

FAIR RETURN FOR MARITIME ELECTRIC COMPANY

Before the Island Regulatory and Appeals Commission

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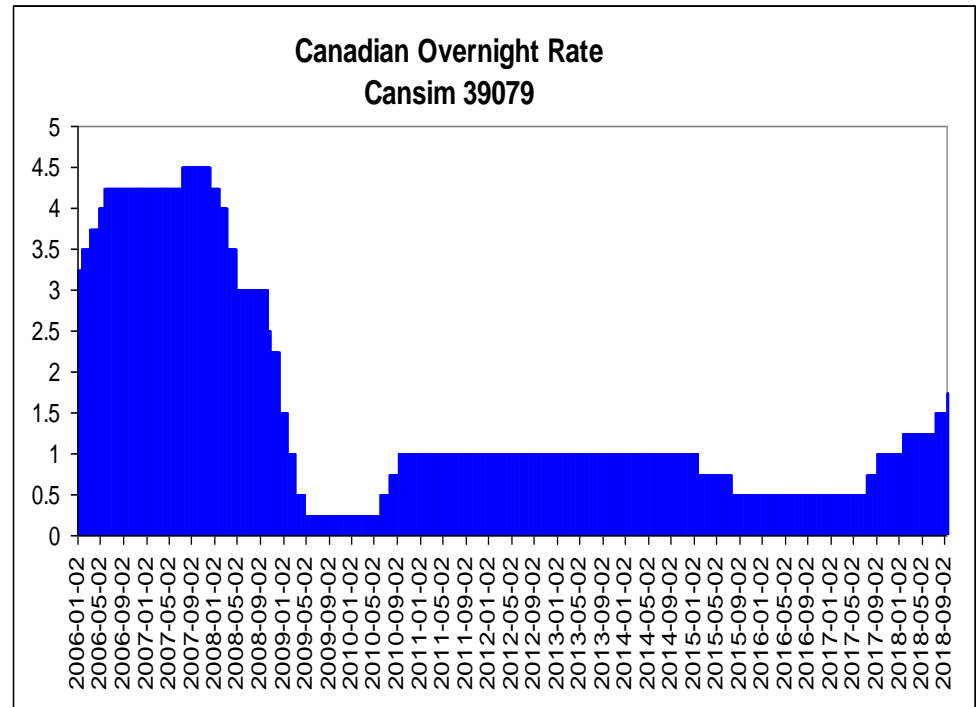
Key Issues before IRAC

- ◆ What is a fair and reasonable ROE for MEC?
- ◆ Is MEC'S capital structure efficient?
 - Does it reflect what we might expect from a competitive firm operating as efficiently as possible?
 - Capital market conditions
- ◆ My last report before IRAC on MEC was May 2010 when I recommended 8.0% ROE on 40% common equity
- ◆ *Currently I recommend a 7.50% ROE on 35% common equity, but IRAC might consider moving to this over time and use the AUC parameters of 8.50% ROE on 37% common equity for a local distribution company for the three test years*



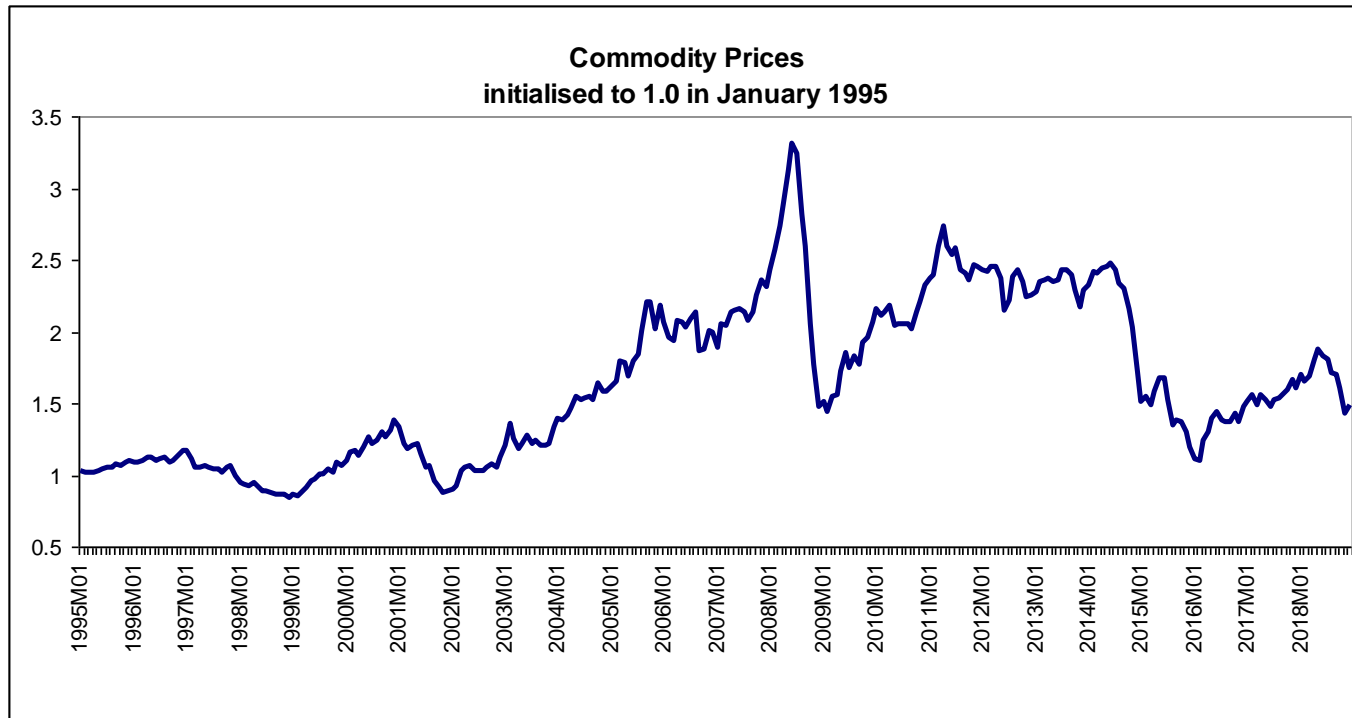
Overnight rate (page 10)

- ◆ In setting policy the Bank of Canada effectively uses the Taylor rule: they lower interest rates when the economy is underperforming and inflation is below the target rate of 2.0%
- ◆ In 2010 the overnight rate was 0.25% since the economy was weak and inflation had collapsed. Currently, the Bank has increased the overnight rate to 1.75%



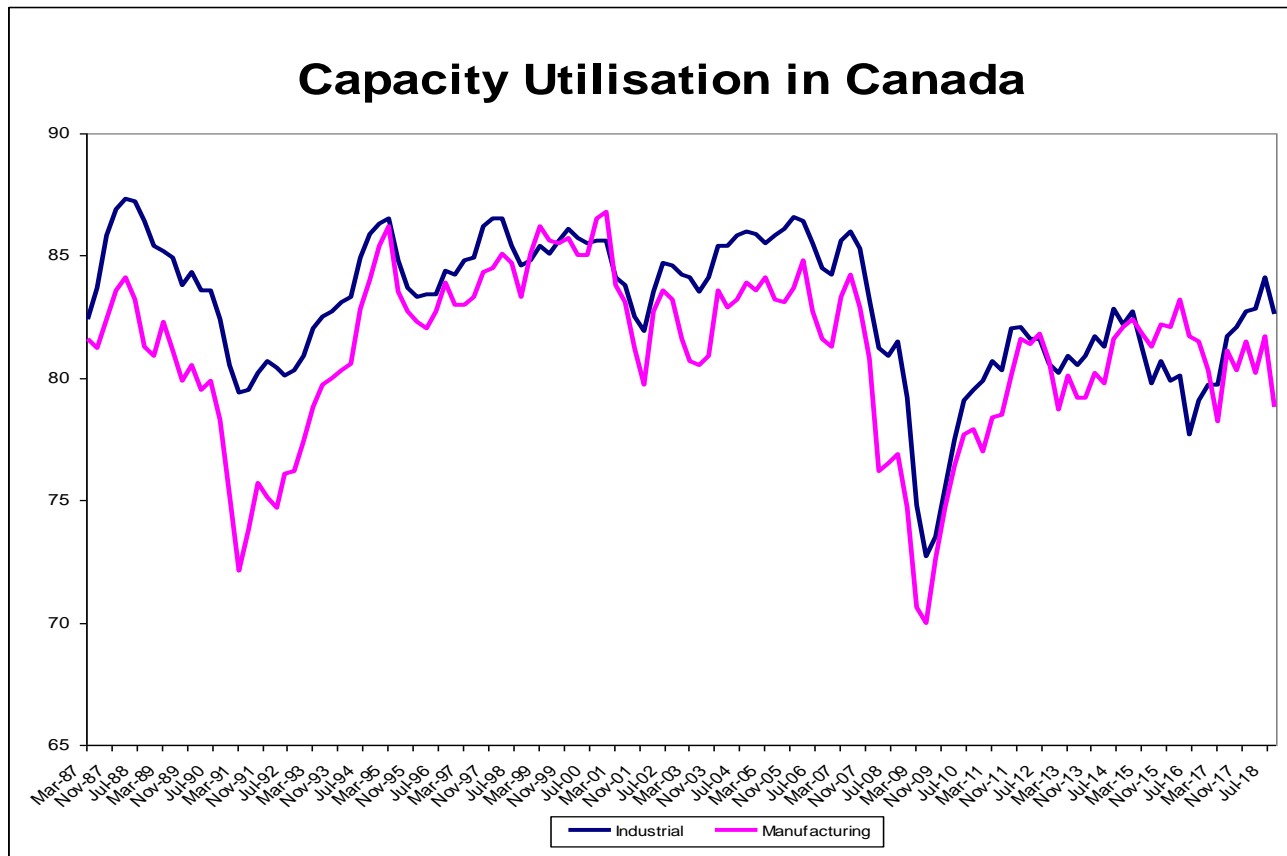
Canadian Economy (Page 12)

- ◆ *Relatively weak commodity prices, particularly oil as US has become self sufficient and an exporter*



Capacity Utilisation (Page 12)

- ◆ **Increased capacity utilisation has stalled mainly due to the resource sector in Western Canada**



Economy (page 15)

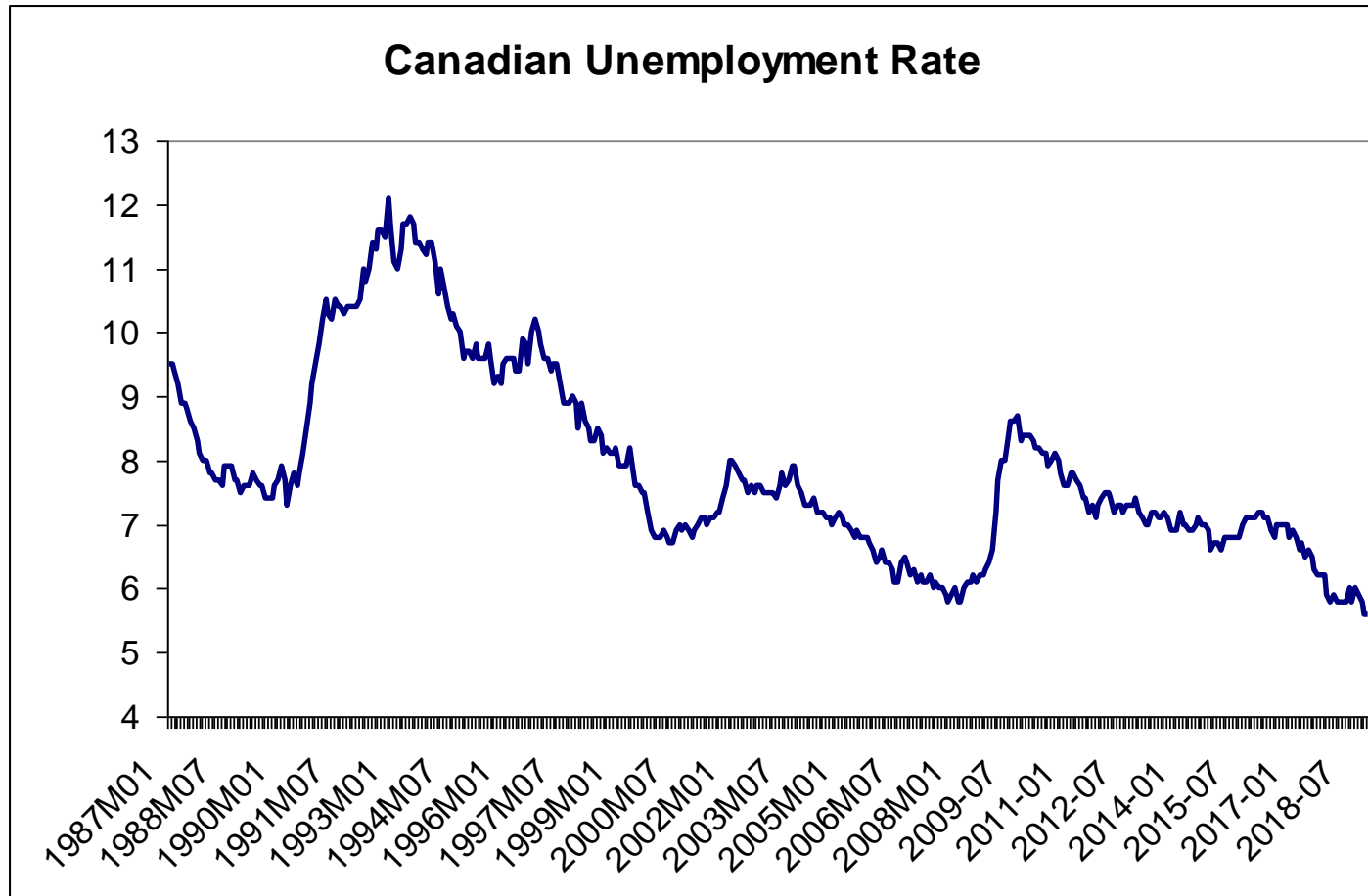
- ◆ *Two speed economy: weak in resource sector relatively strong elsewhere and shift away from relying on consumer demand and housing*

