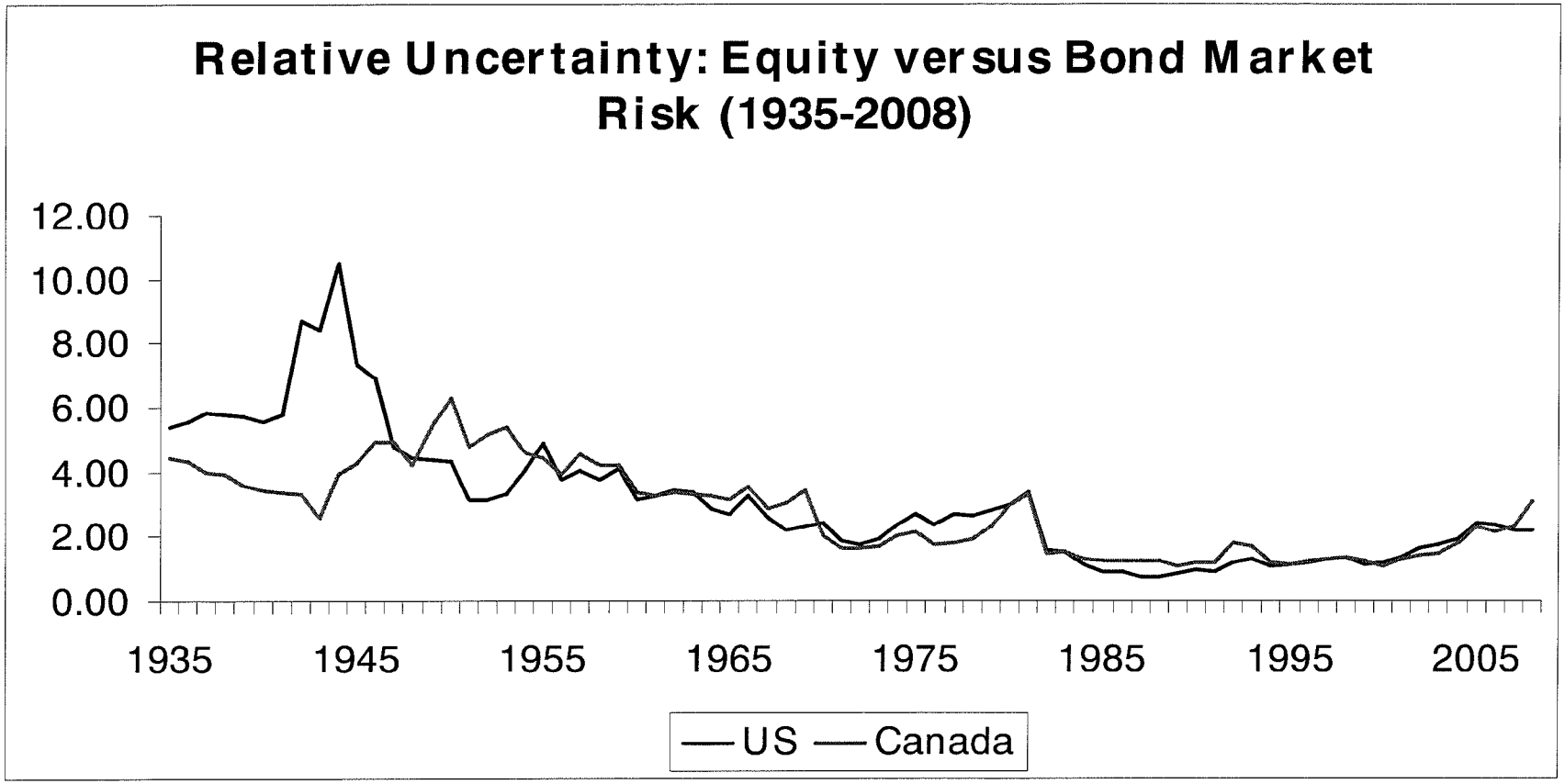
Equities Over Long Term Bonds in the U.S. & Canada						
	S&P500 Equities	U.S. Treasuries	Excess Return	TSE Equities	Long Canadas	Excess Return
1926-1956						
AM	13.05	3.38	**9.67**	12.55	4.00	**8.55**
GM	10.11	3.27	**6.84**	10.30	3.87	**6.42**
OLS	8.98	3.46	**5.52**	8.90	3.99	**4.91**
Volatility[1]	24.88	4.93		22.09	5.41	
1957-2008						
AM	10.83	7.64	**3.19**	10.24	8.08	**2.16**
GM	9.32	7.14	**2.18**	8.87	7.63	**1.25**
OLS	11.14	7.79	**3.35**	10.32	8.62	**1.69**
Volatility	17.72	10.55		16.89	10.10	

1. Volatility is the standard deviation of the returns over the different periods.

Factors Determining the Decline in the Market Risk Premium
(Between 1926-56 & 1957-2008)

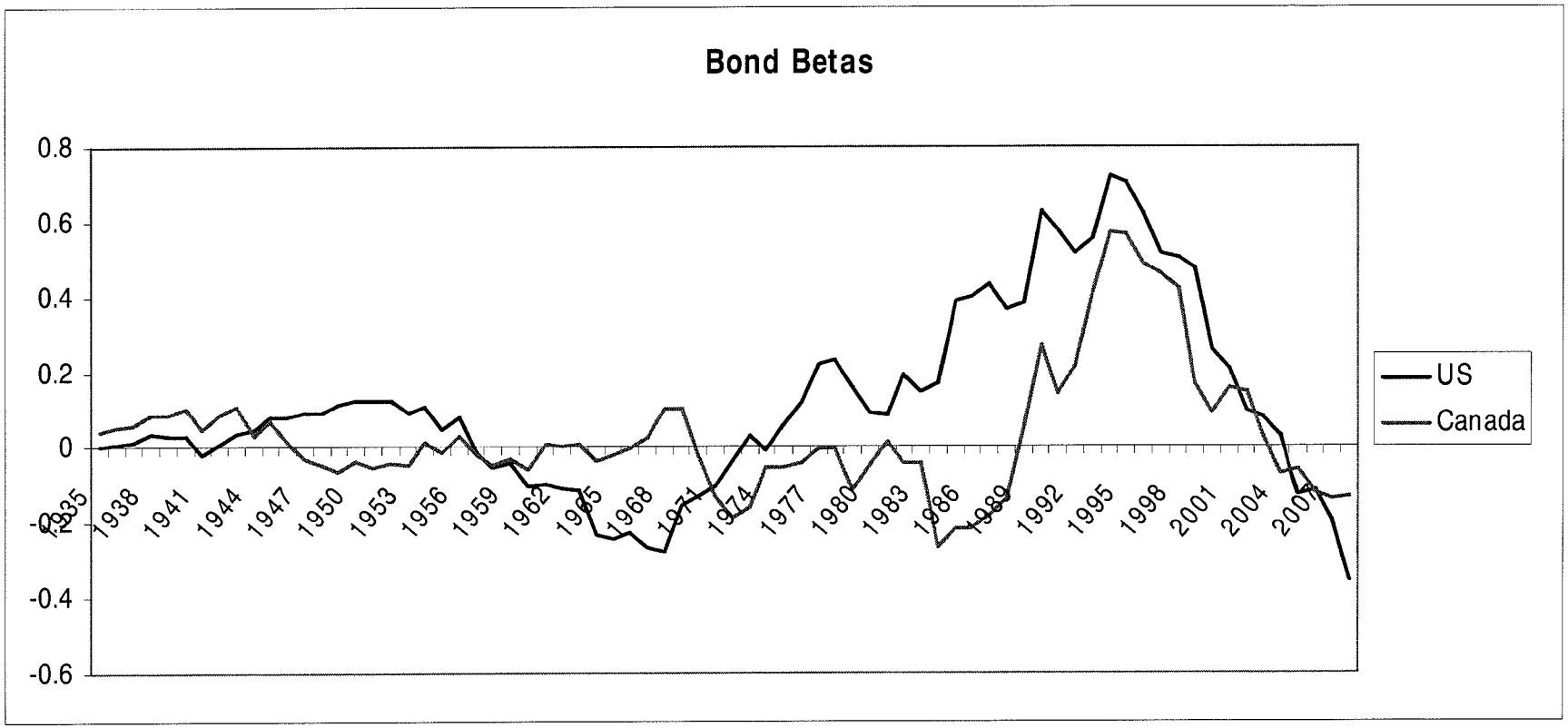
	Decline in U.S. Risk Premium	Equity Returns	Bond Returns	Decline in Canadian Risk Premium	Equity Returns	Bond Returns
AM	**6.48**	-2.22	4.26	**6.39**	-2.31	4.08
GM	**4.66**	-0.79	3.87	**5.18**	-1.41	3.77
OLS	**2.17**	+2.16	4.33	**3.22**	+1.42	4.64

A positive value for the equity or bond returns would indicate an increase in return which for equities means an increase in the market risk premium and for bonds a decrease. In both the US and Canada the decline in the ***realised*** risk premium has largely been due to much larger bond returns. The evidence in the equity market returns is mixed due to differences across the estimation methods.



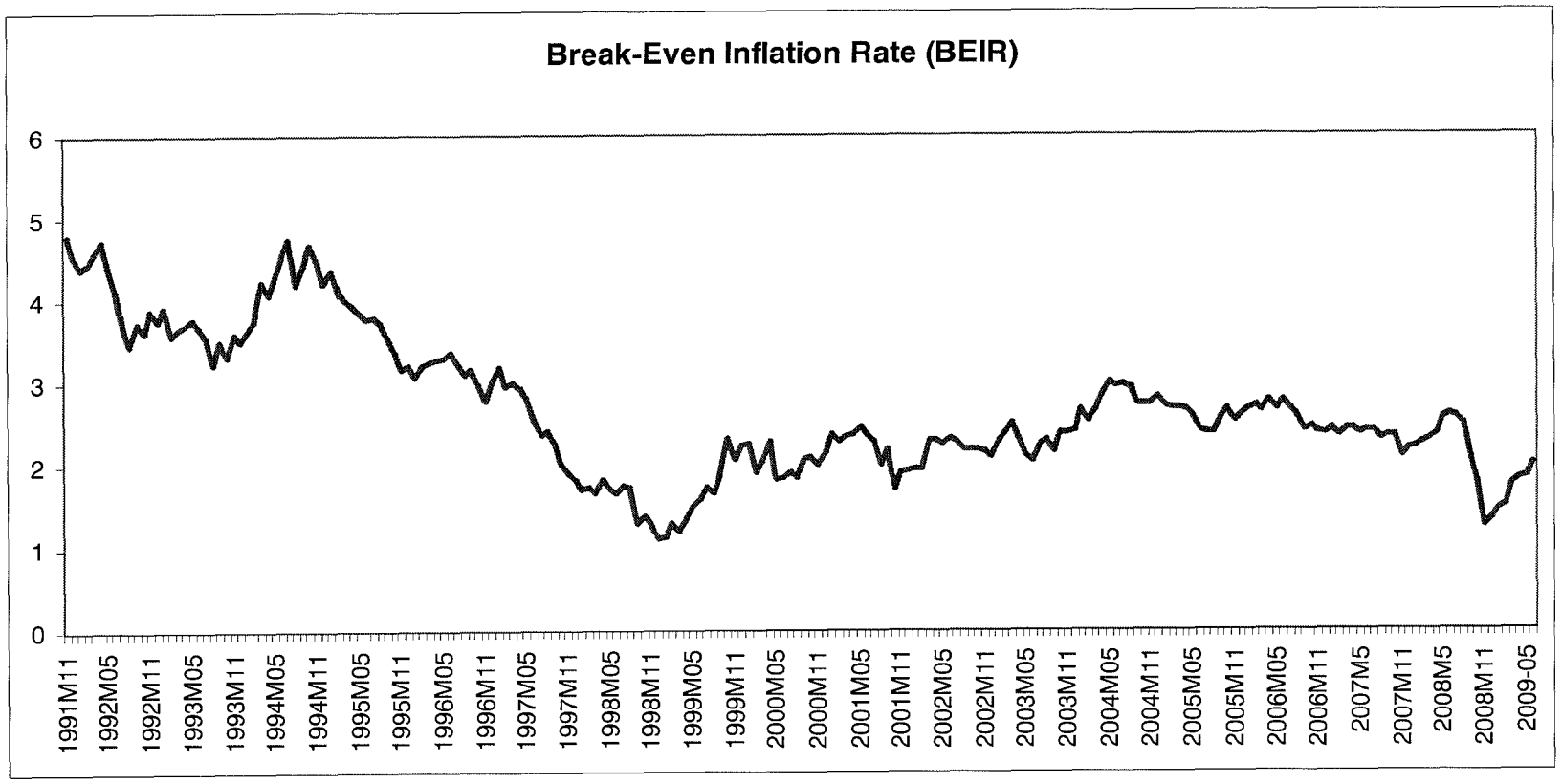
Based on the ratio of standard deviation of returns over the previous ten years

SCHEDULE 5



Based on the estimates from the returns over the previous ten years

SCHEDULE 6


Break-Even Inflation Rate (BEIR)
6
5
4
3
2
1
0
1991M11
1992M05
1992M11
1993M05
1993M11
1994M05
1994M11
1995M05
1995M11
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APPENDIX G

US Regulated Utilities

Introduction

Increasingly expert testimony is introduced into Canadian regulatory hearings using US regulated utilities as comparables for Canadian ones. I have resisted this until now for several reasons: first the US and Canada remain two different countries and there are significant cultural, economic and financial differences; more importantly although the general justification for regulating utilities is similar, the implementation is often quite different. This became dramatically obvious in the Fall of 2008 with the regulatory failures in the US financial system, which similar to utilities has the same basic regulatory objective as in Canada but has been implemented differently. This has highlighted the fact that what is critical is how regulations are implemented, not whether or not they exist. Schedule 1 repeats an overhead by Merrill Lynch presented at the February 2009 NARUC conference and illustrates just how much the US government has had to intervene in the US banking system to correct for its previous regulatory oversight.

The regulation of US utilities suffers from the same philosophical and cultural factors in the US and there is no reason to believe that the results are any different. Without examining US regulatory practise in detail, since much of it is the result of individual state regulation, Canadian utilities seem to be regulated on a much more pro-active basis with very little regulatory lag. In contrast, it appears that US utilities sometimes go several years between rate hearings. Canadian utilities also seem to make more use of deferral accounts. As a result, there is little to be gained from looking at US utilities without making significant risk adjustments which is rarely done. However, since the underlying operations are similar and there is increasing uncontested evidence presented on behalf of the utilities, I have started to examine them.

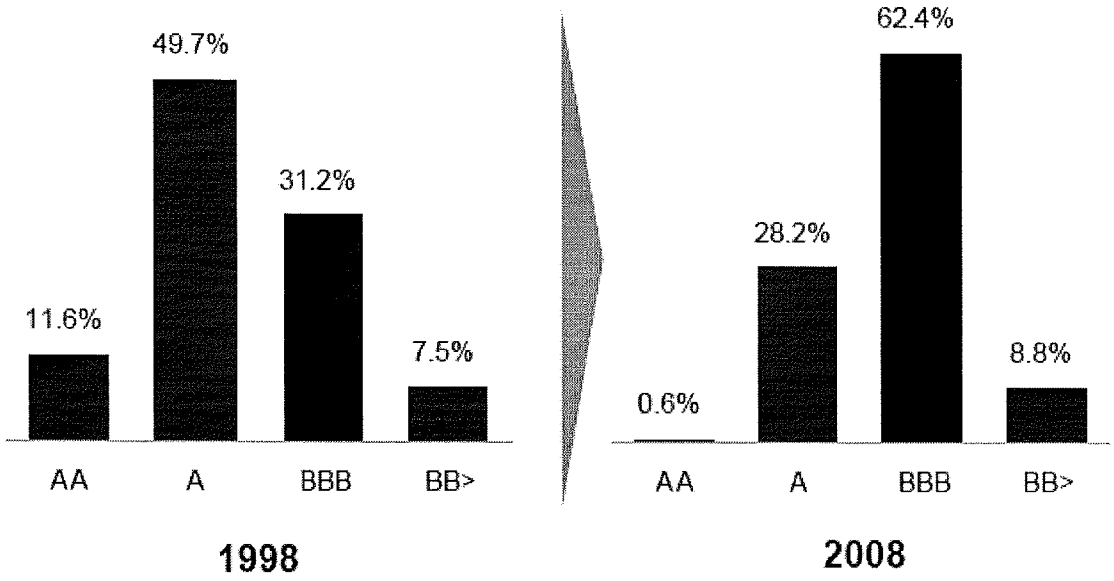
First, I should indicate what the Canadian comparables look like. Here in Schedule 2 is data on the bond ratings of the main Canadian Utility Holding Companies (UHCs), the data comes from

Schedule 3 of the testimony prepared by Ms. McShane on behalf of ATCO in the 2008 generic ROE hearing before the Alberta Utilities Commission. The critical information is that all the Canadian UHCs have DBRS "A' bond ratings except Pacific Northern Gas and Fortis BC, two very small utilities in British Columbia which are penalized because of their size. Moodys does not rate most Canadian utilities, but Standard and Poors (S&P) does since it took over the Canadian Bond Rating Service. Here S&P also rates most of the Canadian UHC's as "A."The exceptions are mainly companies like Westcoast Energy, Union Gas and Nova Scotia Power that are subsidiaries of similarly low rated parents. Here the critical feature is that S&P will not give an operating subsidiary a higher rating than that of its parent unless it is "ring fenced" or has 'structural subordination." This consists of measures taken to insulate the utility subsidiary from its parent, so that the parent can not "raid" the subsidiary if it gets into financial trouble. The message is simply that the typical (modal or median) bond rating of a Canadian utility is A.