Table 2: Contributions to average annual real GDP growth
Percentage points**

	2017	2018	2019	2020
Consumption	2.0 (1.9)	1.3 (1.3)	1.0 (1.2)	1.0 (1.1)
Housing	0.2 (0.2)	-0.1 (-0.1)	-0.1 (0.1)	0.1 (0.0)
Government	0.7 (0.6)	0.7 (0.6)	0.2 (0.3)	0.4 (0.4)
Business fixed investment	0.3 (0.3)	0.5 (0.7)	0.2 (0.4)	0.4 (0.3)
<i>Subtotal: final domestic demand</i>	3.2 (3.1)	2.4 (2.5)	1.3 (2.0)	1.9 (1.8)
Exports	0.4 (0.3)	1.0 (0.9)	1.0 (0.9)	0.8 (0.7)
Imports	-1.4 (-1.2)	-1.1 (-1.1)	-0.5 (-0.6)	-0.6 (-0.6)
<i>Subtotal: net exports</i>	-1.1 (-0.9)	-0.1 (-0.2)	0.5 (0.3)	0.2 (0.1)
Inventories	0.8 (0.8)	-0.3 (-0.2)	-0.1 (-0.2)	0.0 (0.0)
GDP	3.0 (3.0)	2.0 (2.1)	1.7 (2.1)	2.1 (1.9)
Memo items (percentage change)				
Range for potential output	1.4–2.0 (1.4–2.0)	1.5–2.1 (1.5–2.1)	1.4–2.2 (1.4–2.2)	1.3–2.3 (1.3–2.3)
Real gross domestic income (GDI)	4.1 (4.0)	2.2 (2.3)	0.9 (2.0)	2.2 (2.0)
CPI inflation	1.6 (1.6)	2.3 (2.4)	1.7 (2.0)	2.0 (2.0)

Unemployment rate

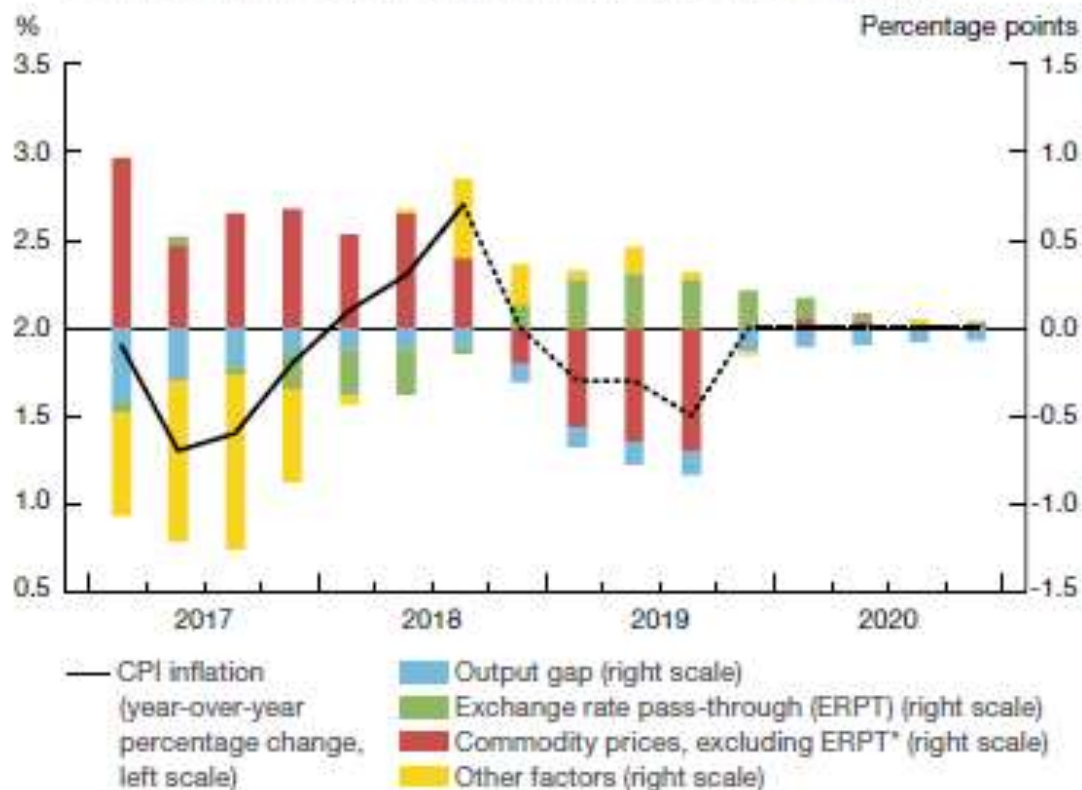
Page 14



CPI Inflation (Page 16)

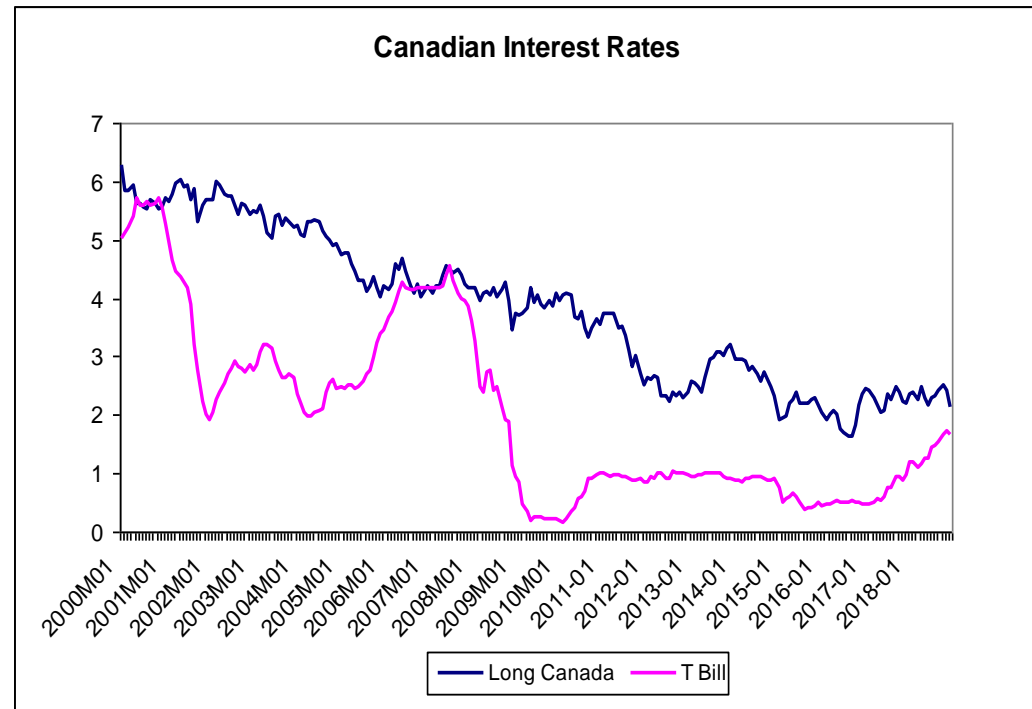
Chart 13: CPI inflation is expected to decline in 2019 due mainly to lower oil prices

Contribution to the deviation of inflation from 2 per cent, quarterly data



Interest Rates (Page 18)

- ◆ *Long Canada interest rates have rebounded from the extreme lows of 2016, but ended 2018 at 2.15% significantly lower than the 3.85% used in my May 2010 report*
- ◆ *Expectations are that target rates will soon drop*



Forecast Interest Rates (Page 20)

◆ RBC forecast in my report: LTC 2.65%

	Actuals				Forecast							
	18Q1	18Q2	18Q3	18Q4	19Q1	19Q2	19Q3	19Q4	20Q1	20Q2	20Q3	20Q4
Canada												
Overnight	1.25	1.25	1.50	1.75	1.75	2.00	2.25	2.25	2.50	2.50	2.50	2.50
Three-month	1.10	1.26	1.59	1.64	1.65	1.95	2.15	2.20	2.45	2.45	2.45	2.45
Two-year	1.78	1.91	2.21	1.86	2.00	2.30	2.40	2.40	2.55	2.50	2.50	2.50
Five-year	1.97	2.07	2.34	1.89	2.10	2.45	2.60	2.55	2.65	2.55	2.55	2.55
10-year	2.09	2.17	2.43	1.97	2.20	2.55	2.65	2.60	2.70	2.65	2.60	2.60
30-year	2.23	2.20	2.42	2.18	2.30	2.65	2.75	2.70	2.75	2.70	2.65	2.65
United States												
Fed funds**	1.75	2.00	2.25	2.50	2.75	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Three-month	1.73	1.93	2.19	2.45	2.65	2.90	2.90	2.90	2.90	2.90	2.90	2.90
Two-year	2.27	2.52	2.81	2.48	2.90	3.25	3.20	3.15	3.10	3.10	3.10	3.05
Five-year	2.56	2.73	2.94	2.51	2.95	3.30	3.30	3.20	3.20	3.20	3.15	3.10
10-year	2.74	2.85	3.05	2.69	3.05	3.40	3.40	3.30	3.25	3.25	3.20	3.15
30-year	2.97	2.98	3.19	3.02	3.25	3.60	3.60	3.50	3.45	3.40	3.35	3.30

◆ RBC's June forecast (my sur-rebuttal, page 7)

		Actuals					Forecast						
		18Q1	18Q2	18Q3	18Q4	19Q1	19Q2	19Q3	19Q4	20Q1	20Q2	20Q3	20Q4
Canada													
	Overnight	1.25	1.25	1.50	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
	Three-month	1.10	1.26	1.59	1.64	1.67	1.65	1.65	1.65	1.65	1.65	1.65	1.65
	Two-year	1.78	1.91	2.21	1.86	1.55	1.50	1.60	1.70	1.75	1.85	1.85	1.90
	Five-year	1.97	2.07	2.34	1.89	1.52	1.50	1.65	1.80	1.85	1.95	1.95	2.00
	10-year	2.09	2.17	2.43	1.97	1.62	1.65	1.80	1.90	2.00	2.10	2.15	2.20
	30-year	2.23	2.20	2.42	2.18	1.89	1.90	2.05	2.15	2.25	2.30	2.35	2.35
United States													
	Fed funds**	1.75	2.00	2.25	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
	Three-month	1.73	1.93	2.19	2.45	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
	Two-year	2.27	2.52	2.81	2.48	2.27	2.00	2.20	2.35	2.45	2.55	2.55	2.55
	Five-year	2.56	2.73	2.94	2.51	2.23	2.05	2.25	2.45	2.55	2.65	2.75	2.75
	10-year	2.74	2.85	3.05	2.69	2.41	2.25	2.45	2.60	2.70	2.80	2.85	2.85
	30-year	2.97	2.98	3.19	3.02	2.81	2.75	2.90	3.00	3.10	3.20	3.20	3.20

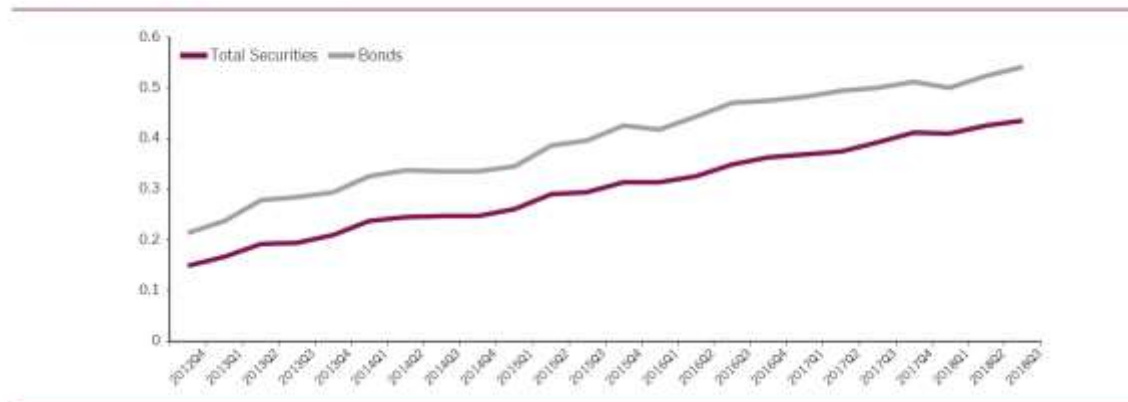
◆ *0.30% drop in forecast LTC rate and 0.10% drop in US Treasury rate*

Two key points

(Page 46)

- ◆ **LTC yields are abnormally low**
 - Spill over from negative interest rates in the euro area and enormous central bank bond buying that forced prices up and interest rates down
 - 50% of the long Canada bond market is now owned by sovereign reserve funds

Figure 9
Foreign % Holdings of Canada Debt



- ◆ **US long term interest rates are 0.85% higher than in Canada. Why would utility fair returns be the same?**

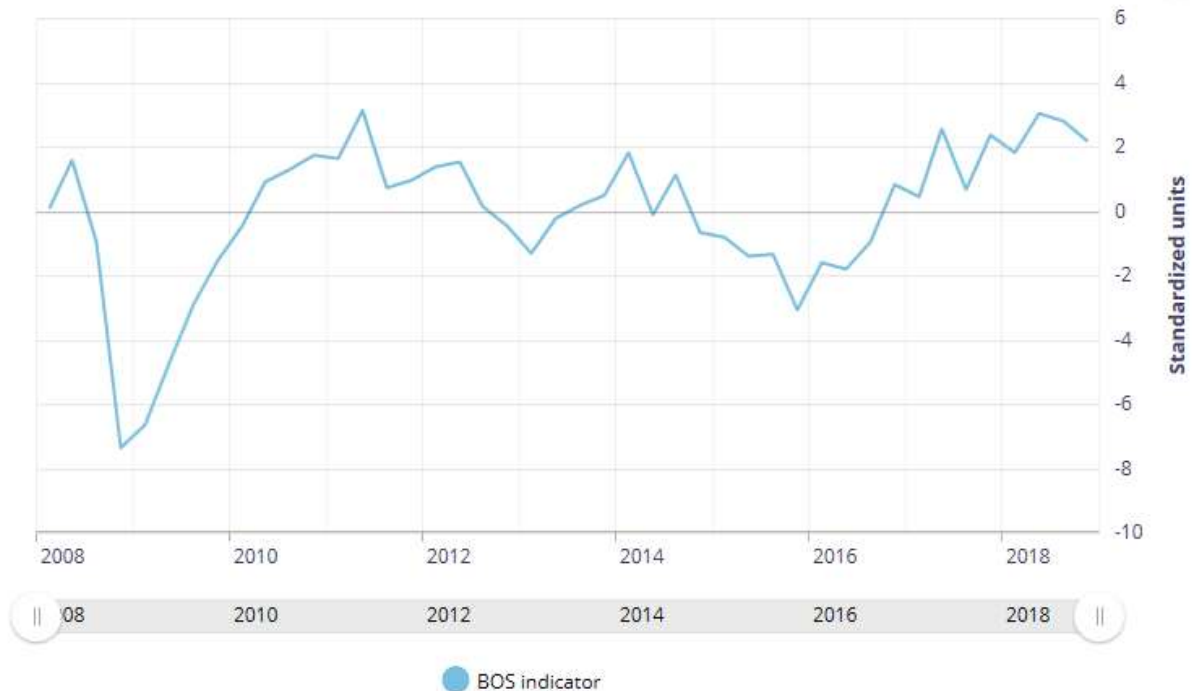
Overall Capital Market Conditions

Bank of Canada -1 (Page 29)

Business Outlook Survey indicator

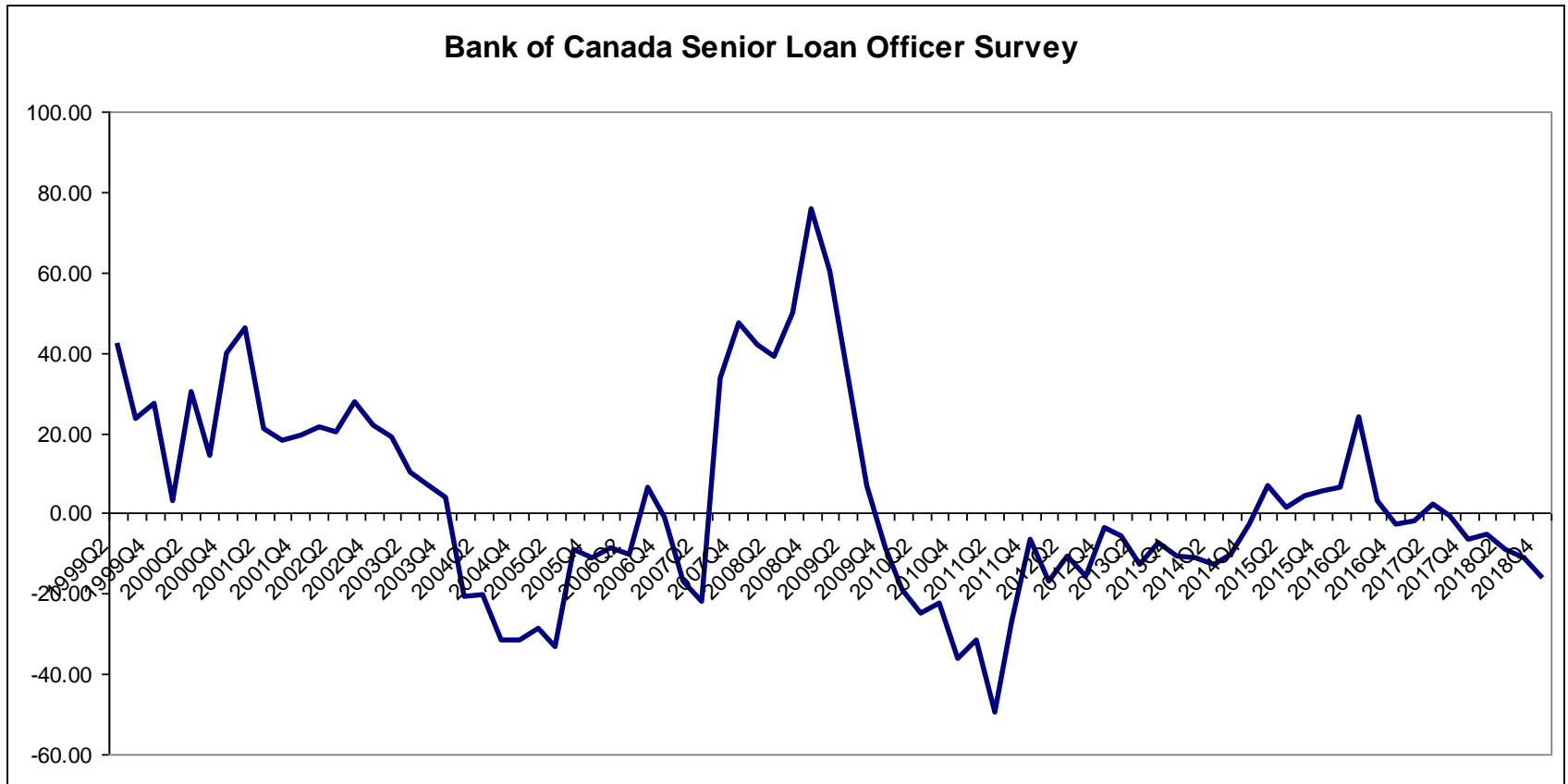
The Business Outlook Survey (BOS) indicator decreased slightly but remains elevated ([Chart 11](#)), as responses to almost all BOS survey questions are holding above their historical averages. This continues to signal that overall business sentiment is positive.

Chart 11: The BOS indicator decreased slightly but remains elevated



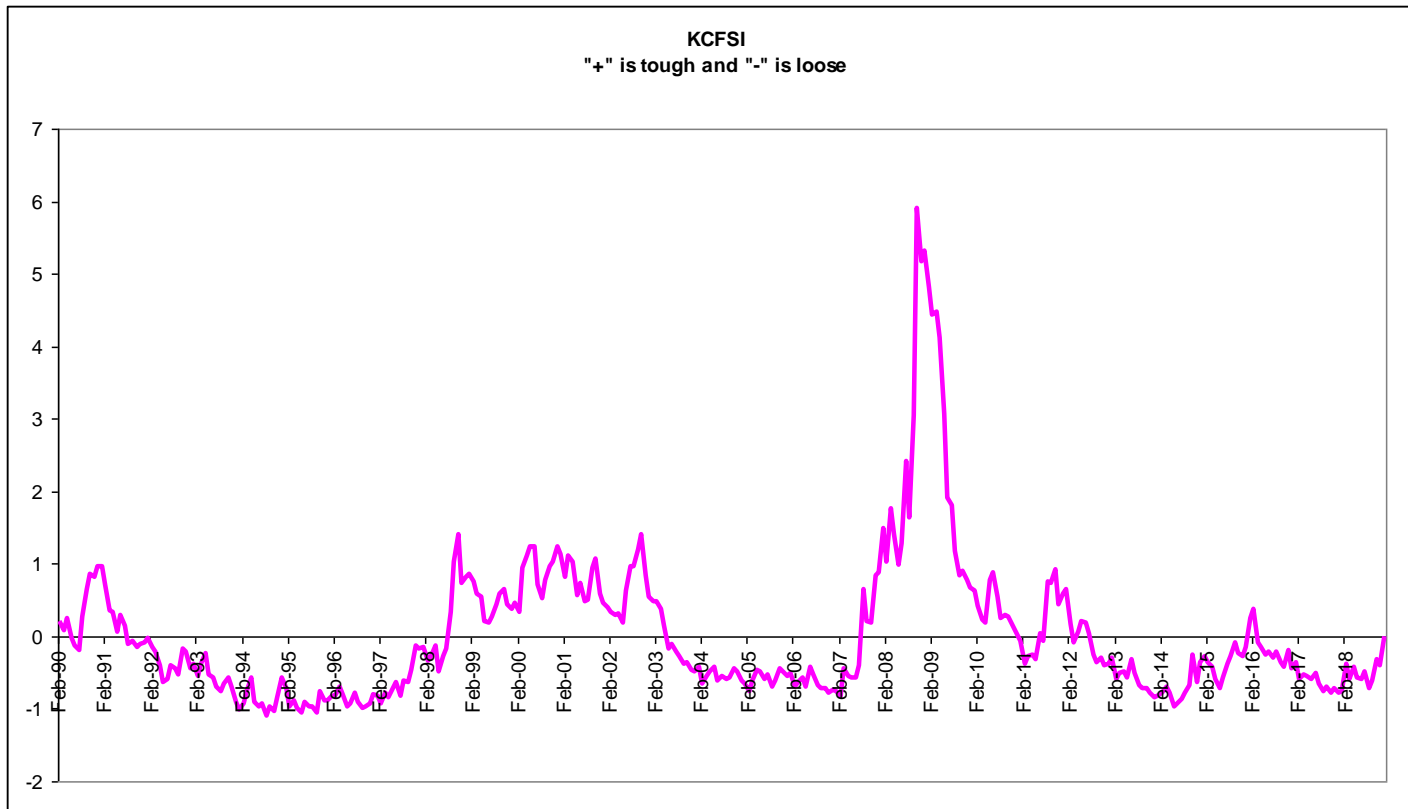
Bank of Canada -2

negative means loose or easy loan market (Page 28)