In Schedule 3 is similar data prepared by Ms. McShane for US electric utilities in a 2007 Ontario Power Generation (OPG) hearing before the Ontario Energy Board in 2008. This schedule includes US utilities that that have an investment grade bond rating. What is clear from this schedule is that the typical bond rating in the US electrical industry is not "A" but "BBB" with a large number of utilities barely investment grade at BBB-. Ms. McShane's schedules in the OPG hearing make it clear that to generate a group of utilities of "comparable" risk to the total population of Canadian UHCs requires a drastic pruning of the total population of US utilities. That is, she uses a ***sample*** of US utilities, that is, a specially chosen to be low risk to compare to the total ***population*** of Canadian UHCs. The US utilities that Ms. McShane used in the OPG hearing is in Schedule 3 and I will refer to these companies as ***McShane***. A quick glance at the firms in Ms. McShane's sample indicates that they are all rated "A" by S&P, that is, this ***sample*** is not typical of US utilities in general, but is much stronger financially.

How much stronger Ms. McShane's sample is as compared to US utilities in general is obvious from the following slide in Merrill Lynch's NARUC presentation.

POWER & UTILITIES INDUSTRY: RELATIVE CREDIT PROFILE 1998 - 2008



In 1998 61.3% of US utilities were rated A or better, by 2008 this had dropped to only 28.6%. Meanwhile the proportion of marginal BBB and lower rated utilities had increased from 38.9% to 71.2%. The Merrill Lynch data indicates that there is absolutely no question that the financial health of US utilities has deteriorated and that it is increasingly difficult to come up with samples of US utilities that are even roughly comparable with the low risk nature of Canadian UHCs.

In Schedule 5 is more data on the Canadian UHCs and this sample of US utilities taken from MS. McShane's OPG testimony. Of note is that the Canadian UHC's common equity ratios average 40%, whereas the Ms. McShane's US comparables have 53%. Consistent with known institutional differences between the US and Canada, US utilities tend to have both higher ROEs and more common equity than Canadian utilities. All else constant this should make them lower risk. However, we have already seen that generally US utilities have poorer debt ratings than Canadian UHCs, while Schedule 5 indicates that the market to book ratios of the Canadian UHCs and the McShane sample are very similar, indicating that they have equal or better access to equity markets. Overall the McShane data shows that despite lower ROEs and higher debt ratios the Canadian UHCs have better financial market access and stronger financials than typical US utilities. The obvious

implication is that Canadian UHCs have lower business risk, than the typical US utility and only by dramatically reducing the sample size is it possible to come up with a sample that approximates the low risk nature of Canadian UHCs.[1]

In Schedule 6 is a second sample of US utilities, this one is taken from the current testimony of Dr. Vilbert. This is a sample of natural gas local distribution companies (LDCs) and is also high grade as indicated by their S&P bond ratings, although four of Dr. Vilbert's utilities have BBB rated debt. I will refer to this sample as ***Vilbert***. To check how reliable the McShane and Vilbert samples are, I also looked at two samples referred to as ***S&P Electric*** and ***S&P Gas*** taken from the S&P Analysts Handbook. A listing of these firms is in Schedule 7; note that the multi-utilities are not included.

The S & P Gas and Electric firms are the current firms contained in the S&P 500 index, which comprises 75% of the total market capitalization of the US equity markets. The key features for inclusions are as follows:

- Market cap of at least $5 billion,
- 50% public float so the firms are not closely held;
- At least four quarters of positive GAAP net income before extraordinary items and discontinued operations;
- Adequate liquidity, which means more than 30% of the market cap is traded each year;

In addition S&P strives for representative coverage of the US economy and focuses on regular companies, not closed end mutual funds or units. These criteria are for inclusion in the index; once in the index a firm would have to "substantially" violate these criteria to be deleted.

There is some overlap between the three samples: Nicor makes all three samples; Southern Co, FPL make the S&P Electric sample and McShane, but not Vilbert, since they are electric companies; and WGL Holdings, Vectren, Piedmont Natural Gas, Northwest Natural Gas, New Jersey Resources and

1 Note it is always possible to draw a structured sample from two divergent populations that are similar. If woman are weaker than men, for example, it is always possible to create a sample of weak men that is similar in strength to a sample of strong women. However, you can not say from this that men and women

AGL Resources make both the McShane and Vilbert samples, but are too small to be in the S&P500 index. By and large the McShane and Vilbert companies that are not included in S&P Gas or Electric are simply too small: the biggest market cap of the firms in Vilbert, for example, is Nisource at just over $3 billion, which is significantly below the $5 billion required for inclusion in the S & P Index.

So how risky are these US comparables? In Schedule 8 is a graph of their beta coefficients since January 1973. These betas are estimated in the conventional way using monthly data over five year time periods. The first observation is for the five year period from January 1973 until December 1977; then each month a new beta is estimated by adding the new month and deleting the oldest one. This procedure allows an examination of the betas over time, since betas reported by Ms. McShane and Dr. Vilbert (for his Canadian sample) are mechanically adjusted by averaging with 1.0. This procedure increases the beta estimates for these low risk firms on the assumption that the observed beta has estimation error and the true beta is 1.0, which is the average for all stocks. By observing the betas over time we can visually confirm whether or not the betas trend towards 1.0 or have any other pattern over time.

In looking at the betas several observations are apparent:

- Over the longest period of time utility risk in the US has declined;
- For the last twenty years all four samples have moved together indicating relatively homogenous "utility" risk;
- There is no evidence that US utility betas "regress" towards 1.0 as is implied in the beta adjustment models implicitly used by Ms. McShane and Dr. Vilbert;
- US utility betas exhibit the same "Internet Bubble" effect[2] observed in Canada: betas were very low in the early 2000's and were negative for the large S&P Electrics sample.
- The most recent 2008 beta estimates are in a range 0.3-0.7;
- The S&P Gas sample is relatively unreliable, not only are the estimates higher than the others, but there are now only three firms in the sample;
- The S&P Electric sample seems to be marginally higher risk than either the McShane or Vilbert samples.

Since 1973, including data from January 1984 until December 2008, the average and December 2008

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are equal in strength.

betas were as follows:

	Vilbert	McShane	S&P Electr	S&P Gas
1/12/2008	0.323	0.333	0.633	0.711
25 YR Average	0.346	0.401	0.433	0.596

This very long period covers the period when utilities were subject to significant inflation risk due to regulatory lag, as well as the post 1981 period when interest rates and inflation declined significantly and the more recent period when many of these utilities diversified into other areas. Currently, the average betas of the samples of both Dr. Vilbert and Ms. McShane are marginally lower than their long run average, whereas the larger utilities covered by S&P are riskier reflecting their more diversified operations.

If we take the intersection of the McShane and Vilbert samples we have the following firms: AGL, New Jersey Resources; Nicor, Northwest; Piedmont, Vectren and WGL.[3] These seven firms would be regarded as the unanimously lowest risk US utilities and their betas, along with the sample average, is graphed in Schedule 8, where the long run secular decline in beta risk is very obvious. Their actual 2008 year end betas were as follows:

[2] This was probably also an Enron or California electric effect.

[3] It is not immediately obvious why for many of these firms their S & P bond ratings differ in the schedules prepared by Ms. McShane and Dr. Vilbert. It could be that some are corporate ratings and others ratings attached to particular bond issues.

	AGL	NJ Resour	Northwest	Piedmont	Vectren	WGL	Nicor	Average
12/31/1998	0.586	0.460	0.471	0.505	0.339	0.482	0.413	0.465
12/31/1999	0.424	0.326	0.189	0.297	0.136	0.286	0.265	0.275
12/31/2000	0.263	0.240	0.070	0.160	0.168	0.204	0.181	0.184
12/31/2001	0.263	0.240	0.070	0.160	0.168	0.204	0.054	0.166
12/31/2002	0.227	0.092	-0.097	0.097	0.215	0.149	0.222	0.129
12/31/2003	0.205	0.029	-0.176	-0.038	0.334	0.129	0.325	0.115
12/31/2004	0.301	0.106	0.014	0.121	0.456	0.224	0.446	0.238
12/30/2005	0.383	-0.046	0.058	0.253	0.341	0.222	0.519	0.247
12/29/2006	0.375	0.024	0.142	0.330	0.514	0.269	0.902	0.365
12/31/2007	0.496	0.514	0.750	0.578	0.564	0.697	0.872	0.639
12/31/2008	0.318	0.148	0.354	0.053	0.256	0.232	0.387	0.250
25 yr Averag	0.349	0.194	0.168	0.229	0.317	0.282	0.417	0.279

From this data I conclude that it is possible to extract from the total population of US utilities a low risk ***sample*** of US utilities with similar bond ratings and market to book ratios of the ***population*** of Canadian UHCs. This sample of US utilities has typical betas in a general range of 0.05-0.387 as of the end of 2008 and long run average betas in a range 0.168-0.417. The behavior of these betas up until the end of 2008 shows a similar pattern to that of the Canadian UHCs. Overall this data confirms the reasonableness of a normal beta range for Canadian utilities of 0.40-0.60 as being generous.

It is interesting to look at the composite financial information available in the Analyst Handbook. In Schedules 10 & 11 are the debt ratios and times interest earned ratios for both the S&P electric and gas firms. Note that these averages are for the firms that were in the S&P index at that time. For example in 1993 there were 24 Electric and 13 Gas companies in the S&P 500 index, but by 2008 this had dropped to 13 and 3 respectively as mergers and acquisitions reduced the number of "pure play" utilities. Consequently we should not view these values as a "time series," since the firms involved have changed over time. However, the debt ratios and interest coverage ratios at a point in time reflect the values for electric and gas companies included in the index at that point in time and are still useful for comparison purposes.

It is important to note that the average debt ratio reported by S & P over the whole time period

was 63.6% in a range 53.6%-79.0% for the Electrics and an average of 61.52% in a range 45.3%-83.76% for the Gas Utilities. Similar to Canada the use of preferred shares declined from 3 - 6% in 1993 to almost zero by 2006. The average times interest earned coverage ratio was 2.85 for the Electrics in a range 1.80-3.75 and an average 3.50 in a range 1.92-9.33 for the gas utilities, but this data is highly skewed by the limited recent observations. These S & P utilities are all relatively large holding companies with significant operating assets, as well as often non-regulated operations. As a result the parent company debt ratios reflect a variety of influences much as did the debt ratio of Westcoast Energy before it was bought by Duke. They therefore reflect the decisions of management rather than the decisions of regulators. What is clear is that average debt ratios of 60% or so plus some preferred shares, implies common equity ratios not unlike those for regulated utilities in Canada.

The market to book ratios for these utilities is graphed in Schedule 12 and was well above 1.0 throughout this period and had been increasing for the last several years until the stock market crash of 2008. Note that these market to book ratios are as of year end so they fully reflect the poor equity market performance in 2008.

Government Lends a Hand and $

CONGRESS / TREASURY

- **Housing and Economic Recovery Act (HERA) – 7/30/2008**
  - Homeowners can refinance into FHA loans w principal write-down
- **FNM/FRE Conservatorship – 9/7/2008**
  - Government Sponsored Enterprise (GSE) Credit Facility
  - GSE Senior Preferred Stock & MBS Purchase Agreement
- **Guarantee Program for Money Market Funds – 9/19/2008**
  - Guarantees participating money funds from breaking the buck
- **Troubled Asset Relief Program (TARP) – 9/28/2008**
  - Capital purchase program to buy troubled assets or preferred shares from U.S banks and thrifts
- **Emergency Economic Stability Act (EESA) – 10/3/2008**
  - Creates the troubled asset program (TARP)
- **FDIC Deposit Insurance Limit Increase – 10/3/2008**
  - Increases Account Limit to $250,000 from $100,000
- **Temporary Liquidity Guarantee Program (TLGP) – 10/14/2008**
  - FDIC guarantees newly issued Senior Unsecured debt of banks, thrifts and certain holding companies
- **Term-Asset Backed Securities Loan Facility (TALF) – 11/25/2008**
  - Fed provides $200 Bn in loans to lend against AAA rated ABS
- **Expected Fiscal Stimulus Under Discussion**
  - Expected to include large infrastructure component

FEDERAL RESERVE

- **Term Auction Facility (TAF) – 12/12/2007**
  - Overnight loan facility that provides funding
- **Term Securities Lending Facility (TSLF) – 3/11/2008**
  - Provides loans over a 1-month term against eligible collateral
- **Primary Dealer Credit Facility (PDCF) – 3/16/2008**
  - Overnight loan facility funding a range of eligible collateral
- **Foreign Currency Swaps – 9/18/2008**
  - Unlimited currency swaps w central banks including ECB
- **Asset Backed Commercial Paper Money Market Fund Liquidity Facility (AMLF) – 9/19/2008**
  - Banks borrow from the Fed to purchase ABCP from money market funds at amortized cost and zero risk weighting
- **Commercial Paper Funding Facility (CPFF) – 10/7/2008**
  - The Fed buys 3-month commercial paper from Tier 1 issuers
- **Money Market Investor Funding Facility (MMIF) – 10/21/2008**
  - Fed buys CP, bank notes and CDs to 90 days maturity from money market funds
- **GSE Debt and MBS Purchase Program – 11/25/2008**
  - Fed buys Fannie, Freddie & Home Loan Debentures and Agency MBS

SCHEDULE 2

DEBT AND COMMON STOCK QUALITY RATINGS
OF CANADIAN UTILITIES

Company	Debt Rated	DBRS Bond Rating	Moody's Bond Rating	S&P Bond Rating	CBS Stock Ranking
Electric Utilities					
AltaLink L.P.	Senior Secured	A		A-	
CU Inc.	Senior Unsecured	A(high)		A	Very conservative
Enersource	Issuer	A			
ENMAX	Unsecured Debentures (DBRS)	A(low)		BBB+	
EPCOR Utilities Inc	Senior Unsecured	A(low)		BBB+	
FortisAlberta Inc.	Senior Unsecured	A(low)	Baa1	A-	Very conservative
FortisBC Inc	Secured Debentures	BBB(high)	Baa2		Very conservative
Hamilton Utilities	Senior Unsecured			A+	
Hydro One	Senior Unsecured	A(high)	Aa3	A+	
Hydro Ottawa Holding Inc.	Senior Unsecured	A(low)		A	
London Hydro	Issuer			A	
Maritime Electric	Senior Secured			A	Very conservative
Newfoundland Power	Senior Secured	A	Baa1	NR [1]	Very conservative
Nova Scotia Power	Senior Unsecured	A(low)	Baa1	BBB	Very conservative
Toronto Hydro	Senior Unsecured	A		A	
Veridian	Issuer	A			
Gas Distributors					
Enbridge Gas Distribution	Senior Unsecured	A		A-	Very conservative
Gaz Metropolitain	Senior Secured	A		A	
Pacific Northern Gas	Senior Secured	BBB(low)		NR [2]	Average
Terasen Gas	Senior Secured	A	A2	AA-	
	Senior Unsecured	A	A3	A	
Union Gas Limited	Senior Unsecured	A		BBB+	
Pipelines					
Enbridge Pipelines	Senior Unsecured	A(high)		A-	Very conservative
NOVA Gas Transmission	Senior Unsecured	A	A3	A-	Very conservative
Trans Quebec & Maritimes	Senior Unsecured	A(low)		BBB+	
TransCanada PipeLines	Senior Unsecured	A	A3	A-	Very conservative
Westcoast Energy	Senior Unsecured	A(low)		BBB+	
Medians					
Electric T&D		**A**	**Baa1**	**A**	**Very conservative**
Electric Integrated		**A(low)**	**Baa2**	**A-**	**Very conservative**
All Electric		**A(low)**	**Baa1**	**A**	**Very conservative**
Gas Distributors		**A**	**A3**	**A**	**Very conservative**
Pipelines		**A**	**A3**	**A-**	**Very conservative**
All Companies		**A**	**A3**	**A-**	**Very conservative**

[1] Withdrawn by company; BBB+ prior to withdrawal.
[2] Withdrawn by company; BBB- prior to withdrawal.

Note: Debt ratings are for utility; Stock rankings are for parent.

SCHEDULE 3

Name	Debt Rating
Madison Gas & Electric Co.	AA-
Alabama Power Co.	A
Boston Edison Co.	A+
Central Hudson Gas & Electric Corp.	A
Consolidated Edison Co. of New York Inc.	A
Consolidated Edison Inc.	A
Florida Power & Light Co.	A
FPL Group Inc.	A
Georgia Power Co.	A
Gulf Power Co.	A
KeySpan Corp.	A
MidAmerican Energy Co.	A-
MidAmerican Energy Holdings Co.	A-
Mississippi Power Co.	A
Orange and Rockland Utilities Inc.	A
PacifiCorp	A-
PPL Electric Utilities Corp.	A-
Public Service Co. of North Carolina Inc.	A-
San Diego Gas & Electric Co.	A
Savannah Electric & Power Co.	A
SCANA Corp.	A-
South Carolina Electric & Gas Co.	A-
Southern Co.	A
Vectren Corp.	A-
Wisconsin Electric Power Co.	A-
Wisconsin Power & Light Co.	A-
Wisconsin Public Service Corp.	A+
WPS Resources Corp.	A
Mean	A
Median	A

AEP Texas Central Co.	BBB
AEP Texas North Co.	BBB
ALLETE Inc.	BBB+
Alliant Energy Corp.	BBB+
Ameren Corp.	BBB
AmerenEnergy Generating Co.	BBB
American Electric Power Co. Inc.	BBB
Appalachian Power Co.	BBB
Arizona Public Service Co.	BBB-
Atlantic City Electric Co.	BBB
Baltimore Gas & Electric Co.	BBB+
CenterPoint Energy Houston Electric LLC	BBB
CenterPoint Energy Inc.	BBB
CenterPoint Energy Resources Corp.	BBB
Central Illinois Light Co.	BBB-
Central Illinois Public Service Co.	BBB-
CILCORP Inc.	BBB-
Cincinnati Gas & Electric Co.	BBB
Cinergy Corp.	BBB
Cleco Corp.	BBB
Cleco Power LLC	BBB
Cleveland Electric Illuminating Co.	BBB
Columbus Southern Power Co.	BBB
Commonwealth Edison Co.	BBB-
Connecticut Light & Power Co.	BBB
Constellation Energy Group Inc.	BBB+
Delmarva Power & Light Co.	BBB
Detroit Edison Co.	BBB
Dominion Resources Inc.	BBB
DTE Energy Co.	BBB
Duke Energy Corp.	BBB
Duquesne Light Co.	BBB
Edison International	BBB-
El Paso Electric Co.	BBB
Empire District Electric Co.	BBB-
Energy East Corp.	BBB+
Entergy Arkansas Inc.	BBB
Entergy Corp.	BBB
Entergy Gulf States Inc.	BBB
Entergy Louisiana LLC	BBB
Entergy Mississippi Inc.	BBB
Exelon Corp.	BBB+
FirstEnergy Corp.	BBB
Great Plains Energy Inc.	BBB
Green Mountain Power Corp.	BBB
Hawaiian Electric Co. Inc.	BBB+
IDACORP Inc.	BBB+
Idaho Power Co.	BBB+
Illinois Power Co.	BBB-
Indiana Michigan Power Co.	BBB
Interstate Power & Light Co.	BBB+
Jersey Central Power & Light Co.	BBB
Kansas City Power & Light Co.	BBB
Kentucky Power Co.	BBB
Kentucky Utilities Co.	BBB+
Louisville Gas & Electric Co.	BBB+
Metropolitan Edison Co.	BBB
NiSource Inc.	BBB
Northeast Utilities	BBB
Northern Indiana Public Service Co.	BBB
Northern States Power Co.	BBB
Northern States Power Wisconsin	BBB+
OGE Energy Corp.	BBB+
Ohio Edison Co.	BBB
Ohio Power Co.	BBB
Otter Tail Corp.	BBB+
Pacific Gas & Electric Co.	BBB
PECO Energy Co.	BBB+
Pennsylvania Electric Co.	BBB
Pennsylvania Power Co.	BBB
PEPCO Holdings Inc.	BBB
Pinnacle West Capital Corp.	BBB-
PNM Resources Inc.	BBB
Portland General Electric Co.	BBB+
Potomac Electric Power Co.	BBB
PPL Corp.	BBB
Progress Energy Inc.	BBB
PSEG Power LLC	BBB
PSI Energy Inc.	BBB
Public Service Co. of Colorado	BBB
Public Service Co. of New Hampshire	BBB
Public Service Co. of Oklahoma	BBB
Public Service Electric & Gas Co.	BBB
Public Service Enterprise Group Inc.	BBB
Puget Energy Inc.	BBB-
Puget Sound Energy Inc.	BBB-
Rochester Gas & Electric Corp.	BBB+
Sempra Energy	BBB+
Southern California Edison Co.	BBB+
Southwestern Electric Power Co.	BBB
Southwestern Public Service Co.	BBB
Tampa Electric Co.	BBB-
Toledo Edison Co.	BBB
Union Electric Co.	BBB
Union Light Heat & Power Co.	BBB
Virginia Electric & Power Co.	BBB
Western Massachusetts Electric Co.	BBB
Wisconsin Energy Corp.	BBB+
Xcel Energy Inc.	BBB

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INDIVIDUAL COMPANY RISK DATA FOR BENCHMARK SAMPLE OF
US ELECTRIC AND GAS UTILITIES

	Value Line									S & P	Moody's	Average
	Safety	Earnings Predictability	Financial Strength	Forecast Common Equity Ratio 2010-2012	Forecast Return On Average Common Equity 2010-2012	Dividend Payout Forecast 2010-2012	Beta	Research Insight Beta 1/	Common Equity Ratio 2006	Business Profile	Debt Rating	Debt Rating 2/	Market/ Book Ratio 1994-2006
AGL Resources	2	75	B++	50.8%	14.2%	58.1%	0.95	0.58	42.7%	4	A-	A3	1.76
Consol. Edison	1	85	A++	50.5%	9.1%	70.6%	0.75	0.43	47.0%	2	A	A2	1.49
FPL Group	1	80	A+	51.0%	12.4%	51.8%	0.85	0.69	44.6%	5	A	A2	1.89
Integrys Energy	2	70	B++	49.5%	11.1%	65.7%	0.85	0.66	42.4%	5	A-	A3	1.62
New Jersey Resources	1	95	A	69.3%	10.7%	54.6%	0.80	0.39	50.2%	2	A+	na	2.19
NICOR Inc.	3	75	A	89.0%	13.2%	63.5%	1.30	0.99	50.7%	3	AA	A3	2.28
Northwest Nat. Gas	1	80	A	52.0%	11.6%	60.0%	0.75	0.44	48.1%	1	AA-	A3	1.56
NSTAR	1	95	A	55.5%	15.7%	58.3%	0.80	0.64	34.4%	1	A+	A2	1.74
Piedmont Natural Gas	2	80	B++	52.8%	11.2%	71.9%	0.80	0.60	47.0%	2	A	A3	2.00
SCANA Corp.	2	95	A	49.0%	11.1%	61.5%	0.85	0.70	43.4%	4	A-	A3	1.64
Southern Co.	1	95	A	44.0%	13.0%	74.0%	0.70	0.33	40.6%	4	A	A3	2.08
Vectren Corp.	2	70	A	51.0%	10.5%	71.5%	0.95	0.71	40.6%	4	A-	Baa1	1.91
WGL Holdings Inc.	1	85	A	64.5%	11.1%	63.3%	0.85	0.54	52.2%	3	AA-	A2	1.71
Mean	**2**	**82**	**A**	**54.5%**	**11.9%**	**63.4%**	**0.86**	**0.59**	**44.3%**	**3**	**A**	**A2**	**1.84**
Median	**1**	**80**	**A**	**51.0%**	**11.2%**	**63.3%**	**0.85**	**0.60**	**44.6%**	**3**	**A**	**A3**	**1.76**
Weighted Average	**1**	**86**	**A**	**50.0%**	**12.0%**	**64.6%**	**0.80**	**0.53**	**43.5%**	**4**	**A**	**A2**	**1.84**

1/ Calculated using monthly data against the S&P 500 (60 months ending June 2007); adjusted towards the market mean of 1.0.

2/ Rating for WGL Holdings is Washington Gas Light.

Source: Standard and Poor's Research Insight, Value Line (June 2007), www.Moodys.com,
Standard and Poor's, *Issuer Ranking: U.S. Integrated Utility And Merchant Power Companies, Strongest To Weakest* (July 24, 2007) and

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ESTIMATE OF MARKET VALUE CAPITAL STRUCTURES FOR CANADIAN UTILITIES

Company	Stock Price (Average Monthly High/Low 7/2002-6/2007) (1)	Book Value Per Share Average 2002-2006 (2)	Market/Book Ratio (3) = (1)/(2)	Book Value Permanent Capital Common Equity Ratio 2002-2006 (4)	Market Value Common Equity Ratio (Debt at Par) (5)=[(4)*(3)]/[(4)*(3)+(1-(4))]	Market Value Debt Ratio 1.0-Col.(7)
CANADIAN UTILITIES -CL A	33.57	16.52	2.03	37.7%	55.1%	44.9%
EMERA INC	18.53	12.37	1.50	46.1%	56.1%	43.9%
ENBRIDGE INC	29.96	11.04	2.71	34.1%	58.3%	41.7%
FORTIS INC	18.77	10.34	1.82	33.6%	47.7%	52.3%
PNG	18.08	20.62	0.88	48.4%	43.1%	56.9%
TERASEN INC [1/]	24.47	13.62	1.80	39.9%	54.4%	45.6%
TRANSCANADA CORP	30.10	14.01	2.15	38.1%	57.0%	43.0%
Mean				39.4%	53.1%	46.9%

1/ Terasen price is through November 2005 due to Kinder Morgan acquisition; book value per share is through 2005.

Sources: Standard & Poor's Research Insight

ESTIMATE OF MARKET VALUE CAPITAL STRUCTURES FOR BENCHMARK SAMPLE OF US ELECTRIC AND GAS UTILITIES

Company	Stock Price (Average Daily Closing 7/16-8/15/2007) (1)	Book Value Per Share (Avg. 2005 and 2006) (2)	Market/Book Ratio (3) = (1)/(2)	Book Value Permanent Capital Common Equity Ratio 2006 (4)	Market Value Common Equity Ratio (Debt at Par) (5)=[(4)*(3)]/[(4)*(3)+(1-(4))]	Market Value Debt Ratio 1.0-Col.(7)
AGL Resources	38.77	19.99	1.94	46.8%	65.8%	34.2%
Consolidated Edison	45.41	30.38	1.49	48.1%	58.4%	41.6%
FPL	59.01	23.01	2.56	50.6%	72.6%	27.4%
Integrys Energy	50.78	33.95	1.50	53.4%	63.2%	36.8%
New Jersey Resources	48.91	19.20	2.55	65.2%	82.7%	17.3%
Nicor Inc.	41.20	18.90	2.18	63.7%	79.2%	20.8%
Northwest Nat. Gas	44.12	21.63	2.04	63.7%	70.3%	29.7%
NSTAR	32.21	14.58	2.21	59.7%	59.2%	40.8%
Piedmont Natural Gas	24.84	11.51	2.12	61.7%	69.4%	30.6%
Scana	38.11	23.80	1.60	47.2%	58.9%	41.1%
Southern Co.	34.57	14.52	2.35	46.2%	66.9%	33.1%
Vectren	26.45	15.24	1.74	49.3%	62.6%	37.2%
WGL Holdings Inc.	31.65	18.61	1.70	60.4%	72.2%	27.8%
Mean				52.3%	67.8%	32.2%

Sources: Schedule 14 for stock prices and Standard & Poor's Research Insight

SCHEDULE 6

Company [1]		Revenue (2008) ($MM) [2]	Regulated Assets [3]	Market Cap. (2008) ($MM) [4]	S&P Credit Rating (2009) [5]	Beta Estimate [6]	Long-Term Growth Estimate [7]
AGL Resources Inc (FL, GA, MD, NJ, TN, VA)	•	2,800	MR	2,282	A	0.60	5.2%
Atmos Energy Corp (CO, GA, IA, IL, KS, KY, LA, MO, MS, TN, TX, VA)		7,221	R	2,134	BBB	0.45	4.3%
The Laclede Group (IL, IN, MO)	•	2,209	R	1,007	A	0.45	n/a
New Jersey Resources (NJ)		3,816	MR	1,572	A	0.52	7.1%
Nicor Inc (IL)	•	3,777	R	1,574	AA	0.52	3.4%
NiSource Inc (IN, MD, KY, OH, PA, VA)		8,874	MR	3,042	BBB	0.60	2.7%
Northwest Natural Gas (CA, OR,WA)	•	1,038	R	1,169	AA	0.37	6.2%
Piedmont Natural Gas (NC, SC, TN)	•	2,089	R	2,278	A	0.52	8.4%
South Jersey Industries (NJ)	•	962	MR	1,098	BBB	0.60	7.7%
Southwest Gas Corp (AZ, CA, NV)	•	2,145	R	1,075	BBB	0.60	5.0%
WGL Holdings Inc (DC, MD, VA)	•	2,628	R	1,585	AA	0.60	4.5%
Vectren Corp (IN, OH)		2,485	MR	2,032	A	0.75	8.8%

Sources and Notes:

[1] Operating region as reported in company annual reports for significant operations.

[2] Bloomberg, March 10, 2009.

[3] Key: R – Regulated (More than 80 % of assets regulated).
MR – Mostly Regulated (50 % to 80 % of assets regulated).
Source: 2008 Company 10-K's. See Table MJV-13.

[4] See Table MJV-14, Panels A through K.

[5] Bloomberg, March 10, 2009.

[6] Value Line Investment Survey - See Workpaper # 1 to Table MJV-20.