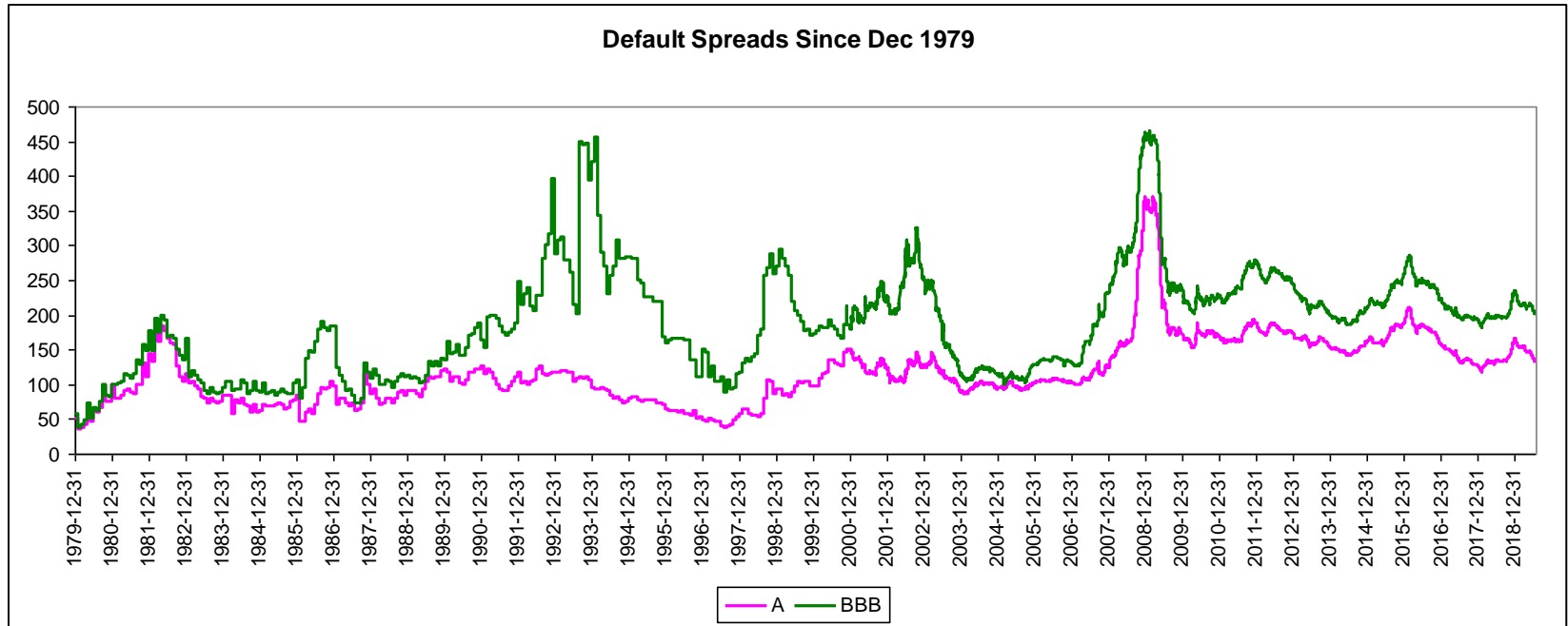
Kansas City Federal Reserve Stress Index

negative means easy markets (Page 27)



Credit Market Conditions

(Page 23)



There was a minor increase in spreads at the time of my report but these have now settled back to their recent normal range

Overall

- ◆ Strong economy despite weak commodity prices
- ◆ Extremely low unemployment rate
- ◆ Benign inflation
- ◆ Exceptionally low Canadian interest rates due to AAA rating and negative rates elsewhere
- ◆ Optimistic business outlook
- ◆ Easy loan conditions and no financial market stress
- ◆ *Tough talk from President Trump seems to be leading the Fed to lower its policy rate while Europe remains weak with trade and Brexit concerns*



Two Approaches to fair ROE

◆ **Normative**: what *should* be

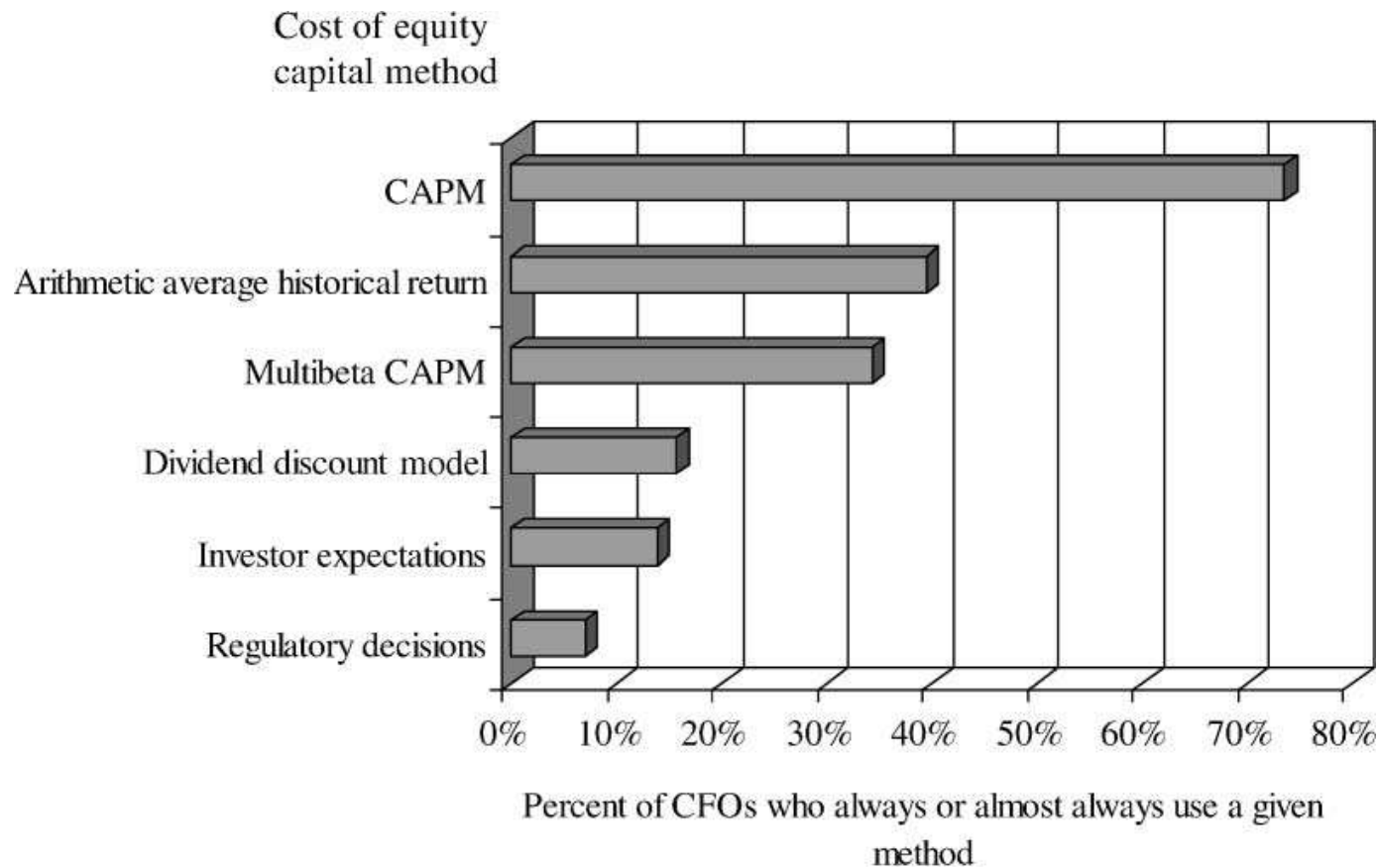
- Model building based on some simple assumptions about human behaviour
- Discounted cash flow models (DCF)
- Risk premium models, mainly the Capital Asset Pricing Model (CAPM)

◆ **Positive**: what *is*

- Survey results
- What people tell us they do

Graham and Harvey (JFE 2001) Survey

(Page 34)



Estimating Opportunity Costs

- ◆ **CAPM: risk positioning model: models the basic propositions in finance**
 - Time value of money: the LTC interest rate
 - The market trade-off between risk and return: the market risk premium
 - The relative risk of a security

$$K = R_F + MRP\beta$$

- ◆ **Discounted cash flow (DCF models)**
 - Assumes that investors value the expected stream of future cash flows (dividends for a stock)
 - Reverse engineers to find the discount rate for an *assumed* stream of dividends



Market Risk Premium 1926-2018

Slight update to Schedule 9 Appendix B

Annual Rate of Return Estimates 1926-2018						
U.S.				CANADA		
	S&P Equities	Long US Treasury	Excess Return	TSE Equities	Long Canadas	Excess Return
AM	11.88	5.88	6.00	10.85	6.35	4.50
GM	9.99	5.45	4.54	9.25	6.01	3.24
OLS	10.89	5.55	5.34	10.18	6.18	4.00
Volatility ¹	19.76	9.86		17.48	7.99	

Arithmetic is simple average; geometric is compound and OLS is the least squares estimate.

Approximately Geometric Mean = Arithmetic Mean - .5*variance

For example, US variance is about 4% (0.0384), so AM and GM diverge by a bit less than 2%

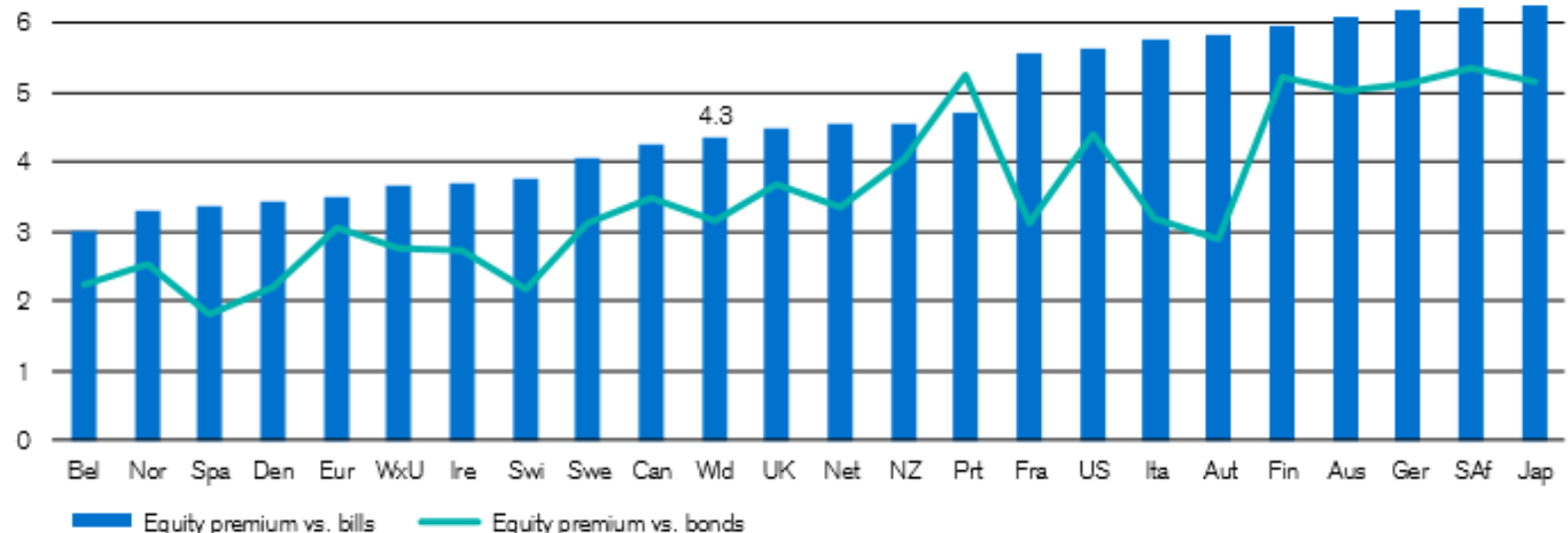
Credit Suisse

(Appendix B, Schedule 26)

- ◆ *I use 5.0-6.0% for the average historic MRP based on arithmetic annual returns*
- ◆ Credit Suisse puts the MRP at barely 4.0% since 1900

Figure 8

Worldwide annualized equity risk premium (%) relative to bills and bonds, 1900–2017



Source: Elroy Dimson, Paul Marsh, and Mike Staunton, *Triumph of the Optimists*, Princeton University Press, 2002, and subsequent research. Premiums for Austria and Germany are based on 116 years, excluding 1921–22 for Austria and 1922–23 for Germany.

Fernandez 2019 Survey

Appendix B Page 10

Table 2. Market Risk Premium (MRP) used for 69 countries in 2019

MRP	Number of Answers	Average	St. Dev.	Median	MAX	min	St.Dev. / Average
USA	1175	5,6%	1,8%	5,5%	17,0%	2,2%	31,9%
Spain	371	6,4%	1,8%	6,4%	12,0%	2,5%	27,7%
Argentina	35	14,9%	2,0%	14,3%	20,0%	12,0%	13,1%
Australia	54	6,5%	1,9%	6,1%	14,0%	3,0%	29,0%
Austria	139	6,1%	1,5%	6,3%	12,0%	3,0%	24,7%
Belgium	145	6,2%	1,5%	6,3%	12,0%	3,0%	24,5%
Bolivia	24	8,8%	2,2%	8,8%	11,3%	6,2%	25,5%
Brazil	58	8,2%	2,2%	8,7%	11,3%	2,0%	26,6%
Bulgaria	28	8,1%	0,8%	8,0%	10,0%	6,0%	9,5%
Canada	60	5,8%	1,4%	5,8%	12,0%	3,1%	24,8%

**Survey respondents use 5.8% MRP for
Canada in my 5.0-6.0% range**

Fernandez Equity Market Return: 8.30%

(Appendix B Page 11)

Table 4. Km [Required return to equity (market): RF + MRP] used for 69 countries in 2019

Km	Number of Answers	Average	St. Dev.	Median	MAX	min	St.Dev. / Average
USA	1175	8,3%	2,1%	8,0%	24,8%	3,6%	25,1%
Spain	371	8,2%	2,2%	8,2%	16,8%	3,1%	27,5%
Argentina	35	25,0%	3,4%	23,5%	32,0%	19,0%	13,6%
Australia	54	9,2%	2,4%	8,7%	18,0%	5,0%	25,9%
Austria	139	7,4%	1,9%	7,9%	14,5%	3,5%	26,0%
Belgium	145	7,4%	1,9%	7,9%	14,5%	3,5%	25,8%
Bolivia	24	11,8%	2,2%	11,8%	14,0%	9,6%	18,9%
Brazil	58	15,4%	2,3%	15,8%	19,8%	10,0%	15,0%
Bulgaria	28	11,2%	0,9%	11,8%	12,1%	8,0%	8,1%
Canada	60	8,3%	1,3%	8,3%	13,7%	5,9%	15,5%
Chile	42	10,5%	1,3%	10,5%	11,9%	7,5%	12,7%
China	58	11,5%	3,4%	10,8%	22,0%	6,0%	29,7%
Colombia	30	13,9%	2,0%	14,6%	14,6%	7,0%	14,3%
Croatia	27	11,0%	0,9%	11,6%	12,3%	8,5%	7,8%
Czech Republic	32	8,7%	0,8%	8,8%	9,4%	6,3%	9,2%
Denmark	135	7,2%	2,0%	7,9%	14,5%	3,5%	27,1%

Duff and Phelps: 8.50%

Appendix B Schedule 25

- ◆ Major cost of capital advisory service
- ◆ Bought the “Ibbotson data and service”

Table: Equity Risk Premium & Risk-free Rates

Duff & Phelps Recommended
U.S. Equity Risk Premium (ERP) and
Corresponding Risk-free Rates (R_f);
January 2008–Present

DUFF & PHELPS

September 6, 2017

For additional information, please visit
www.duffandphelps.com/CostOfCapital

Date	Risk-Free Rate (R_f)	R_f (%)	Duff & Phelps Recommended ERP (%)	What Changed
Current Guidance: September 6, 2017 – UNTIL FURTHER NOTICE	Normalized 20-year U.S. Treasury yield	3.50	5.00	ERP
November 15, 2016 – September 4, 2017	Normalized 20-year U.S. Treasury yield	3.50	5.50	R_f
January 31, 2016 – November 14, 2016	Normalized 20-year U.S. Treasury yield	4.00	5.50	ERP
December 31, 2015	Normalized 20-year U.S. Treasury yield	4.00	5.00	
December 31, 2014	Normalized 20-year U.S. Treasury yield	4.00	5.00	
December 31, 2013	Normalized 20-year U.S. Treasury yield	4.00	5.00	
February 26, 2013 – January 30, 2016	Normalized 20-year U.S. Treasury yield	4.00	5.00	ERP
December 31, 2012	Normalized 20-year U.S. Treasury yield	4.00	5.50	
January 15, 2012 – February 27, 2013	Normalized 20-year U.S. Treasury yield	4.00	5.50	ERP
November 30, 2011	Normalized 20-year U.S. Treasury yield	4.00	6.00	
September 30, 2011 – January 14, 2012	Normalized 20-year U.S. Treasury yield	4.00	6.00	ERP
July 1, 2011 – September 29, 2011	Normalized 20-year U.S. Treasury yield	4.00	5.50	R_f
June 1, 2011 – June 30, 2011	Spot 20-year U.S. Treasury yield	Spot	5.50	R_f
May 1, 2011 – May 31, 2011	Normalized 20-year U.S. Treasury yield	4.00	5.50	R_f
December 31, 2010	Spot 20-year U.S. Treasury yield	Spot	5.50	
December 1, 2010 – April 30, 2011	Spot 20-year U.S. Treasury yield	Spot	5.50	R_f
June 1, 2010 – November 30, 2010	Normalized 20-year U.S. Treasury yield	4.00	5.50	R_f
December 31, 2009	Spot 20-year U.S. Treasury yield	Spot	5.50	
December 1, 2009 – May 31, 2010	Spot 20-year U.S. Treasury yield	Spot	5.50	ERP
June 1, 2009 – November 30, 2009	Spot 20-year U.S. Treasury yield	Spot	6.00	R_f
December 31, 2008	Normalized 20-year U.S. Treasury yield	4.50	6.00	
November 7, 2008 – May 31, 2009	Normalized 20-year U.S. Treasury yield	4.50	6.00	R_f
October 27, 2008 – October 31, 2008	Spot 20-year U.S. Treasury yield	Spot	6.00	ERP
January 1, 2008 – October 25, 2008	Spot 20-year U.S. Treasury yield	Spot	5.00	Initialized

Normalized in this context means that in months where the risk-free rate is deemed to be abnormally low, a proxy for a longer-term sustainable risk-free rate is used.

To learn more about cost of capital issues, and to ensure that you are using the most recent Duff & Phelps Recommended ERP, visit

www.duffandphelps.com/CostOfCapital

To learn more about/purchase Duff & Phelps valuation data resources published by John Wiley & Sons, visit:

www.wiley.com/go/valuationdataresources

Other Independent Estimates: AQR

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Exhibit 1

Summary of Expected Medium-Term Real Return Estimates for Major Asset Classes



QRG

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Table 2: Capital Markets Assumptions by Asset Class

	2018 Estimates		2017 Estimates		Year 2018 vs 2017	
	expected return	standard deviation	expected return	standard deviation	expected return	standard deviation
All Cap	6.11%	15.29%	6.19%	15.45%	-0.08%	-0.15%
Global Equity	6.50%	14.67%	6.57%	14.83%	-0.07%	-0.16%
Large-Cap Core	6.06%	15.12%	6.15%	15.28%	-0.09%	-0.16%
Large-Cap Growth	5.90%	16.80%	6.01%	16.92%	-0.11%	-0.12%
Large-Cap Value	6.23%	14.71%	6.28%	14.91%	-0.06%	-0.20%
Mid-Cap Core	6.55%	16.86%	6.83%	17.01%	-0.28%	-0.15%
Mid-Cap Growth	6.45%	20.51%	6.83%	20.63%	-0.38%	-0.11%
Mid-Cap Value	6.62%	15.79%	6.83%	15.99%	-0.21%	-0.20%
Small-Cap Core	6.74%	19.66%	6.69%	19.76%	0.05%	-0.10%
Small-Cap Growth	6.72%	22.89%	6.66%	22.97%	0.06%	-0.07%
Small-Cap Value	6.76%	17.41%	6.71%	17.56%	0.04%	-0.15%
Int'l Developed Mkts	7.19%	16.70%	7.30%	16.88%	-0.11%	-0.18%
Foreign Large Cap Core	7.19%	16.84%	7.31%	17.03%	-0.13%	-0.19%
Foreign Large Cap Growth	6.93%	17.01%	6.84%	17.17%	0.10%	-0.15%
Foreign Large Cap Value	7.42%	17.42%	7.72%	17.64%	-0.30%	-0.23%
Foreign Small Mid Cap Core	7.21%	16.95%	7.25%	17.22%	-0.04%	-0.26%
Foreign Small Mid Cap Growth	7.14%	18.02%	6.93%	18.26%	0.20%	-0.24%
Foreign Small Mid Cap Value	7.33%	16.92%	7.66%	17.23%	-0.33%	-0.30%

Bank of NY Mellon

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Exhibit 18: 10-Year Equity Market Expected Returns From 2018 to 2027 (in USD)

U.S. Equity	6.2%
U.S. Large Cap Equity	6.1%
U.S. Mid Cap Equity	6.5%
U.S. Small Cap Equity	7.0%
International Developed Equity	5.8%
International Small Cap Equity	5.9%
Emerging Equity	8.3%

Source: BNY Mellon Wealth Management. Data as of October 31, 2017.
Please see page 9 for a list of representative indices.

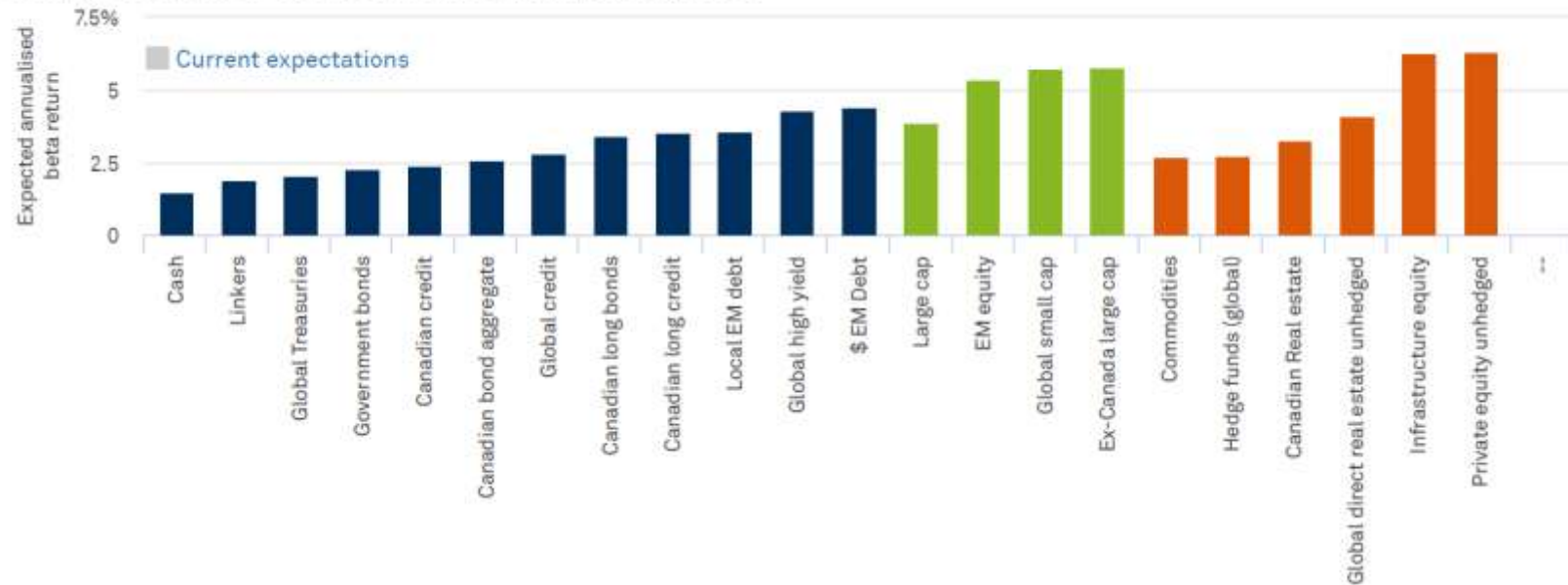


Blackrock

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In search of returns

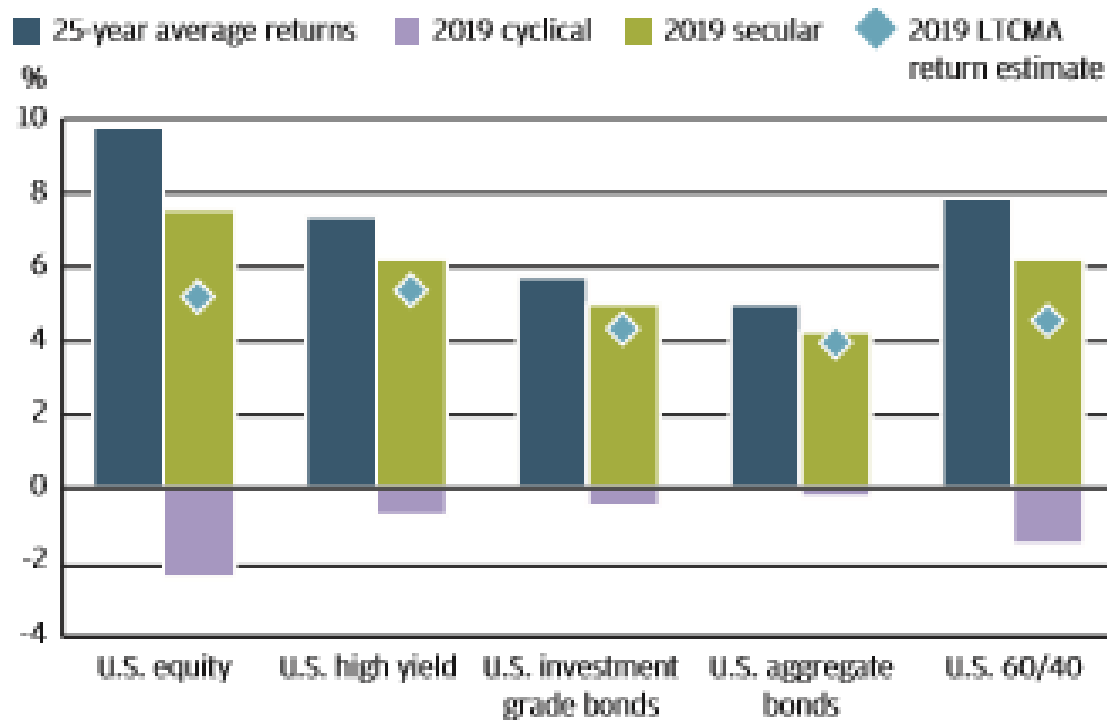
BlackRock's long-term asset class beta return expectations, August 2018