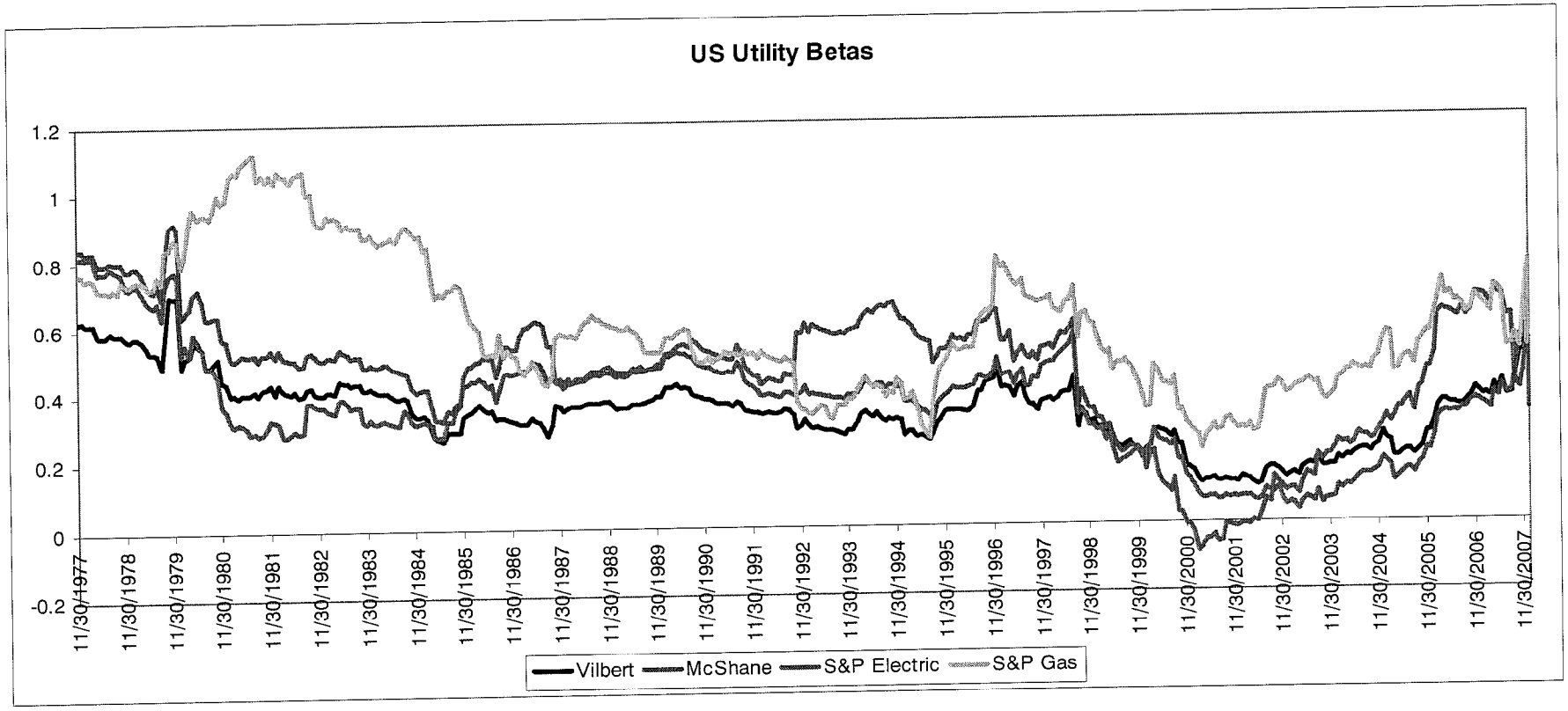
[7] See Table MJV-15.

• Company included in gas LDC sub-sample (see text for discussion).

Standard and Poors Utility Index (5510)

Utilities (55)
Utilities (5510)
Electric Utilities (551010)
Electric Utilities (55101010)
Allegheny Energy (AYE)
American Electric Power (AEP)
Duke Energy (DUK)
Edison Int'l (EIX)
Entergy Corp. (ETR)
Exelon Corp. (EXC)
FirstEnergy Corp. (FE)
FPL Group (FPL)
Pepco Holdings, Inc. (POM)
Pinnacle West Capital (PNW)
PPL Corp. (PPL)
Progress Energy, Inc. (PGN)
Southern Co. (SO)
Gas Utilities (551020)
Gas Utilities (55102010)
Equitable Resources (EQT)
NICOR Inc. (GAS)
Questar Corp. (STR)
Multi-Utilities (551030)
Multi-Utilities (55103010)
Ameren Corporation (AEE)
CenterPoint Energy (CNP)
CMS Energy (CMS)
Consolidated Edison (ED)
Dominion Resources (D)
DTE Energy Co. (DTE)
Integrys Energy Group, Inc. (TEG)
NiSource Inc. (NI)
PG&E Corp. (PCG)
Public Serv. Enterprise Inc. (PEG)
Sempra Energy (SRE)
TECO Energy (TE)
Wisconsin Energy (WEC)
Xcel Energy Inc (XEL)
Water Utilities (551040)
Water Utilities (55104010)
Independent Pwr Producers & Engy Traders (551050)
Independent Pwr Producers & Engy Traders (55105010)
AES Corp. (AES)
Constellation Energy Group (CEG)
Dynegy Inc. (DYN)

SCHEDULE 8


US Utility Betas
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
11/30/1977
11/30/1978
11/30/1979
11/30/1980
11/30/1981
11/30/1982
11/30/1983
11/30/1984
11/30/1985
11/30/1986
11/30/1987
11/30/1988
11/30/1989
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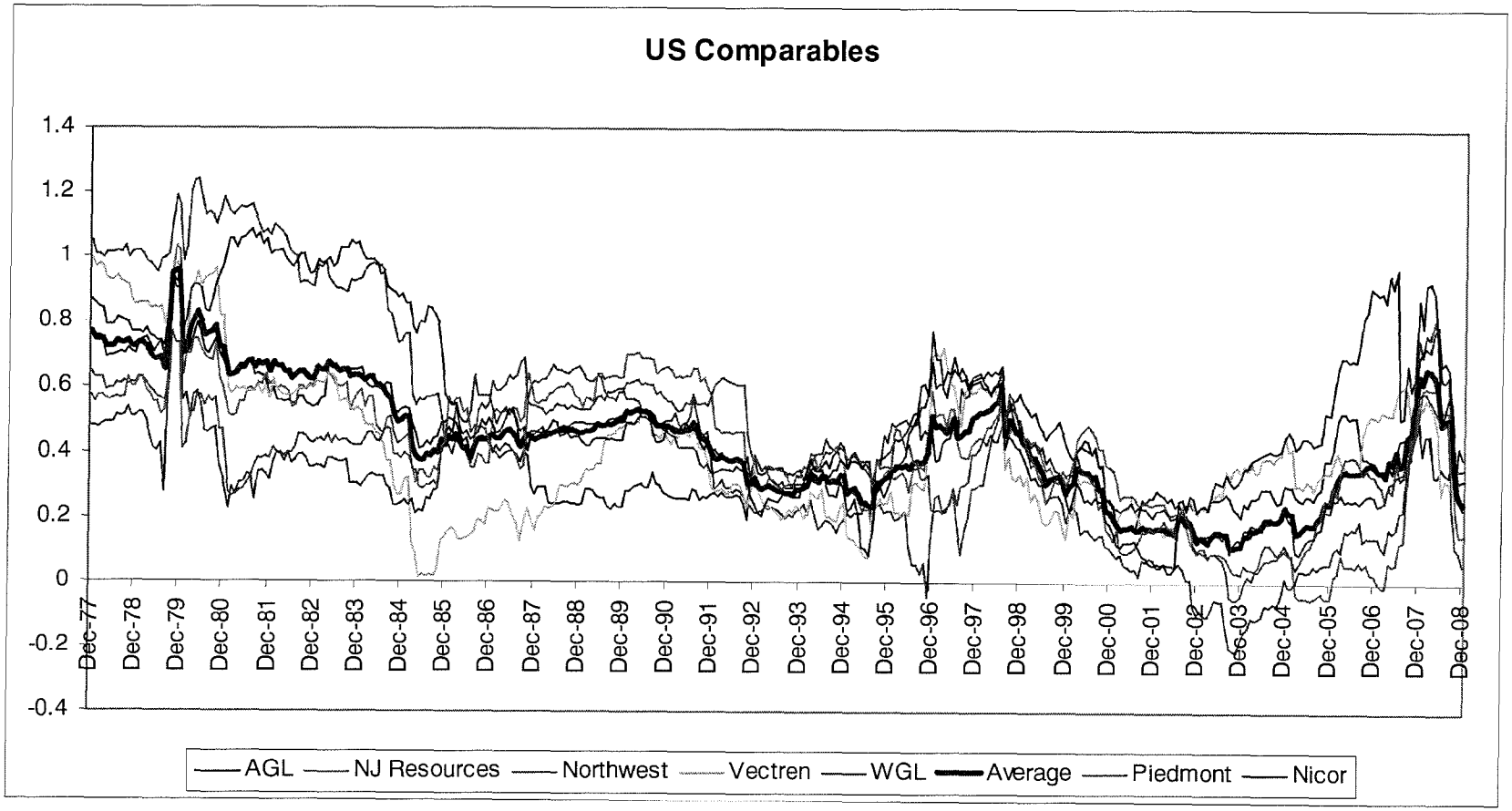
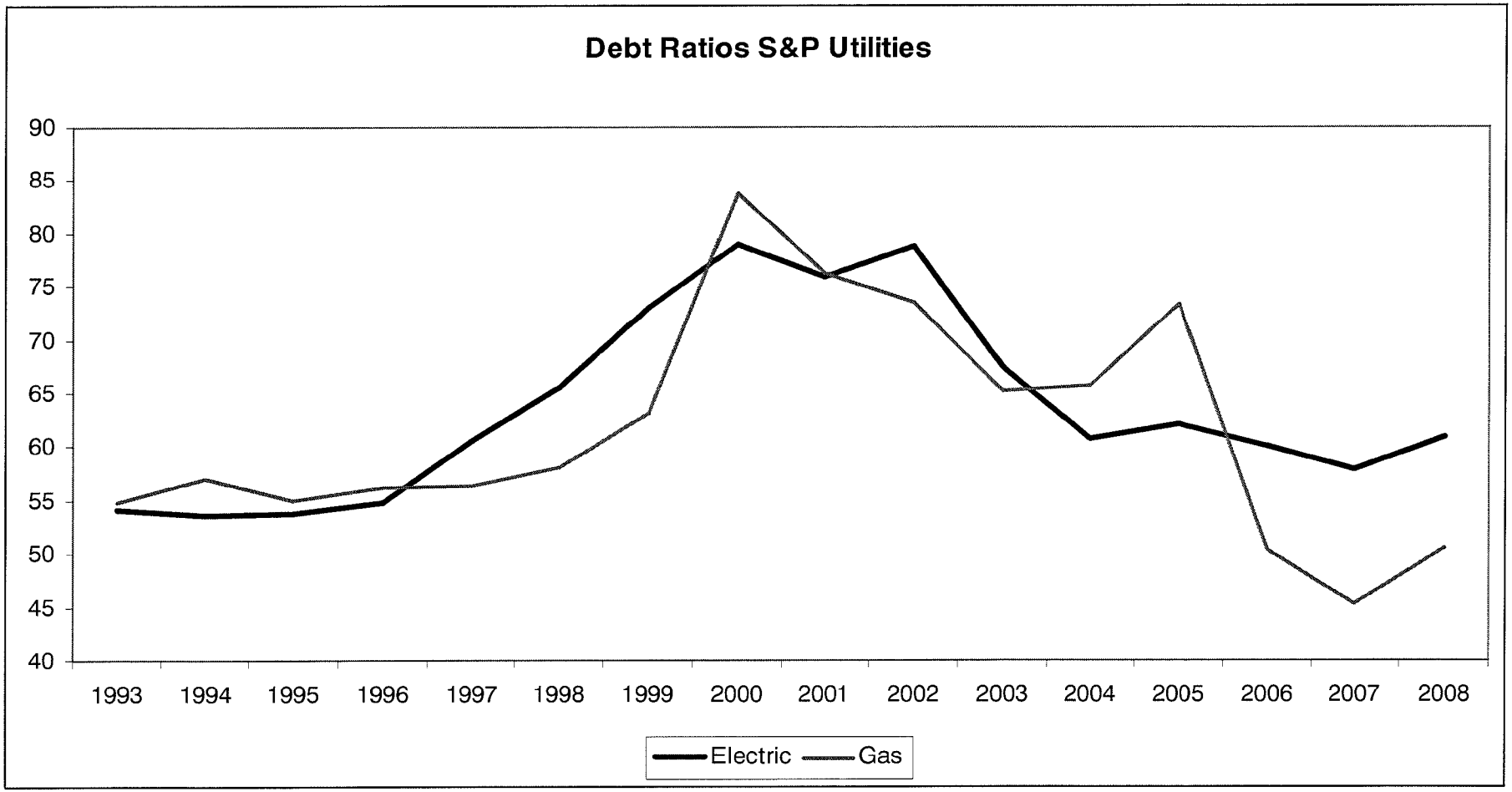
11/30/1997
11/30/1998
11/30/1999
11/30/2000
11/30/2001
11/30/2002
11/30/2003
11/30/2004
11/30/2005
11/30/2006
11/30/2007
Vilbert
McShane
S&P Electric
S&P Gas

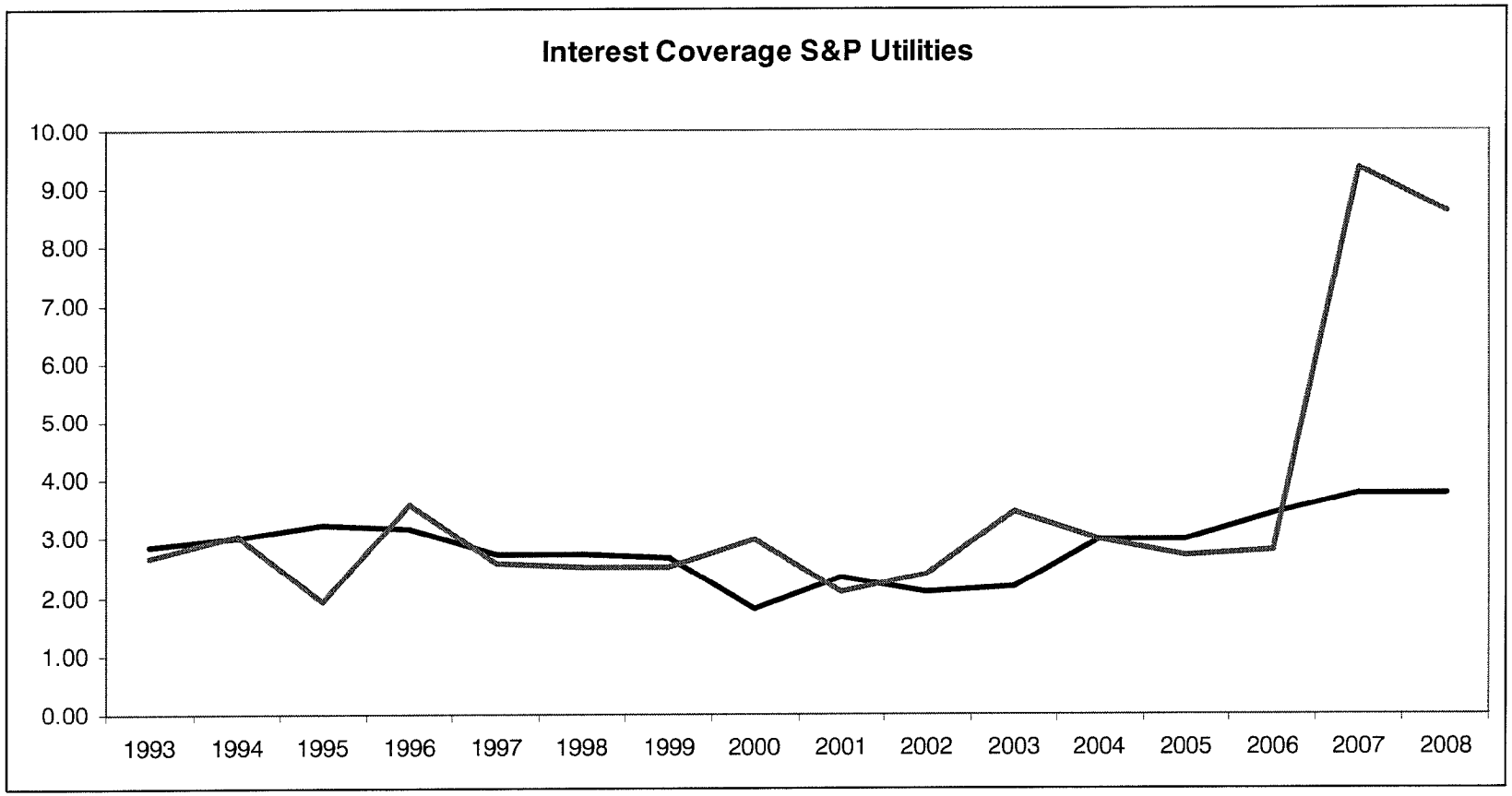
SCHEDULE 9


US Comparables
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
Dec-77
Dec-78
Dec-79
Dec-80
Dec-81
Dec-82
Dec-83
Dec-84
Dec-85
Dec-86
Dec-87
Dec-88
Dec-89
Dec-90
Dec-91
Dec-92
Dec-93
Dec-94
Dec-95
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
AGL
NJ Resources
Northwest
Vectren
WGL
Average
Piedmont
Nicor

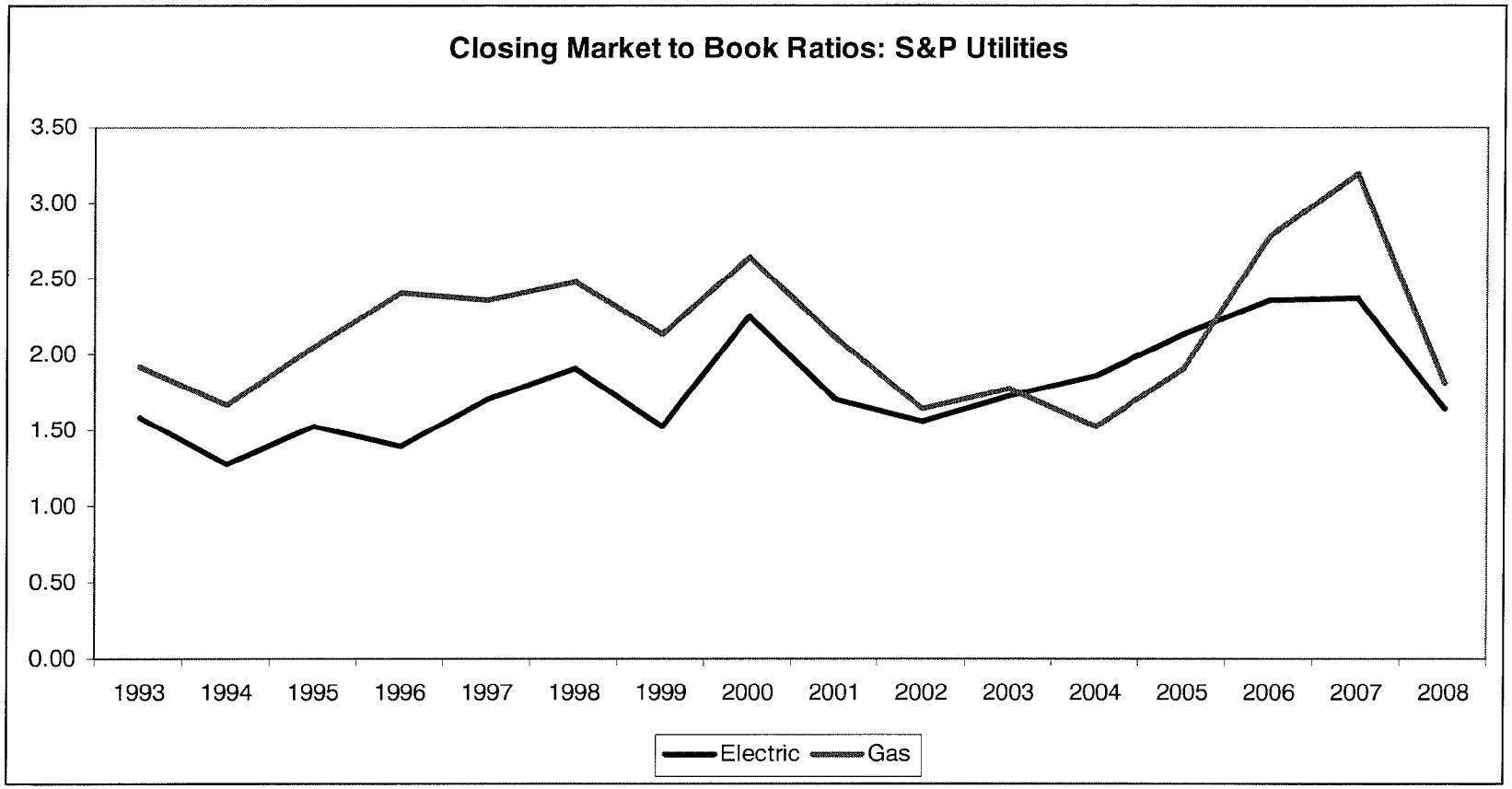
SCHEDULE 10


Debt Ratios S&P Utilities
90
85
80
75
70
65
60
55
50
45
40
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
Electric
Gas

SCHEDULE 11


Interest Coverage S&P Utilities
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008

SCHEDULE 12


Closing Market to Book Ratios: S&P Utilities
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
Electric
Gas

Appendix H

THE REGULATORY FRAMEWORK AND BUSINESS RISK

RISK

Investors are interested in the rate of return on the *market value* of their investment. This investment can be represented by the standard discounted cash flow model,

$$P_0 = \frac{ROE * BVPS * (1 - b)}{K - g}$$

where P_0 is the stock price, *ROE* the return on *book equity*, *BVPS* the book value per share, b the retention rate (how much of the firm's earnings are ploughed back in investment) and K and g are the investor's required rate of return and growth expectation respectively.[1]

Of the different sources of risk, normally the focus is on a firm's *business* risk, its *financial* risk, and its *investment* risk. For regulated utilities a fourth dimension is added, namely its *regulatory* risk. In terms of the above equation the firm's accounting return on equity **(ROE)** captures the business, financial and regulatory risk, which together I term income risk, whereas all the other factors are reflected in investment risk. Investment risk is the way in which investors react to the income risk and other macroeconomic variables like interest rates, inflation and GDP growth rates. The regulator can only directly affect the shareholder's income risk, since by definition investment risk is determined in the capital market. The bulk of the risk faced by investors in Canadian utility share is actually investment risk beyond the control of the regulator.

Business risk is the risk that originates from the firm's underlying "real" operations. These risks are the typical risks stemming from uncertainty in the demand for the firm's product resulting, for example, from changes in the economy, the actions of competitors, and the possibility of

[1] This equation is in every introductory finance textbook as *d/(K-g)* where *d* is definitionally the dividend or *ROE*BVPS*(1-b)*.

product obsolescence. This demand uncertainty is compounded by the method of production used by the firm and the uncertainty in the firm's cost structure, caused, for example, by uncertain input costs, like those for labour or critical raw or semi-manufactured materials. Business risk, to a greater or lesser degree, is borne by **all** the investors in the firm. In terms of the firm's income statement, business risk is the risk involved in the firm's earnings before interest and taxes (EBIT). It is the EBIT, which is available to pay the claims that arise from all the invested capital of the firm, that is, the preferred and common equity, the long-term debt, and any short-term debt such as debt currently due, bank debt and commercial paper.

If the firm has no debt or preferred shares, the common shareholders "own" the EBIT, after payment of corporate taxes, which is the firm's net income. This amount divided by the funds committed by the equity holders (shareholder's equity) is defined to be the firm's return on invested capital or ROI, and reflects the firm's operating performance, independent of how it is financed. For 100% equity financed firms, this ROI is also their return on equity (ROE), since by definition the entire capital investment has been provided by the equity holders. The uncertainty attached to the ROI therefore reflects all the risks prior to the effects of the firm's financing and is commonly used to measure the business risk of the firm.

As the firm reduces the amount of equity financing and replaces it with debt or preferred shares, two effects are at work: first the earnings to the common stock holder are reduced as interest and preferred dividends are deducted from EBIT and, second the reduced earnings are spread over a smaller investment. The result of these two effects is called financial leverage. The basic equation is:

$$ROE = ROI + (ROI - R_d(1-T))\,D/S$$

where D, and S are the amounts of debt, and equity respectively in terms of ***book*** values. If the firm has no debt financing (D/S =0), the accounting return to the common stockholders (ROE) is the same as the return on investment (ROI). In this case the equity holders are only exposed to business risk. As the debt equity ratio increases, the spread between what the firm earns and its borrowing costs is magnified. This magnification is called financial leverage and measures the

financial risk of the firm. The simplest way to measure this financial risk is through the debt equity ratio.

The common stockholders in valuing the firm are concerned about the total "income" risk they have to bear, which is the variability in the accounting ROE. This reflects both the underlying business risk as well as the added financial risk. If the firm operates in a highly risky business, the normal advice is to primarily finance with equity, otherwise the resulting increase in financial risk might force the firm into serious financial problems. Conversely, if there is very little business risk, as is the case with regulated utilities, the firm can afford to carry large amounts of debt financing, since there is very little risk to magnify in the first place.

Business risk is then equivalent to the variability in EBIT or the *ROI*, both of which reflect the variability in the firm's operating costs and revenues. To analyse this we normally look at how easy it is to forecast operating costs and how stable revenues are.

These comments mean that any regulatory authority has a variety of tools to manage the regulated firm's income risk. The ***first*** is it can manage the different components of business risk. The basic way that a regulatory authority can do this is by establishing deferral accounts. The essence of deferral accounts is simply to capture major forecasting errors. Instead of having the utility's stockholders "eat" any cost over runs in terms of a lower earned rate of return, the regulator can simply pass the extra costs to a balance sheet deferral account. The value of the deferral account is then charged to the ratepayers over some future time period. In this way "ratepayers" always pay the full cost of service and stockholder risk is lowered.

A **second** tool is for the regulator to alter the amount of debt financing. If the regulator feels that the firm's business risk has increased (decreased) it can reduce (increase) the amount of debt financing so that the total risk to the common stockholder is the same. Both of Canada's national regulators, the National Energy Board and the CRTC, have recognized this. When the CRTC opened up Canada's telecommunications market to long distance competition it specifically increased the allowed common equity component of the Telcos to 55% to offset their increased business risk. Similarly, when the National Energy Board decided to go to a formula based approach for the return on equity in 1994 it reviewed all the capital structure ratios for the major

oil and gas pipelines and set the oil pipelines at 45% common equity, Westcoast at 35%, and the remaining mainline gas transmission companies at 30%. In each case the different equity ratio adjusted for differences in perceived business risks.[2]

The **third** tool available for the regulator is to directly alter the allowed rate of return, so that the shareholder only earns a rate of return commensurate with the risks undertaken. The CRTC, for example, has historically allowed Northwestel 0.75% more than the other Telcos primarily due to the "ruggedness" of its operating region. The BC Utilities Commission has allowed Pacific Northern Gas a premium over its low risk utility (Terasen Gas) and the Ontario Energy Board has allowed Union Gas a small premium over Enbridge Gas Distribution Inc. Similarly the Regie allowed Gaz Metro a 0.14% increase to its ROE in 2007 while leaving its regulated equity ratio unchanged.

In my judgment it makes sense that any significant forecasting risks that are largely beyond the control of the firm should be managed though the use of deferral accounts. The reason for this is simply that they do not affect the efficiency of the utility and there are diversification gains by spreading the variability over a large number of customers. As a result, deferral accounts are a "win-win" solution as they reduce the operating risk faced by the company, thereby allowing a higher debt ratio and they lower overall cost of capital thereby benefiting customers. For this reason I have long argued that companies should have deferral accounts for the cost of short term debt, for example, since no-one can predict short term interest rates and otherwise there may be a tendency to over estimate them.

With a choice between capital structure versus ROE adjustments; my preference is to adjust for business risk in the capital structure for two main reasons. First, the market seems to consider any changes in the allowed capital structure to be a more permanent change, while it expects the ROE to change with capital market conditions. Since business risk is the primary determinant of capital structure, it is to be expected that a regulator will change an allowed capital structure relatively infrequently in response to significant changes in business risk. Second, allowing firms

[2] Westcoast was allowed a higher common equity ratio because of the greater share of non-mainline assets in its rate base. The mainline tolls were based on a 30% deemed common equity.

to chose their capital structure and then adjusting the ROE to a fair return runs the risk that although the equity holders are getting a fair rate of return the overall utility income and thus rates are too high; thus the rates are unfair and unreasonable. Moreover, it is the primary duty of the regulator to determine whether it is the rates that are fair, since that is why the utility is regulated in the first place. An extreme example would be a firm that "chooses" 100% equity financing. The regulator might then give a fair return, but rates are still unfair and unreasonable, since the company is forgoing the advantages of using debt financing.

THE IMPORTANCE OF CAPITAL STRUCTURE

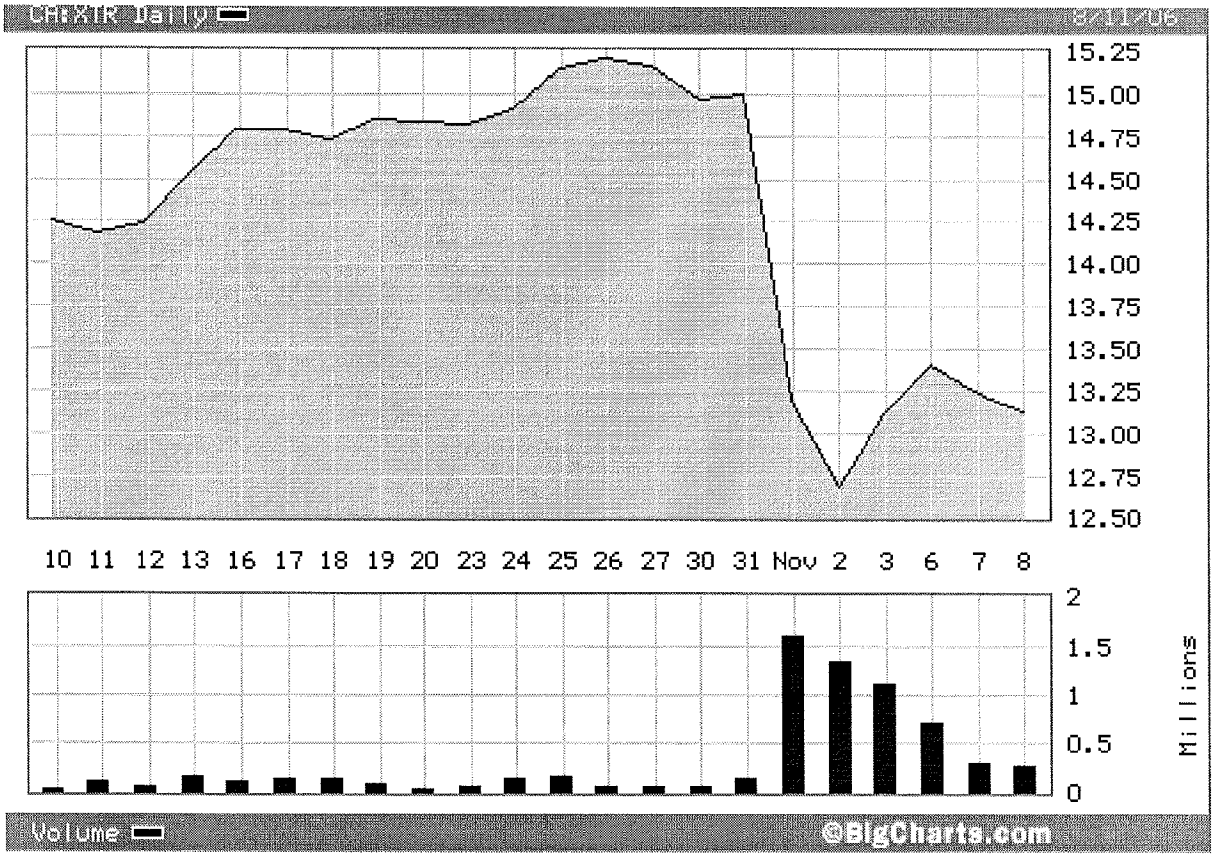
The firm's capital structure has a direct impact on the overall cost of capital as conventionally defined in finance, since equity costs are paid out of **after-tax** income, whereas debt costs are tax deductible. Hence, for example, if debt costs are 7.0% and equity costs are 9.0%, then at a 50% tax rate (for simplicity), the **pre-tax costs** are actually 18.0% for the equity (.09/(1-.50)) compared to 7.0% for the debt. Conversely the after tax costs are 3.5% and 9.0%; either way the costs of debt versus equity have to be compared on the same tax basis. It is these "same tax" cost comparisons, whether before or after tax, that competitive firms make in deciding their financing. This implies that there is an incentive for competitive firms to finance with debt: as they replace expensive equity with "cheap" debt, their cost of capital goes down. Hence, for the same fixed amount of operating income, the stockholders benefit from the tax advantage of debt financing for competitive firms.

We know that taxes are critically important in corporate finance since a huge amount of corporate financing activity is tax motivated. The announcement by the Government of Canada to change the tax status of income trusts and publicly traded limited partnerships like GMLP is a vivid reminder of their importance.

Income trusts invest in both the debt and equity of an operating company, where the debt is structured to remove the income tax liability of the operating company. The trust is then non-taxable, since it is legally the same as a mutual fund, and flows the interest on the debt, the dividends on the equity, plus other non-cash charges like depreciation, through to the trust unit holders. The income trust structure, therefore effectively removes the corporate income tax.