J. P Morgan

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EXHIBIT 2: HISTORICAL 25-YEAR AVERAGE RETURNS FOR KEY ASSETS AND THIS YEAR'S ESTIMATES, SPLIT INTO THEIR SECULAR (EQUILIBRIUM) AND CYCLICAL COMPONENTS



Forecast Returns

- ◆ These returns are long run
 - Closer to compound than arithmetic returns
 - Generally convert compound to arithmetic add 1.50-2.0%
 - Typical 6% compound or 7.5-8.0% arithmetic
 - Generally a judgment that long run returns will be less than the “equilibrium” or normal rate due to high prices

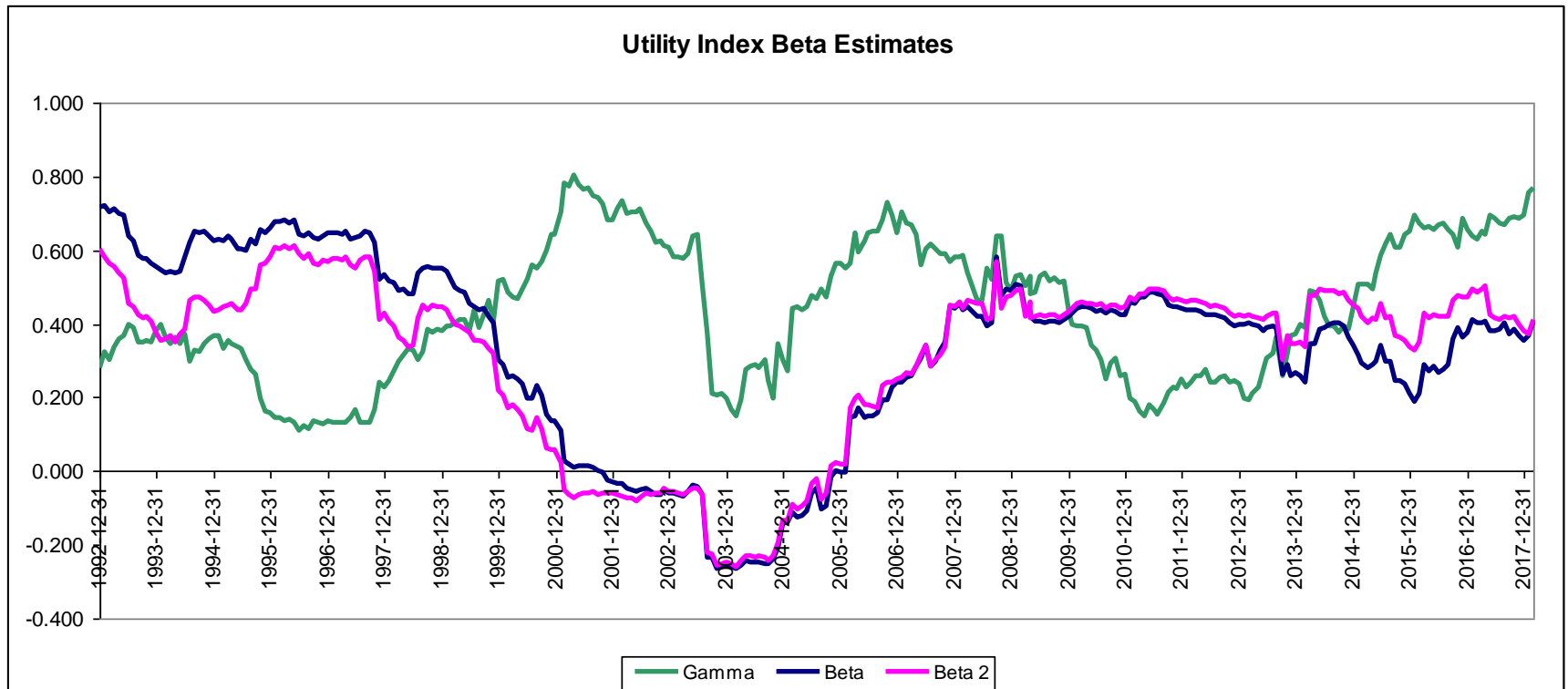
- ◆ Appendix D I estimate the equity market’s arithmetic return using DCF at:
 - Canada: 8.21%-8.76%
 - US: 9.17-9.89%

- ◆ *Risk positioning would put a low risk utility’s fair ROE below these values for the overall equity market*



Relative Risk

(Appendix C, Schedule 1)



Gamma is their interest sensitivity

Maureen Howe

RBC Utility Analyst

- ◆ **October 3, 2001 Morning Comment (Appendix C, page 4)**

“like convertible bonds. When interest rates are low, as they currently are, the companies trade on their bond value and are supported by tax-efficient dividend yields. When the 10-year GOC yield rises above 6%-6.5%, the Canadian companies trade on the basis of their underlying earnings and P/E.”

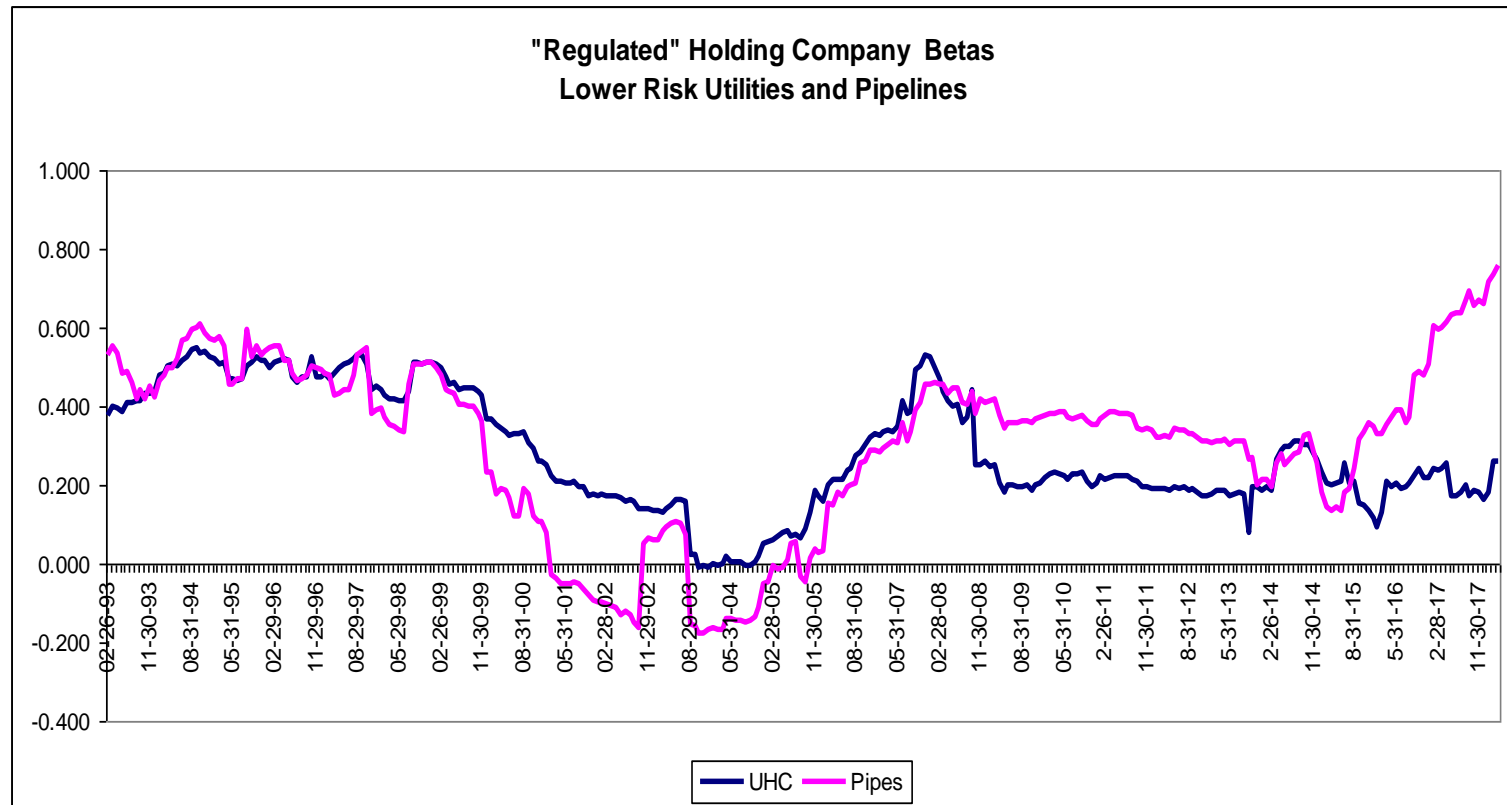
- ◆ **Utilities are defensive stocks and sensitive to interest rates (gamma)**



Canadian Regulated Firms

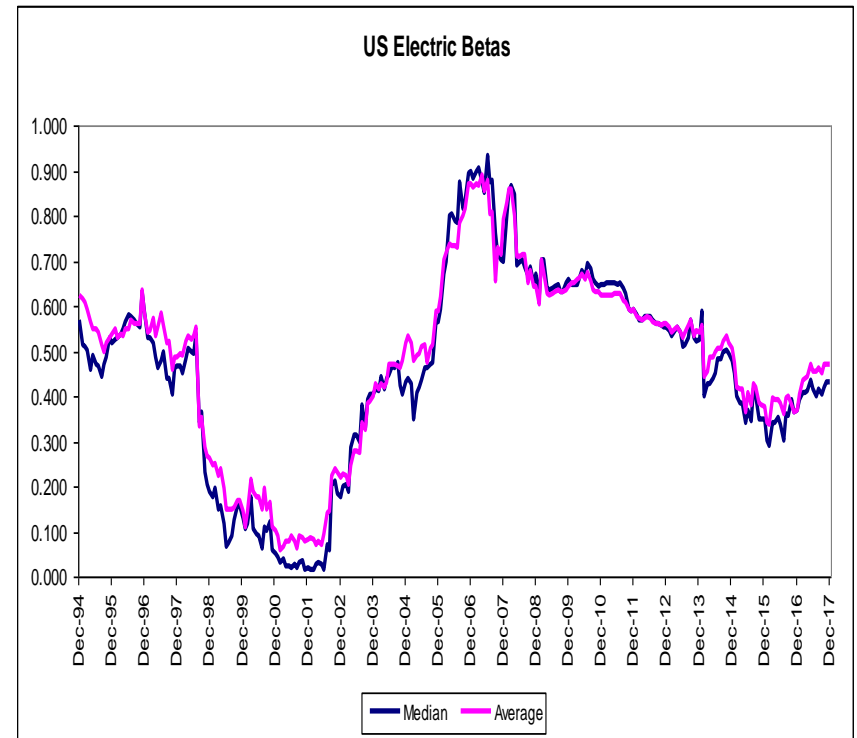
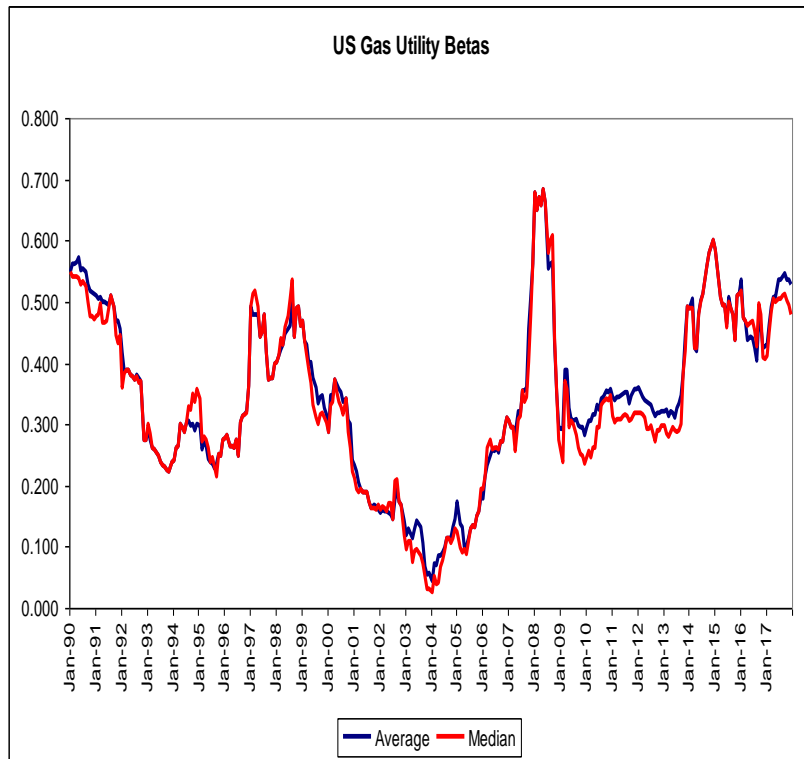
Appendix C Schedule 4

- ◆ I split my traditional sample into pipelines and regulated utility holding (UHC) companies since the pipes have become riskier due to government and “activist” intervention in their business



US UHC Betas

Appendix C Schedules 6 & 8



Similar pattern to Canada but riskier (higher betas)

Beta Adjustment

- ◆ I use a range 0.45-0.55 to reflect forward looking estimates.
- ◆ I do not mechanically adjust betas to 1.0 using the Blume formula

$$\beta = 0.33 + .0.67 * \beta_{estimated}$$

- ◆ Blume estimated this for *all stocks* where the average by definition is 1.0. In this case, suppose you estimate half the stocks at a beta of 0.50 and half at 1.5 the adjustment would then still be for an average of 1.0, ie.,
 - For 0.5 the adjustment is to 0.666
 - For 1.5 the adjustment is to 1.333
- ◆ For specific, perennially low, risk stocks this does not make sense as shown by Michelfelder and Theodossiou
- ◆ *Its not even commonly done for most stocks, since you would then never observe betas less than 0.33*



Public Market Betas

Appendix C pages 10 & 12

	Canadian Betas					
	VE	RT	RBC	Yahoo	Average	Booth
TransCanada	0.42	0.78	0.92	0.49	0.65	0.57
Enbridge	0.18	0.56	0.8	1.3	0.71	0.62
Pembina	0.42	1.13	1.13	0.8	0.87	0.79
Average					0.74	0.66
Canadian Utilities	0.11	0.37	0.37	0.49	0.34	0.49
Fortis	-0.09	0.02	0.02	-0.03	-0.02	0.01
Emera	0.11	0.12	0.12	0.28	0.16	0.00
GMI (VNR)	0.17	0.39	0.39	0.4	0.34	0.15
Average					0.20	0.16

	US Electrics					
	VE	RT	RBC	Yahoo	Average	Booth
Duke	0.01	0.02	0.02	-0.09	-0.01	0.25
Allette	0.29	0.26	0.26	0.11	0.23	0.48
Eversource	0.26	0.28	0.28	0.15	0.24	0.32
OGE	0.52	0.55	0.55	0.58	0.55	0.92
Pinnacle West	0.17	0.16	0.16	-0.08	0.10	0.39
Evergy	0.28	0.31	0.31	0.24	0.29	0.32
Average	0.26	0.26	0.26	0.15	0.23	0.45

No sign of adjustment to 1.0

Betas

◆ Blume adjustment to 1.0 AUC (GCOC 2009-216, paragraph 251)

“The Commission is persuaded by the empirical analysis of Drs. Kryzanowski and Roberts that there is insufficient evidence to support the use of adjusted betas for Canadian utilities if the purpose of the adjustment is to adjust the beta towards one and therefore, beta should not be adjusted towards one. Therefore, the Commission rejects Mr. Coyne’s beta results as unreasonably high, because he adjusted his beta estimates on the assumption that they would revert to 1.00. In other words, his analysis assumes that, in time, utilities would be as risky as the market as a whole.”



DCF

- ◆ General DCF formula: discount all future cash flows (C)

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

- ◆ Impossible to extract K the discount rate from this formula so we constrain the growth rate in the future dividends to get a formula. *If we assume constant growth forever* it becomes the Gordon formula

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

- ◆ *ONLY if this assumption holds can we rearrange the Gordon formula to get*

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

- ◆ It does not hold for most firms!

AUC Decision

Appendix D, Page 19

- ◆ In response to Mr. Coyne's (Concentric) evidence, identical to that of Mr. Trogonoski for MEC

445. The Commission finds that both Mr. Coyne's and Mr. Hevert's estimates of the expected Canadian and U.S. market returns using the DCF model, which range from 12.65 to 14.84 per cent, are too high. These results are driven by unreasonable growth rate estimates. The Commission observes that the basis of Mr. Coyne's estimate of the Canadian market return relied on a sample with approximately 14 per cent of the companies having growth rates that exceeded 20 per cent. Turning to Mr. Hevert's estimate of the Canadian market return, approximately 16.5 per cent of the companies in his sample had growth rates that exceeded 20 per cent. Considering that the single-stage DCF model assumes a growth rate into perpetuity, the Commission finds the resulting estimate unrealistic, and affords Mr. Hevert's and Mr. Coyne's equity market DCF estimates no weight. In addition, the Commission notes that the expected market return rates used by Mr. Coyne and Mr. Hevert use analyst estimates of growth rates that far exceed GDP growth. Accordingly, the Commission finds that the expected market return rates put forward by Mr. Coyne and Mr. Hevert are too high. No meaningful evidence was provided that would enable the Commission to quantify the extent of the over-estimation in order to develop a more reasonable estimate.

- ◆ In their DCF estimates they used all firms where very few satisfy the assumptions of the DCF model that the growth rate is constant in perpetuity

Do Utilities Satisfy the DCF Assumptions?

- ◆ Probably if they are 100% regulated, but what we observe are utility holding companies, which are intrinsically riskier, (Booth answer to MEC #10)

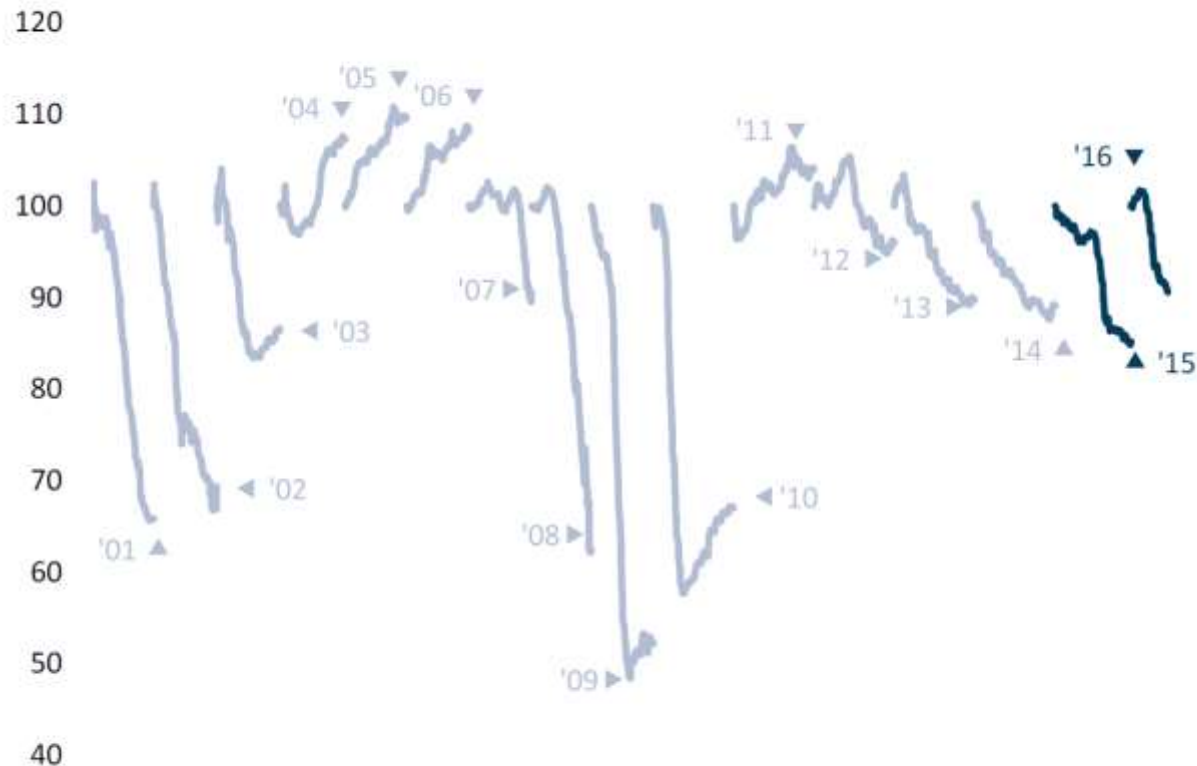
Electrics DPS Growth rates

	Arithmetic	Compound	OLS	Volatility
Duke	4.2%	1.4%	0.5%	30.4%
Allette	3.0%	0.5%	0.4%	24.7%
Ever	5.8%	0.8%	-1.6%	45.1%
Great Plains	-0.2%	-1.3%	-1.3%	12.8%
OGE	1.1%	0.1%	0.3%	12.1%
PNW	8.0%	2.4%	1.3%	46.0%
WR	1.2%	0.1%	-0.2%	12.8%
SO	1.3%	0.8%	0.6%	9.0%
"Industry"	0.9%	0.6%	0.3%	7.1%
GDP	6.6%	6.5%	6.8%	

- ◆ Also the growth estimates come from analysts who are known to be “optimistic” ie., biased high. Easton and Summers (2007)

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

Consensus Bottom-Up S&P 500 EPS Forecasts (Indexed to 100)



Note: Estimates are bottom-up and indexed to 100; shown from initial release through final/most recent results.
Source: S&P, Thomson Financial, Compustat, FactSet and RBC Capital Markets

Source: RBC Investment Strategy Playbook, February 2016
Appendix D Schedule 19

DCF for US Utilities

Appendix D Schedule 17

	5 year Growth		# Analysts	Yield	K (Est g)	ROE	Retention	SUST G	K	MB	DPS	EPS	Beta
	Past	Future											
Duke Energy	0.51	4.41	7	4.3	8.90	6.84	0.12	0.85	5.19	1.41	3.6	4.11	0.07
Allete Inc.,	1.21	6	1	3.06	9.24	7.43	0.26	1.96	5.08	1.81	2.21	3	0.3
Eversource	5.86	5.83	6	3.03	9.04	9.21	0.39	3.61	6.74	1.84	1.99	3.27	0.26
OGE Energy	2.55	-2.25	2	3.38	1.05	17.41	0.60	10.46	14.19	1.98	1.33	3.33	0.5
Pinnacle West	6.98	4.11	4	3.37	8.90	9.77	0.38	3.73	7.23	1.76	2.78	4.5	0.11
Evergy	3.75	9.2	3	2.96	12.43	7.73	0.44	3.44	6.50	1.4	1.66	2.99	0.33
Alliant	5.59	6.9	2	3.2	10.32	11.41	0.41	4.69	8.04	2.17	1.32	2.24	0.22
American Electric	3.64	5.83	5	3.36	9.39	10.58	0.39	4.14	7.64	1.95	2.418	3.97	0.09
Edison International	0.56	3.75	5	4.16	8.07	2.97	-0.72	-2.13	1.94	1.48	2.42	1.41	-0.21
PNM	9.7	4.1	3	2.59	6.80	5.51	0.02	0.10	2.69	1.85	1.06	1.08	0.3
Southern	3.48	1.39	8	5.11	6.57	9.18	0.02	0.15	5.27	1.94	2.36	2.4	0.11
Average	3.98	4.48	4	3.50	8.25	8.91	0.21	2.82	6.41	1.78	2.10	2.94	0.19
Median	3.64	4.41	4	3.36	8.90	9.18	0.38	3.44	6.50	1.84	2.21	3.00	0.22

- DCF estimates significantly lower if you use the sustainable growth rate rather than the optimistic analyst growth estimates
- Forecast US GDP growth is just over 4.0%
- Sustainable reflects actual retention of earnings and what the firms earns on those earnings