Income trusts have been incredibly popular in Canada, since the absence of the corporate income tax allows more income to flow through to investors. Even though the conservative government in Ottawa campaigned on 'no changes to the tax treatment of income trusts,' their hand was forced by the announcement of Bell Canada Enterprises that it was following the lead of Telus and converting to an income trust. The result was that on October 31, 2006 after the markets closed the Federal Minister of Finance, Mr. Jim Flaherty, announced that all new trusts would be subject to a 31.5% distribution tax to put them on the same tax status as corporations and that existing trusts would pay this tax in five year's time.

The importance of the income tax changes can be understood from the following graph that tracks the price of the exchange traded income trust fund, XTR.



Before the Minister of Finance's decision the income trust ETF was at $15 and the day after it had dropped to $13.25 and then on November 2 even further to $12.75 before rebounding slightly. Most analysts predicted that the tax changes would cause income trusts to drop in value

by 20-25%, but the effect varies across different trusts depending on the proportion of Canadian to foreign income and the type of income, that is, how much is return of capital and how much newly taxable income. Plus the existing trusts would only be taxed after a four year grace period, that is, in five year's time.

Regardless the price drop vividly demonstrates that the corporate income tax has a huge impact on the valuation of shares. Another way of saying this is that removing the corporate income tax by financing with debt adds of the order of 15-20% to the market value of the firm. We can see this from the fact that the exchange traded fund would sell for $15 without the corporate tax and about $13 with the tax levied in ***five year's*** time. The impact of the time until the tax is levied means that the true value of removing the corporate income tax is much greater than these price changes indicates.

Firms try to remove the corporate income tax through the judicious use of tax deductible debt financing. However, unlike income trusts, the debt is held by third parties. The beauty of the income trust structure is that the debt and equity is held by the same party (the trust) so if a firm has trouble making an interest payment it negotiates with the same party that owns the equity. However, for regular corporations the debt is owned by banks and public institutions, like pension funds etc., that are not identical to its shareholders. As a result, there are limits to the amount that firms can borrow due to the increased costs of financial distress that are associated with higher fixed financial charges. In extreme cases, the higher fixed financial charges can force a firm to be reorganised, or taken over, when it could probably have otherwise survived had it been financed with less debt. Alternatively the debt can be withdrawn or simply may not be available as a result of a credit crunch, similar to that which we are in at the moment.

As a result, it is a basic rule of corporate finance that the financial risk is **layered** on top of business risk: firms with high business risk are advised not to issue too much debt, otherwise their solvency could be jeopardised in the event of adverse market developments and financial distress. This discussion puts the utility capital structure in perspective, since utilities have the lowest business risk of just about any sector in the Canadian economy. Consequently, they should have the highest debt ratios. There are several reasons for this:

First, the costs and revenues from utility operations are very stable so that the underlying uncertainty in operating income is very low. As such financial leverage is essentially magnifying almost non-existent business risk, and zero times anything is still zero!

Second, in the event of unanticipated risks, regulated utilities are the **only** group that can go back to their regulator and ask for "after the fact" rate relief. As effective monopolies their rates can be increased in the event of financial problems, while demand is typically insensitive to these rate increases. In contrast, if unregulated corporations face serious financial problems they usually compound one another. This is because unregulated firms encounter difficulties raising capital and frequently suppliers and customers switch to alternates in the face of this uncertainty creating severe financial distress.

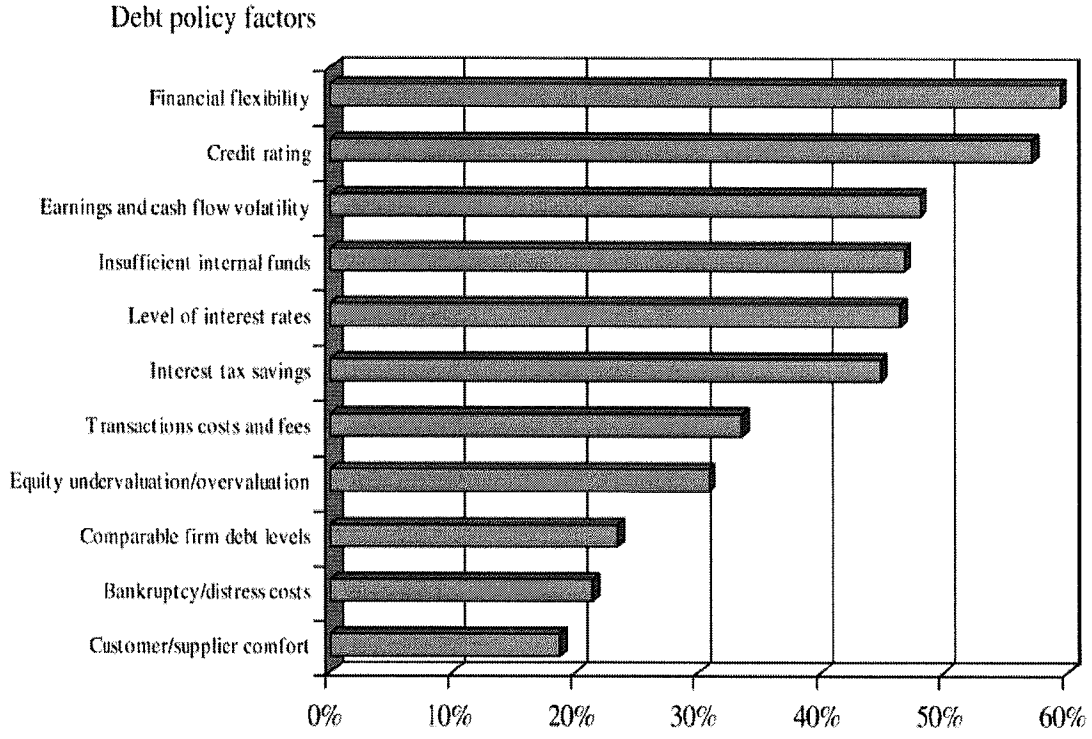
Third, the major offset to the tax advantages of debt is the risk of bankruptcy. In liquidation there are significant external costs that go to neither the equity nor the debt holders. These costs include "knock down" asset sales, the loss of tax loss carry forwards, and the reorganisation costs paid to bankruptcy trustees, lawyers etc. This causes non-regulated firms to be wary of taking on too much debt, since value seeps out of the firm as a whole. In contrast, it is impossible to conceive of most utilities ripping up their assets to sell them for scrap.

Finally, most private companies have an asset base that consists largely of intangible assets. For example, the major value of Nortel was its growth opportunities; of Coca Cola its brand name; of Merck its R&D team. It is extremely difficult for non-regulated firms to borrow against these assets. Growth opportunities have a habit of being competed away; brand names can waste away, while R&D teams have a habit of moving to a competitor. Regulated utilities in contrast largely produce un-branded services and derive most of their value from tangible assets. Unlike intangible assets, tangible assets are useful for collateral, for example in first mortgage bonds, and are easy to borrow against.

Consequently, utilities have very low business risk; have reserve borrowing power by being able to return to the regulator, minuscule bankruptcy/distress costs and hard tangible assets that are easy to borrow against. In fact, utilities are almost unique in terms of their financing possibilities,[3] and are prime candidates for using large amounts of debt to utilise their very significant tax advantages.

[3] When we analyse corporate financial decisions we normally include a number of explanatory variables and then add a "dummy" variable for whether or not the industry is regulated, since the mere fact of regulation is frequently the most significant feature of a firm's operations.

The above ideas are standard in financial practise. Two prominent finance researchers at Duke University in the US[4] surveyed a large number of CEOs and produced the following table of factors mentioned in capital structure decisions.

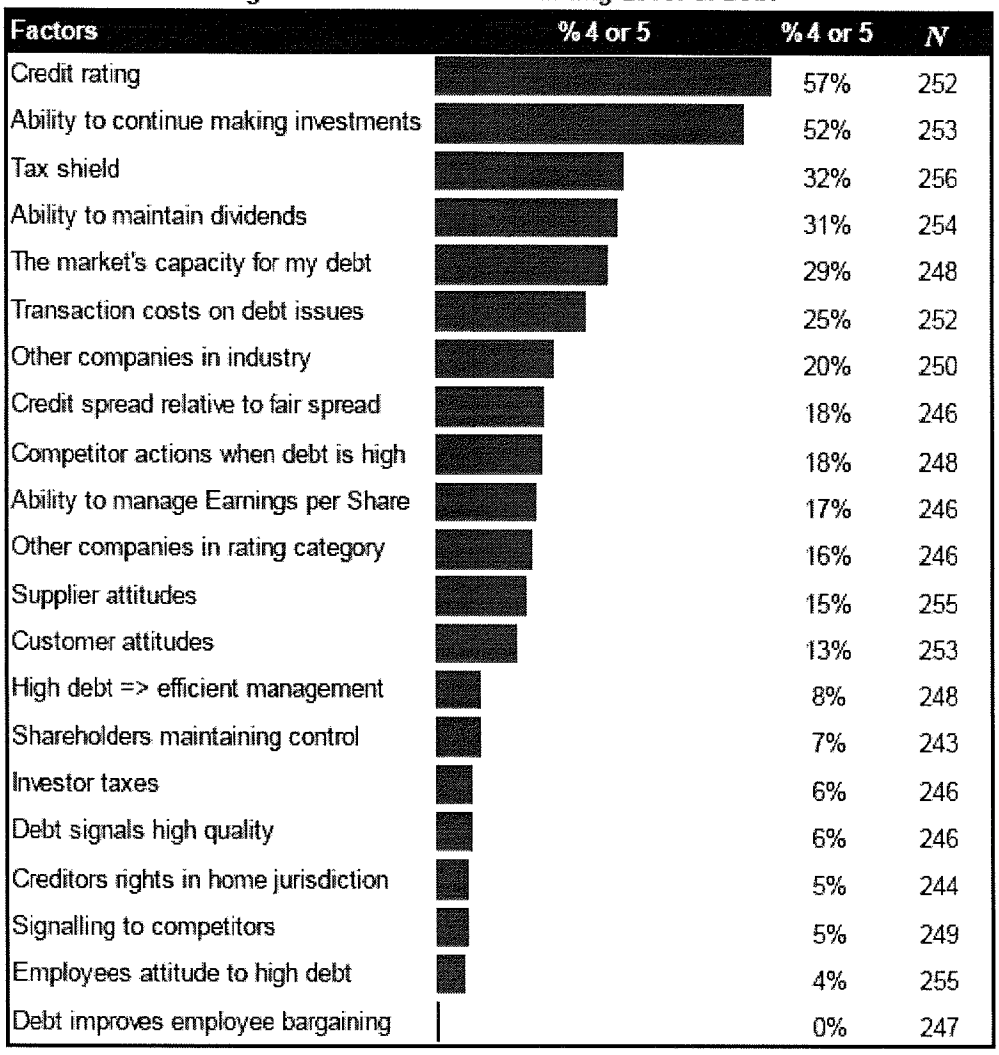


The most important factor was financial flexibility, which is loosely whether the use of debt inhibits the firm from undertaking its corporate mission and is essentially the risk of financial distress. The second factor is simply the credit rating while the third is the firm's business risk. The fourth factor is the firm's need for funds and the fifth the cost of debt. The sixth factor is the tax shield savings from using debt. After this the importance of the reasons drops off, but broadly these criteria amount to: need for funds, business risk, tax savings, financial distress and market access (through credit ratings), which are the factors discussed above.

[4] John Graham and Campbell Harvey, "Theory and practice of Corporate Finance: Evidence from the field," Journal of Financial Economics-60, 2001, pp 187-243.

In 2006 Deutsche Bank published a study Corporate Capital Structure, January 2006 with a review of the basic principles for determining corporate use of debt and the results of their survey of chief financial officers with the following relevant results on page 42.

Figure 21: Factors in Determining Level of Debt



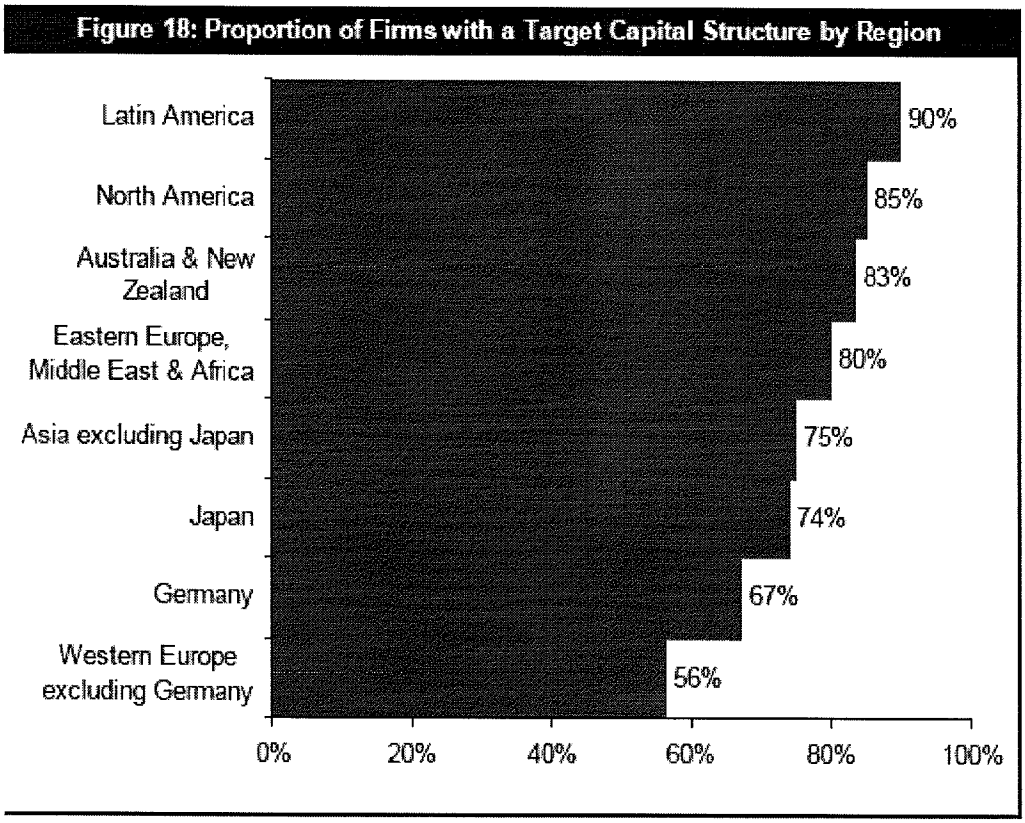
Factors	% 4 or 5	% 4 or 5	N
Credit rating		57%	252
Ability to continue making investments		52%	253
Tax shield		32%	256
Ability to maintain dividends		31%	254
The market's capacity for my debt		29%	248
Transaction costs on debt issues		25%	252
Other companies in industry		20%	250
Credit spread relative to fair spread		18%	246
Competitor actions when debt is high		18%	248
Ability to manage Earnings per Share		17%	246
Other companies in rating category		16%	246
Supplier attitudes		15%	255
Customer attitudes		13%	253
High debt => efficient management		8%	248
Shareholders maintaining control		7%	243
Investor taxes		6%	246
Debt signals high quality		6%	246
Creditors rights in home jurisdiction		5%	244
Signalling to competitors		5%	249
Employees attitude to high debt		4%	255
Debt improves employee bargaining		0%	247

Q3.2: "How important are the following factors in determining the appropriate level of debt for your company?" Scale is Not Important (0) to Very Important (5).

The questions that Deutsche Bank asked are different from those of Graham and Harvey, but the ideas are the same. Again we see the importance of credit ratings (market access), ability to continue to make investments (financial flexibility and fear of distress), tax shields etc. Overall

both these surveys reinforce the basic "static trade-off" model that firms balance the tax advantages of debt against the restrictions it imposes on their activities and the fear of financial distress. As a result they have an optimal or target capital structure.

On page 37 of their report Deutsche bank had the following table



Fully 85% of North American firms reported that they had a target capital structure, second only to firms in South America. Why this is important is that this target capital structure represents the trade off of the factors discussed above and reinforces the academic literature that has modelled this trade off.[5] However, note that the major offsets mentioned to the use of debt, such as credit ratings, financial flexibility, ability to continue making investments etc are all of lesser importance for utilities because of the regulatory protection they enjoy.

[5] Note that as discussed above, this does not mean that this target is constant.

BUSINESS RISK AND CAPITAL STRUCTURE

The risk of a utility can be measured by its ability to earn its allowed ROE since ultimately all risk has to result in inadequate financial performance.[6] In Schedule 1 is a table of earned vs allowed ROEs for the pipelines that are part of TransCanada Corporation from their annual surveillance reports and answers to information requests.[7] There is a minor distinction between full cost of service pipelines regulated by the National Energy Board and those regulated on a forward test year basis. Foothills, for example, bills its shippers for its full costs and usually exactly earns its allowed ROE, to the extent that until very recently it only reported one number in its surveillance reports to the NEB. However, for the last three years Foothills has been under incentives that have allowed it to suddenly find costs savings and over-earn its allowed ROE by about 0.50%. The TransCanada BC system (formerly ANG and now integrated with Foothills) is regulated on a similar basis to Foothills and also has a long history of earning its allowed ROE, but under earned in 2001, 2003 and 2006. However, in none of these years was the under earning due to operational problems. Consequently, I have always regarded Foothills and the TransCanada BC System as the lowest risk regulated entities in Canada, since there is very little income risk from their regulated operations. With very little business risk, both these pipelines can finance with large amounts of debt, in fact prior to RH-2-94 they were financed with less than 30% common equity with the balance conventional debt. After 1994 they were had 30% common equity and more recently 36% as a result of settlement agreements with the shippers.

Unlike these two pipelines the TransCanada Mainline and TQ&M are regulated on a forward test year basis. This leaves the companies exposed to forecasting risk where the actual revenues and expenses may deviate from those expected and included in the revenue requirement. However, the use of deferral accounts and long term contracting with shippers that pay fixed demand charges, regardless of whether or not they ship, significantly reduces this forecasting risk. The result is that both the TransCanada Mainline and TQ&M consistently over-earn their allowed

[6] Normally I look at short run versus long run, since for the gas pipelines there is long run recovery risk associated with the supply risk from Western Canada. This is not a factor for NP.

[7] CAPP-NGTL 25g provides the results since 1994.

ROEs. Over this period the Mainline only failed to earn its allowed ROE once and on average over-earned by 0.25%, whereas TQ&M over-earned by 0.35% and never once failed to earn its allowed return.

In Schedule 2 is similar data for Union Gas, EGDI, Terasen Gas (TGI), Gaz Metro (GMI) and ATCO Gas. This data was provided by Ms. McShane in CA-NP-28 except that for Gaz Metro which was provided by the company in answer to IR 21.3 of the Regie D'Energie. Note that the latter answer provides different data to Ms. McShane since she includes the effect of incentives in the allowed ROE, which is thus over stated. This can be easily be confirmed by comparing the allowed ROEs across the different gas utilities. The data for Union and EGDI is based on weather normalised ROE's, since these utilities are not allowed deferral accounts for variances due to weather. In contrast, TGI and GMI are both allowed comprehensive weather normalization accounts with TGI's being particularly comprehensive. Of note is that TGI's "over-earning" is similar to that of the TransCanada Mainline.[8] In contrast Union and EGDI do not have as many deferral accounts and over-earned to a much higher degree than the TransCanada Mainline or TGI, let alone the full cost of service pipelines. GMI's situation is different. It exactly earned its allowed ROE until the Regie allowed it a series of incentive awards that have subsequently allowed it to over earn.

If risk is the possibility of incurring harm or a loss, the insight from the data in Schedules 1 and 2 is that regulated utilities in Canada have very little risk. It is also interesting that the degree of over earning decreases with the use of deferral accounts. The full cost of service pipes can be regarded as having 100% protection, since they neither over nor under-earn except if allowed "incentives." The Mainline and TQ&M have limited room to improve their earnings, since so many of their revenues and expenses are fixed. Similarly TGI, with comprehensive deferral accounts, looks a lot like the NEB forward test year pipes in having little room to over-earn. In contrast, the two Ontario LDCs with fewer deferral accounts have over-earned the most followed by GMI with its incentive regulation. However, none of these utilities have experienced anything that can be described as business risk over these time periods.

[8] Since 1998 Terasen's actual ROE is prior to earning sharing.

It is also interesting to contrast the general utility performance with the utility holding companies (UHC) that actually face the market. Schedule 4 shows the annual earned ROEs and the estimated variability of the ROE over the period 1993-2008 for the major utility holding companies (UHCs) and pure play utilities in Canada. The ten utilities include the eight main public UHCs in Canada as well as the TransCanada Mainline and Foothills and Terasen for historic reasons. Foothills was added since it is regulated on a cost of service basis where under or over collection is periodically trued up so that Foothills normally earns its cost of service. The TransCanada Mainline was added since its ROE has not been as affected by negotiated settlements.

Of note is that although I use variability as indicative of risk for utilities, it is not a measure of business risk since it reflects both the impact of financial leverage and also the change in the allowed ROE. For example if the allowed ROE is changed for a utility, and as a result its earned ROE also changes, this can not be regarded as risk since the variability is not coming from the firm's operations but simply regulatory changes. However, several points are important: first for TransCanada Corporation (TCPL) the holding company has twice the variability of the regulated Mainline. This is what we would expect as TransCanada's unregulated operations have traditionally been much riskier. Second both Foothills and the TransCanada Mainline have less variability than any of the public UHCs, which confirms the fact that risk measures taken from these publicly traded UHCs over states the risk of regulated utility operations.

The final column is the previously discussed ROE for Corporate Canada. This ROE reflects all corporate activity in Canada and thus the effect of owning a small piece of everything. As such it reflects full diversification of risk across all Canadian corporations. Previously I used representative ROEs from the biggest companies in Canada, but many of these are quite risky, so comparing a regulated utility to say Rogers Communication, Nortel, or RIM produces estimates of only 10-20% as risky as the typical TSX60 firm. More importantly such a comparison ignores the fact that individuals hold diversified portfolios and the measure of risk is relative to a diversified portfolio. For these reasons I use the variability in the Corporate Canada ROE as a benchmark even though this overstates the risk of a Canadian utility relative to an individual firm.

In the last row but one is the standard deviation of each utility's ROE divided by that of Corporate Canada. So for example CU Ltd's ROE has a standard deviation of 1.21 over this period, divided by that of Corporate Canada of 2.68 gives a relative risk ranking of 0.45. This means that CU LTD's ROE is only 45% as variable as that of Corporate Canada as a whole. Looking across the range of UHC and utilities we see that the TransCanada Mainline and Foothills as the purest utilities have about 40% of the risk of Corporate Canada. At the other extreme TransAlta has the highest variability at 1.76, which is what we would expect given that it has divested itself of most of its ROE regulated assets. The other relative risky operations are PNG, which is generally regarded as the riskiest utility in Canada, Enbridge and TransCanada Corporation. Overall the relative risk ranking makes broad sense with the purest UHCs, like CUL, Emera and Fortis having relative risk rankings closer to that of the two purely regulated operations.

However, this analysis misses a very important fact. This is that the performance of the UHCs tends to occur at different stages of the business cycle than that of Corporate Canada as a whole. Note that there were serious recessions/slowdowns in the early 1990s and 2000s when Corporate Canada earned sub par ROEs. However, the earnings of the UHCs scarcely skipped a beat and some like CUL and GMI had record high ROEs. What this indicates is that we need to take into account when the high and low ROEs occur. This is because UHCs are widely regarded as defensive stocks that do just as well in a recession and thus act as a "safe harbour." To measure this I estimate their ROE beta, which is the sensitivity of their ROE to that of Corporate Canada. This ROE beta is estimated in the same way as for their stock market betas and is in the last row in Schedule 4. This beta indicates that for the purest regulated utilities the ROE betas are negative! The negative beta indicates that utility earnings are not sensitive to the business cycle, which is why they are defensive and low risk.

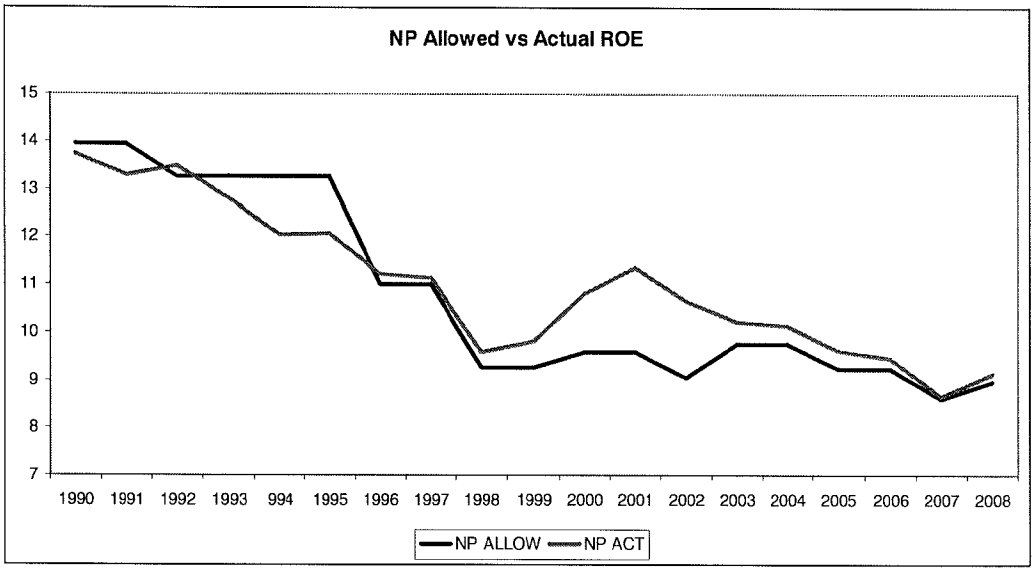
It is clear from this analysis that utilities invariably earn their allowed ROE; that they have less variability than the diversified group representing corporate Canada as a whole; and their earnings are contra cyclical. All of which is another way of saying they are low risk. This indicates that there is minimal short run risk facing Canadian utilities. Moreover the increasing

use of deferral accounts and the removal of the merchant function are also factors decreasing the typical utility's future short run risk.

NEWFOUNDLAND POWER

I tend to use the Gas LDCs as comparators since they are the bulk of the larger independent privately owned companies. In contrast the electricity industry is still dominated either by vertically integrated companies or provincial owned enterprises. Further it is my judgement that they are reasonable proxies as illustrated in my main testimony, where I showed that the allowed ROE for NP has historically tracked that allowed the five big Gas LDCs. If the different regulatory bodies feel that they have equalised their business risk with offsetting financial risk then they can be awarded similar ROEs as the graph shows they are.

If we look specifically at NP we can see that similar to the gas LDCs NP consistently over earns its allowed ROE.



It is 14 years since NP last failed to earn its allowed ROE and over this period its average over earning is 57 bps, whereas since 1990 it is 21 bps. We can discuss the minutia of NP's business risk in terms of the demand elasticity of electricity, its customer rate classes and the Newfoundland economy etc, but ultimately these sources of risk have to show up in NP's ability

to earn its allowed ROE. Here it has to be emphasised that risk means the probability of incurring harm, which in a financial sense is losing money. The objective evidence is that NP has not experienced any risk since 1995 and is a very low risk utility. Based on a comparison of NP's over earning it would be very similar to the gas LDCs particularly Terasen Gas and Gaz Metro both of which have comprehensive weather normalisation accounts.

The low risk assessment for NP is due to two major factors: basic business economics and regulation. In terms of ***basic economics*** NP reports the following summary of its revenue requirement for 2010 (Filing page 4-3):

Table 4-1
Summary of 2010 Revenue Requirements
($000s)

Power Supply Cost	351,942
Operating Costs (including OPEBs)[5]	63,820
Depreciation & Related Amortization[6]	47,202
Income Taxes	21,167
Return on Rate Base	79,383
2010 Revenue Requirement	**563,514**
Deductions[7]	(18,202)
2010 Revenue Requirements from Rates	**545,312**

Of its $563.5 million gross revenue requirement $351.9 million is a pass though of power costs, since the Rate Stabilisation Account (RSA) captures changes in the cost and quantity of fuel used to generate electricity for NP. These differences are then disposed of in the subsequent twelve month period. Of the balance, fixed financial costs of depreciation and amortisation, income taxes and return amount to $148 million leaving the only item that is subject to significant forecasting error the operating costs. Without accepting the revenue requirement as fair or reasonable, the critical point is the very low variable costs, since even the operating costs are in

part mainly period costs, like maintenance etc, that can be partially reshuffled from one period to another in the face of unexpected costs.

NP's low cost uncertainty is combined with very low revenue uncertainty. 87% of NP's customers are residential which generates 60% of NP's revenues, with the balance commercial and for street lighting.[9] Although this residential demand is inherently seasonal, since much of it stems from space heating a weather normalisation reserve captures deviations caused by weather fluctuations from normal. The following table is from NP's 2008 Annual Information Form filed with the Ontario Securities Commission.

	Revenue [1]				Electricity Sales [1]			
	2008		2007		2008		2007	
	Smillions	%	Smillions	%	GWh	%	GWh	%
Residential	304.6	58.9	287.8	58.5	3,130	60.1	3,044	59.8
Commercial	180.1	34.8	177.0	36.0	2,041	39.2	2,013	39.5
Street Lighting	12.7	2.5	12.3	2.5	37	0.7	36	0.7
Other [2] [3]	19.5	3.8	14.6	3.0	-	-	-	-
Total	516.9	100.0	491.7	100.0	5,208	100.0	5,093	100.0

This low risk assessment is enhanced by the fact that NP operates in a mature stable market. In Table 2-12 NP indicates that capital expenditures for the period 2007-2010 are essentially flat, but slightly higher than the annual depreciation expense, while in Table 3-3 sales growth is under 2.0%, which is the mid point of the Bank of Canada's operating band. This implies zero real growth in NP's revenues. With stable sales and rate base growth as well as a mature market, NP's forecasting problems are "de minimus" compared to other expanding utilities in Canada like the ATCO Companies in Alberta.

The low growth, stable, operating environment for NP also means minimal external funds needs since growth is usually the prime factor determining long run external funds needs. In its 2008 Annual Report NP states

[9] NP serves 85% of the province's electricity customers.

> The Company has historically generated sufficient annual cash flows from operating activities to service annual interest and sinking fund payments on debt, to pay dividends and to finance a major portion of its annual capital program. Additional financing to fully fund the annual capital program is obtained through the Company's bank credit facilities and these borrowings are periodically refinanced along with any maturing bonds through the issuance of long-term first mortgage sinking fund bonds. The Company currently does not expect any material changes in these basic cash flow and financing dynamics over the foreseeable future.

Note that NP uses its cash flow from operations partly to meet its sinking fund payments. These are periodic payments made to repay debt, so that the full amount of debt does not come due at maturity. As this debt is repaid all else constant it opens up debt capacity for new borrowing, so that a lot of NP's debt financing is simply refinancing of debt paid off through sinking fund payments. As NP states, it does this by first drawing down on its bank lines of credit until the balance is large enough to issue more First Mortgage Bonds.

In its Annual Information Form (AIF) and Annual Report (AR), NP states that its bond ratings are stable at A from DBRS and Baa1 from Moody's and that "it does not expect any material adverse actions by the rating agencies in the near term." Indeed, on August 3, 2009 Moody's upgraded NP from Baa1 to A2; a two notch jump where a notch is a change in a modifier to the basic rating. Moody's did this primarily for technical reasons since it regards NP's "issuer" rating as Baa1, but had not traditionally provided the normal one notch lift when applied to *secured* debt such, as NP's first mortgage bonds. It further modified this because of a decision to accord more weight to secured as opposed to unsecured debt and the fact that NP had negotiated a removal of the "material adverse change" (MAC) clause from its bank lines. Essentially, when a MAC is in a bank line it gives the bank the flexibility to not honour its commitments if it feels that the credit-worthiness of the borrower has deteriorated. As a result its removal provides slightly more security to the bond holders in the sense that it increases NP's short term borrowing capacity under all possible situations.

With the Moody's upgrade to A2 it places NP's bonds at the same rating as the secured bonds issued by Terasen Gas. From Ms. McShane's Schedule 3 no Canadian utility has a higher bond rating than the A2 accorded NP by Moody's. Similarly with an A rating from DBRS, only three issuers have a higher rating: CU Inc's unsecured debt is rated A(High) as is Hydro One's and Enbridge Pipeline's.