Relationship to ROEs

◆ Warren Buffet

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

◆ Jack Bogle

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



Investment and Speculative TSX Returns back to 1987 Schedule 4

	ROE	TSX	Spec
1980	15.05	30.13	15.09
1981	11.70	-10.25	-21.95
1982	6.80	5.54	-1.26
1983	9.34	35.49	26.15
1984	10.53	-2.39	-12.92
1985	10.47	25.07	14.60
1986	9.49	8.95	-0.54
1987	11.19	5.88	-5.31
1988	12.97	11.08	-1.89
1989	11.79	21.37	9.58
1990	7.48	-14.80	-22.28
1991	3.53	12.02	8.48
1992	1.56	-1.43	-2.99
1993	3.69	32.55	28.86
1994	6.57	-0.18	-6.75
1995	9.55	14.53	4.98
1996	10.29	28.35	18.06
1997	10.86	14.98	4.12
1998	8.83	-1.58	-10.42
1999	10.70	31.71	21.01
2000	11.70	7.41	-4.29
2001	9.00	-12.57	-21.57
2002	6.90	-12.44	-19.34
2003	11.30	26.72	15.42
2004	12.40	14.48	2.08
2005	13.90	24.13	10.23
2006	14.90	17.26	2.36
2007	13.30	9.83	-3.47
2008	10.90	-33.00	-43.90
2009	9.00	35.05	26.05
2010	11.10	17.61	6.51
2011	12.10	-8.71	-20.81
2012	10.40	7.19	-3.21
2013	9.70	13.00	3.30
2014	10.70	10.55	-0.15
2015	6.90	-8.32	-15.22
2016	9.80	21.08	11.28
2017	10.68	9.10	-1.58
Average	9.92	10.14	0.22
Volatility	2.92	15.85	15.56



Fair ROE (pages 61-62)

◆ LTC Yield:	2.65%
◆ Market Risk Premium:	5.0-6.0%
◆ Beta:	0.45-0.55
◆ Issue costs:	0.50%
◆ Credit spreads:	0.33
◆ Adjustment for bond buying	0.80%
◆ <i>Risk Premium:</i>	<i>6.53-7.58%</i>
◆ Overall equity market return:	8.5-9.5%
◆ Normal US Electric risk premium:	3.0-3.70%
◆ US electric DCF:	6.50%
◆ Average Canada ROE since 1990:	9.92%
◆ Asset manager's equity returns:	7.0-9.0%
◆ Preferred shares (about):	5.25%



Risk Ranking

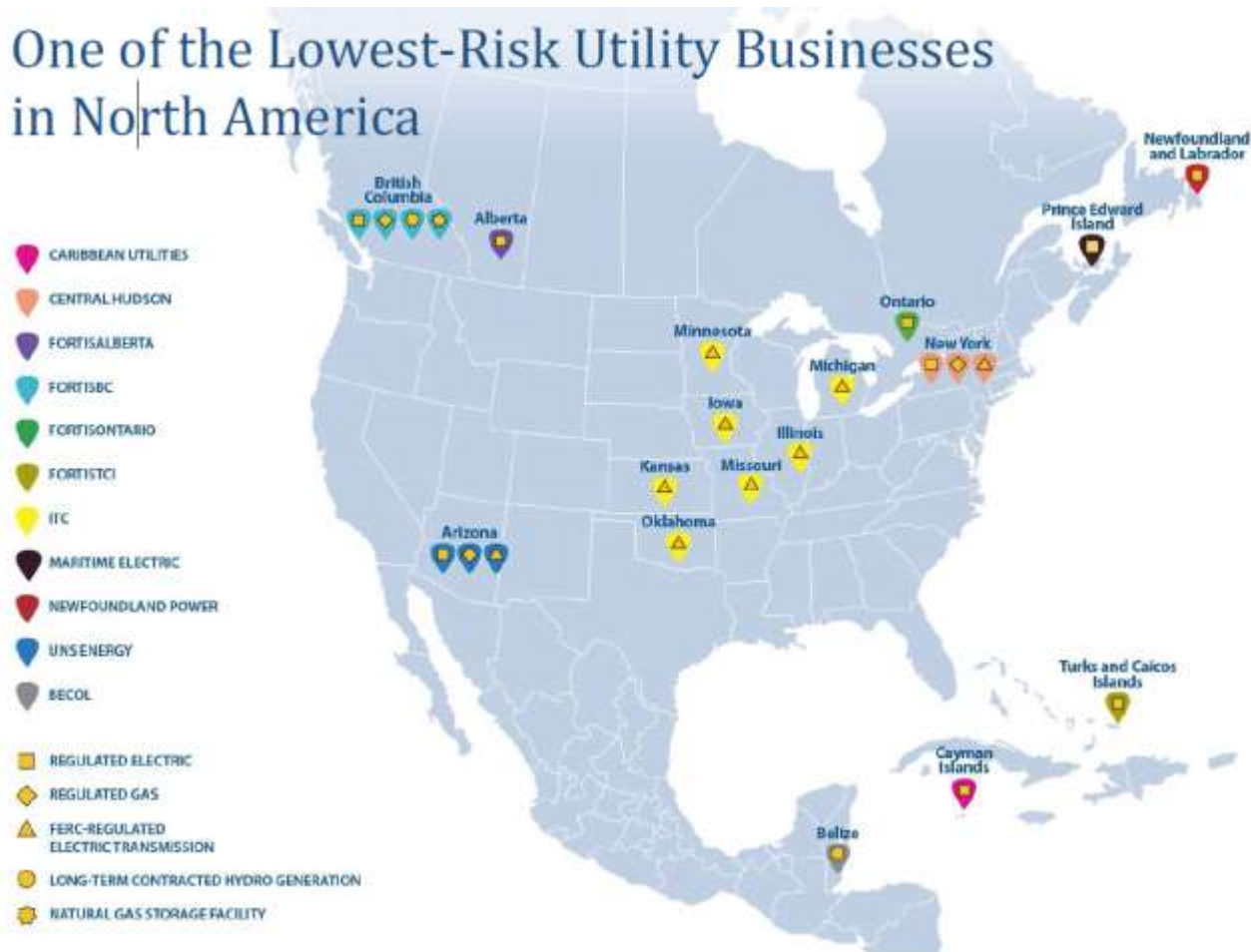
◆ S&P *Issuer* rating

Business And Financial Risk Matrix						
Business Risk Profile	Financial Risk Profile					
	Minimal	Modest	Intermediate	Significant	Aggressive	Highly leveraged
Excellent	aaa/aa+	aa	a+/a	a-	bbb	bbb-/bb+
Strong	aa/aa-	a+/a	a-/bbb+	bbb	bb+	bb
Satisfactory	a/a-	bbb+	bbb/bbb-	bbb-/bb+	bb	b+
Fair	bbb/bbb-	bbb-	bb+	bb	bb-	b
Weak	bb+	bb+	bb	bb-	b+	b/b-
Vulnerable	bb-	bb-	bb-/b+	b+	b	b-

- ◆ S&P lowers the rating to BBB+ due to “management and governance”
- ◆ S&P then raises it two notches to A since it is secured financing (mortgage bonds) which lowers parent company risk (Fortis)

***Fortis Utility Operations
Schedule 7***

One of the Lowest-Risk Utility Businesses in North America



Investment-Grade Credit Ratings and Ample Liquidity

Schedule 8

Credit Ratings	
 ⁽¹⁾	A- / BBB+
	BBB (high)
 ⁽²⁾	Baa3



(1) In March 2018, S&P affirmed the Corporation's credit ratings. The outlook was revised to negative from stable, due to modest temporary weakening of financial measures as a result of U.S. Tax Reform, which reduces cash flow at the Corporation's U.S. utilities.

(2) In April 2018, Moody's issued a credit opinion with no change to the Corporation's credit ratings or outlook.

Other Utility Bond ratings: Not one A

Schedule 9

	Ticker	Recent	Market		EV/EBITDA								S&P
January 7, 2019	(Exch.)	Price	Cap.	EV	2016A	2017A	2018E	2019E	2020E	For.	vs. Peers	Debt-to-Cap.	Debt Rating
Canadian Power & Utility													
AltaGas Ltd.	ALA-T	14.44	3,939	14,088	20.0	17.8	14.1	11.4	10.8	11.4	108%	44.2	BBB-
ATCO Ltd.	ACO.X-T	38.34	4,401	18,407	9.4	8.0	9.0	8.6	8.3	8.6	n.a.	58.0	A-
Canadian Utilities Ltd.	CU-T	31.24	8,513	20,159	11.6	11.1	10.7	10.1	9.7	10.1	117%	60.6	A-
Capital Power Corp.	CPX-T	26.42	2,692	4,850	9.7	8.4	8.8	6.1	6.1	6.1	71%	41.4	BBB-
Caribbean Utilities Ltd.	CUP.U-T	12.47	414	687	11.3	10.3	10.3	9.6	9.2	9.6	112%	54.8	A-
Emera Inc.	EMA-T	42.94	10,004	26,273	16.5	11.2	10.8	10.1	9.9	10.1	118%	67.8	BBB+
Fortis Inc.	FTS-T	44.39	18,942	45,358	18.1	12.1	12.0	11.1	10.5	11.1	130%	56.8	A-
Hydro One Ltd.	H-T	20.20	12,037	24,301	11.8	12.0	10.7	9.1	8.4	9.1	106%	52.8	A-
TransAlta Corp.	TA-T	5.92	1,893	8,842	6.5	6.5	6.7	7.4	7.2	7.4	87%	45.8	BBB-
Valeneer Inc.	VNR-T	19.49	765	948	7.3	3.1	14.2	1.9	13.9	2.1	25%	9.9	NR
Average					12.5	10.2	10.7	8.5	9.5	8.6		48.2	
U.S. Electric Utilities													
Ameren Corp.	AEE-N	64.59	15,783	24,878	11.0	10.4	10.3	10.2	9.6	10.2	110%	53.5	BBB+
American Electric Power	AEP-N	73.44	36,214	60,229	10.9	11.4	11.3	10.7	10.1	10.6	115%	55.5	A-
Centerpoint Energy Inc.	CNP-N	28.68	14,374	22,027	10.8	10.3	10.7	8.2	7.9	8.1	88%	65.3	A-
CMS Energy Corp.	CMS-N	48.85	13,841	24,707	12.0	11.2	11.3	10.7	10.4	10.6	115%	70.1	BBB+
Consolidated Edison Inc.	ED-N	76.55	24,887	42,613	11.6	10.6	10.8	10.0	9.6	10.0	108%	51.8	A-
Dominion Resources Inc.	D-N	72.21	54,294	94,164	16.2	14.7	13.9	11.9	11.0	11.8	128%	65.8	BBB+
DTE Energy Co.	DTE-N	109.99	20,010	34,087	13.4	12.6	12.4	11.5	11.0	11.5	124%	56.4	BBB+
Duke Energy Corp.	DUK-N	85.37	60,869	117,437	12.5	12.0	12.2	11.4	10.9	11.4	123%	56.6	A-
Edison International	EIX-N	58.42	19,034	35,967	8.3	8.0	8.2	7.6	7.6	7.6	82%	51.1	BBB+
Entergy Corp.	ETR-N	84.80	15,361	33,056	9.7	9.4	9.1	8.0	9.1	8.1	87%	67.1	BBB+
FirstEnergy Corp.	FE-N	37.17	19,010	38,029	8.6	8.6	9.8	9.6	9.4	9.6	104%	85.1	BBB
NextEra Energy Inc.	NEE-N	172.53	82,460	117,636	14.3	12.7	13.0	11.7	10.9	11.7	126%	54.3	A-
PG&E Corp.	PCG-N	24.40	12,656	31,828	5.1	5.1	6.2	5.0	6.0	5.0	55%	49.6	BBB-
Pinnacle West Capital	PNW-N	84.74	9,498	14,780	11.0	10.2	10.6	10.0	9.5	10.0	108%	49.2	A-
PPL Corp.	PPL-N	28.87	20,778	41,739	10.2	10.7	10.2	9.6	9.1	9.6	103%	66.4	A-
Public Service Enterprise	PEG-N	51.37	25,985	40,655	11.3	11.1	11.2	10.4	9.6	10.4	112%	49.6	BBB+
Southern Co./The	SO-N	44.71	45,342	94,009	13.1	11.1	11.2	10.7	10.4	10.7	115%	66.3	A-
Average					11.1	10.5	10.6	9.8	9.5	9.2		59.2	

Fair ROE & Common Equity

- ◆ *In 2012 I recommended an ROE of 7.50%, an AAM and LTC floor of 3.80%*
- ◆ *This forecast LTC floor has yet to be reached so I continue to recommend a 7.5% ROE. This is 2.0% more than typical preferred shares.*
- ◆ *In terms of business risk I see nothing in MEC that is unusual for a Canadian electricity distributor, particularly since it has minimal generation. I would therefore recommend a 35% common equity ratio*
- ◆ *Bearing in mind the AUC financial parameters a “half way” house would be their allowances of 8.5% ROE on 37% common equity which target an A rating*