In terms of the interest coverage ratio NP's pre-tax interest coverage in 2008 was over 2.5 but is projected to fall in line with a decline in the ROE and high embedded debt costs. I am aware that there has been a preference for a target interest coverage ratio of 2.5X. However, this exceeds the level of interest coverage of other "A" rated Canadian utilities and there is no objective reason for it. As the level of interest rates and allowed ROEs have fallen there is a natural compression of the interest coverage ratio as the embedded debt cost only falls with a lag. This is not a cause for alarm, but is a natural result of a declining interest rate environment. Pre-tax interest coverage will also fall as the effective income tax rate falls. The fact is that there only needs to be a dollar of pre-tax EBIT (earnings before interest and tax) to pay for a dollar of interest and what is important is the riskiness of this EBIT, which for NP is minimal. As long as NP meets the conditions in its trust indenture it can issue first mortgage bonds and if there are temporary problems it has access to its line of credit.

Overall NP has better market access than the typical Canadian utility and there should be no concerns about its financial health on its current formula ROE and deemed capital structure. In "normal" times I would recommend that NP's common equity ratio be trimmed back to the 35-40% level that is more typical of a low risk predominantly local distribution company. However, given the stage in the business cycle and the fragility in the markets I don't judge now to the correct time for this and would recommend that NP maintain its 45% common equity ratio. However, it is quite amazing given NP's financial health that it is proposing that its pre-tax equity cost (Net Income plus income taxes) increase by over 60% from the existing $38.549 million to $62.9 million. Well over half the requested 6.1% increase in rates is due to this excessive increase in net income and associated taxes.

The second reason for the low risk assessment is that the major component of utility risk is the attitude of the regulator, since almost all aspects of a utility's operations in Canada are reviewed and approved by the regulator. In this respect it is a gross misnomer to refer to regulatory *risk*. In my judgment the nature of regulation in Canada has been to protect the utility and is entirely different from practises in the United States. In the years since the RH-4-94 decision by the NEB and the adoption of formulaic ROEs, Canadian utilities have continued to consistently over-earn. In fact with the adoption of settlements and incentive regulation most utilities have increased

their over-earning by cutting costs that they should have cut without incentives. Consequently, it is difficult to see how Canadian utilities have in general been exposed to increased risk.

Further, I have heard many company witnesses discuss "increases" in risk faced by various regulated utilities since I first testified in 1985. However, the ability of Canadian regulated utilities to earn their allowed ROE has not been impaired and I have yet to see ***any*** of these risks materialise to significantly harm a Canadian utility. In this respect it is my judgement that the risks brought forward on behalf of utilities have, or will be, largely transferred to ratepayers if and when they ever materialise.

The history of regulation in Canada is that when risks arise to potentially cause losses to utilities they are invariably transferred to rate payers as part of the dynamics of regulation. This dynamic is illustrated through:

- the adoption of forward test years;
- the removal of the commodity charge through fuel pass throughs for LDCs;
- the removal of the merchant function;
- the adoption of weather related deferral accounts;
- increasing focus on the core service where the utility has market power;
- the reduction in regulatory lag;
- increased fixed charge component in rates
- the adoption of ROE formula adjustments;
- review of depreciation studies when stranded asset risk changes;
- flexible hearings to review unique risks.

All these policies have served to reduce the risk of regulated utilities in Canada. The fact is that regulation is a flexible process that moderates or shares these risks even if they do materialise to the extent that the regulated utility is rarely hurt. A case in point is Pacific Northern Gas (PNG), which I regard as the riskiest regulated utility in Canada.

There is no doubt that PNG is extremely risky. It operates a tiny 600 kilometre pipeline from the Westcoast Transmission system through to Western British Columbia, where the economy is heavily dependent on forest products and a few cyclical industries. Until November 2005 almost 70% of PNG's throughput went to a few industrial customers with one, Methanex,

overwhelmingly important. Unfortunately, Methanex closed its doors in November 2005 and PNG lost the load. Such a loss of load dwarfs anything that could conceivably affect Gaz Metro.

How has the BCUC responded to PNG's serious problems? In the first place the BCUC almost immediately allowed PNG a 0.65% premium to the ROE as well as more common equity than that allowed its low risk benchmark (Terasen Gas). These more favourable financial parameters have been allowed on an ex ante or before the fact base to reflect PNG's potential problems, since the risks attached to PNG's dependence on a limited number of industrial customers have been known for a long time. That is, PNG's shareholders were rewarded for its greater risk ex ante or before they materialised. However, as the risk increased the BCUC then allowed PNG a series of deferral accounts. First a comprehensive revenue stablisation adjustment mechanism (RSAM) to remove weather induced variability in PNG's earnings. Second an industrial customer deliveries deferral account (ICDDA) to recover any deviations of actual deliveries from those forecast for PNG's large industrial customers. PNG has also taken $5.05 million of Methanex related assets out of its rate base and put these into a special deferral account to be recovered from other customers over a ten year period. Finally the BCUC approved in principle the conversion of PNG into an income trust to help reduce costs

The important fact to note is the active participation of the regulator, the BCUC, in helping PNG cope with a huge company threatening event. For example, although Methanex accounted for 62% of PNG's throughput the BCUC allowed PNG to offer a special discount rate for Methanex and rebalance its rates. As a result, before it closed Methanex only accounted for 7.6% of PNG's operating revenues, even though it was 62% of PNG's throughput. As the Methanex related assets are recovered from other customers it emphasises the fact that a regulated utility only faces two basic risks: short run forecasting risk and the possibility of a "death spiral."

The example of PNG illustrates the basic proposition that regulation shields the utility from many of the problems it ostensibly faces. The reason is that should these risks arise the utility invariably goes to the regulator and gets the costs allocated to ratepayers. Another more recent example is the potential liability to EGDI caused by the Supreme Court of Canada with respect

to a 5% late payment penalty, a penalty which breached the criminal code in terms of a fair rate of interest. On page 3 of the October 31, 2006 MD&A EGDI simply states

> "The company intends to apply to the OEB for recovery of the proposed payments resulting from the settlement of this action."

That is, that the settlement of this liability would not be paid by shareholders but simply passed on to ratepayers. Further in 2008 the OEB did allow EGDI to recover these costs and was supported in this decision by the Consumers Association of Canada. Again this demonstrates the dynamics of Canadian regulation and that most risks end up not with the shareholders but ratepayers.

As the actual versus allowed ROE data for the major utilities indicates none of the risks advanced in regulatory hearings involving those utilities have materially harmed their shareholders. Consequently, in my judgement utilities in Canada claim higher ROEs and common equity ratios on the basis of risks that they do not in fact bear. Moreover, in the future I expect this to continue and any future risks, should they materialise, will similarly be allocated to ratepayers and not to shareholders.

CONCLUSION

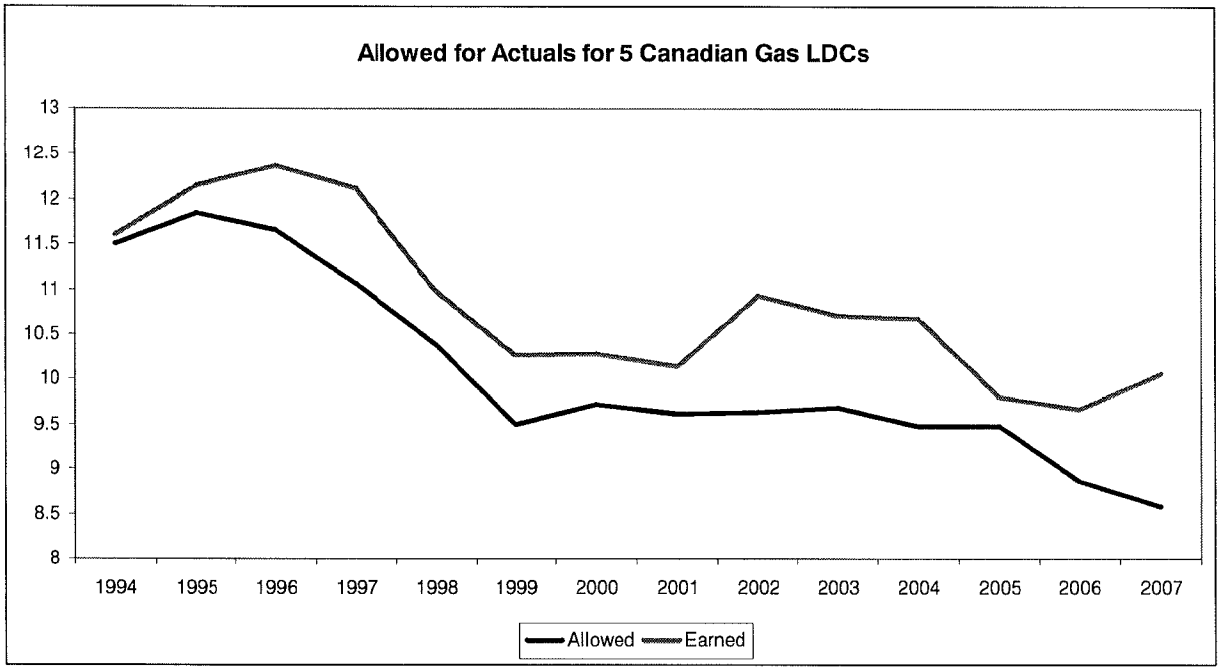
NP is a typical low risk Canadian utility. Its ability to (over) earn its allowed ROE is similar to that of other Canadian utilities and there is no indication that it has been exposed to any material risks for the last 14 years. Its bond rating is amongst the highest in Canada primarily because it is allowed a 45% common equity ratio and issues first mortgage bonds, whereas most of the larger utilities issue unsecured medium term notes and have 35-40% common equity. A direct consequence of this is its marginally higher pre-tax interest coverage ratio and good financial market access. There is nothing in NP's business risk to indicate any change in its allowed risk premium: on the contrary given its lower financial risk a case can be made for a smaller risk premium relative to its peer group.

EARNED ROE vs ALLOWED

		Mainline		Foothills	TCPL BC (ANG)			TQM
	Allowed	Actual	Allowed	Actual	Allowed	Actual	Allowed	Actual
1990	13.25	13.34	14.25	14.25	13.25	13.25	13.75	14.87
1991	13.5	13.65	14.25	14.25	13.38	13.38	13.75	13.94
1992	13.25	13.43	13.83	13.83	13.43	13.43	13.75	13.97
1993	12.25	12.31	11.73	11.73	12.08	12.08	12.25	12.5
1994	11.25	11.16	11.5	11.5	12	12	12.25	12.55
1995	12.25	12.56	12.25	12.25	12.25	12.25	12.25	12.65
1996	11.25	11.83	11.25	11.25	11.25	11.25	11.25	11.83
1997	10.67	11.15	10.67	10.67	10.67	10.67	10.67	10.94
1998	10.21	10.63	10.21	10.21	10.21	10.21	10.21	10.32
1999	9.58	9.64	9.58	9.58	9.58	9.58	9.58	9.94
2000	9.9	9.99	9.9	9.9	9.9	9.9	9.9	9.96
2001	9.61	9.72	9.61	9.61	9.61	6.86	9.61	10.21
2002	9.53	9.95	9.53	9.53	9.53	9.53	9.53	9.8
2003	9.79	10.18	9.79	9.79	9.79	8.21	9.79	10.21
2004	9.56	9.83	9.56	9.56	9.56	9.56	9.56	9.84
2005	9.46	9.66	9.46	10.14	9.46	9.46	9.46	9.92
2006	8.88	8.92	8.88	9.53	8.88	8.47	8.88	8.99
2007	8.46	9.13	8.46	8.89	8.46		8.46	8.74
Average	10.70	10.95	10.82	10.92	10.74	10.59	10.83	11.18
ovrearn		0.25		0.10		-0.14		0.35

Earned vs Allowed ROE

		EGDI		UNION		Terasen		GMI	ATCO Gas	
	Allowed	Actual	Allowed	Actual	Allowed	Actual	Allowed	Actual		
1990	13.25	13.60	13.50	13.40			14.25	14.25		
1991	13.13	13.29	13.50	12.50			14.25	14.25		
1992	13.13	13.40	13.00	13.70	12.25	9.06	14	14		
1993	12.30	14.43	12.50	14.30	na	11.91	12.5	12.5		
1994	11.60	12.49	11.75	12.14	10.65	9.73	12	12.04		
1995	11.65	12.66	11.75	12.12	12.00	12.03	12	11.78		
1996	11.88	13.14	11.75	12.52	11.00	11.80	12	12.04		
1997	11.50	13.00	11.00	12.28	10.25	11.27	11.5	11.9		
1998	10.30	11.97	10.44	11.14	10.00	9.70	10.75	11.09		
1999	9.51	10.77	9.61	10.10	9.25	9.97	9.64	10.22		
2000	9.73	10.83	9.95	10.11	9.50	10.12	9.72	10.06		
2001	9.54	10.03	9.95	11.45	9.25	9.31	9.6	10.38	9.75	9.58
2002	9.66	11.81	9.95	12.38	9.13	10.03	9.67	10.67	9.75	9.77
2003	9.69	9.74	9.95	12.08	9.42	10.23	9.89	10.82	9.50	10.68
2004	9.69	10.66	9.62	11.51	9.15	9.31	9.45	11.47	9.50	10.42
2005	9.57	9.46	9.62	10.99	9.03	10.09	9.69	10.51	9.50	8.00
2006	8.74	8.86	8.89	10.28	8.80	9.82	8.95	9.66	8.93	9.74
2007	8.39	9.78	8.54		8.37	9.55	9.05	9.91	8.51	11.02
Average	10.74	11.66	10.85	11.94	9.87	10.25	11.05	11.53	9.35	9.89
Overearn		0.93		1.09		0.38		0.48		0.54


Allowed for Actuals for 5 Canadian Gas LDCs
13
12.5
12
11.5
11
10.5
10
9.5
9
8.5
8
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Allowed
Earned

	CU Ltd	Emera	Enbridge	Fortis	GMI	PNG	Terasen	TransAlta	TCPL	Mainline	Foothills	Canada
1993	13.37	12.02	17.53	11.84	19.29	12.92	10.82	16.00	14.01	12.31	11.73	3.81
1994	13.71	11.90	9.59	10.71	19.73	13.44	7.24	15.10	12.86	11.16	11.5	6.7
1995	14.12	11.55	16.91	10.74	19.50	11.77	8.51	14.00	13.20	12.56	12.25	9.77
1996	14.86	10.59	14.47	9.61	19.91	13.32	17.59	13.24	12.33	11.83	11.25	10.35
1997	14.87	10.56	14.04	9.43	18.91	13.32	8.34	12.84	11.25	11.15	10.67	10.93
1998	14.75	9.47	13.25	7.16	19.11	10.14	12.09	16.41	7.04	10.63	10.21	8.78
1999	14.54	10.83	13.35	8.56	17.66	10.79	13.35	4.88	7.42	9.64	9.58	9.88
2000	15.44	10.88	15.65	9.71	17.93	9.75	15.16	8.14	8.44	9.99	9.9	10.93
2001	14.96	10.58	14.90	12.25	17.45	7.50	10.26	7.23	10.89	10.01	9.61	7.42
2002	17.56	6.65	10.11	12.24	18.91	5.94	9.59	2.31	11.93	9.95	9.53	5.67
2003	13.71	9.77	17.31	12.28	18.05	7.59		8.67	12.80	10.18	9.79	9.64
2004	15.19	9.80	16.43	11.25	18.21	6.97		5.97	15.49	10.18	9.56	11.63
2005	12.24	9.03	13.90	12.39	16.94	8.34		7.45	17.56	9.66	9.46	12.71
2006	14.24	9.07	14.26	11.83	15.80	5.86		1.81	14.10	8.92	8.88	14.18
2007	15.96	10.93	14.53	9.96	13.31	5.00		13.07	13.99	9.13	8.46	12.04
2008	15.67	9.92	22.69	8.68	16.57	6.79		9.77	12.70		8.71	10.38
STDEV	1.21	1.32	3.04	1.59	1.71	2.97	3.28	4.72	2.80	1.10	1.12	2.69
Ratio	0.45	0.49	1.13	0.59	0.64	1.11	1.22	1.76	1.04	0.41	0.42	
Beta	-0.05	-0.07	0.20	-0.08	-0.36	-0.40	0.43	-0.57	0.23	-0.22	-0.21	

Ratio is the simple ratio of the standard deviation of the UHC ROE to that of Corporate Canada

Beta is the regression coefficient of the Utility ROE against that of Corporate Canada.