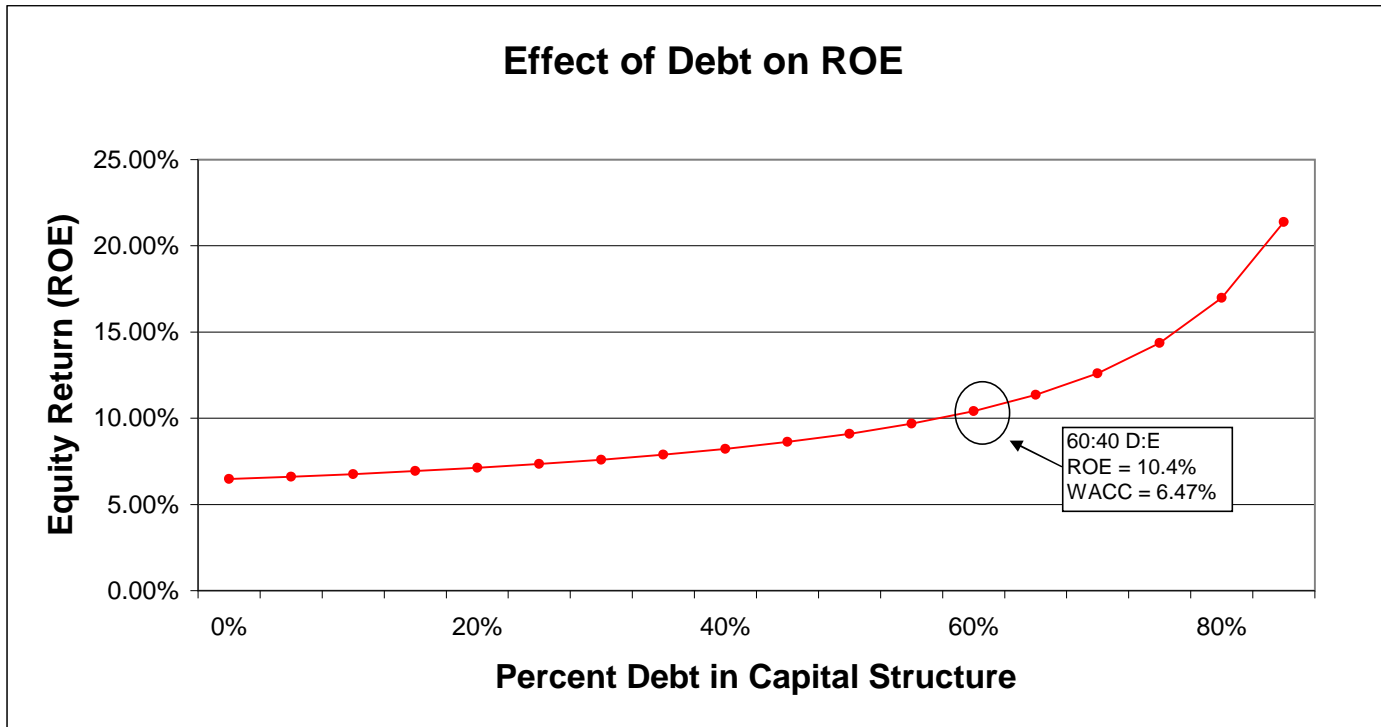


This asset return, or WACC calculation, is identical to that which Lazar & Prisman used to calculate asset returns of 5.8% to 7.0% in their June paper. (Using Lazar & Prisman's values: Asset Beta of 0.357, Rf of 5.01% and Rm of 10.65%, WACC, or asset return is 7.0%.) Note this is not ROE - it is Asset Return, or WACC. WACC is important because it measures the risk and return associated with the comparable firms.

In the example above, varying the percentage of debt in the capital structure, we see that Asset Return, or WACC, varies between 5.2% and 7.4% for the observed equity beta of 0.47 (from Appendix A of Staff's July 25 report). As more debt is added to the capital structure, WACC decreases. This phenomenon is what Professor Booth referenced when he discussed optimizing the capital structure. In this example, with 50% debt in the capital structure, we see that WACC is 6.47%. This 6.47% WACC measures the asset risk associated with the comparable firms which have a D:E ratio of approximately 50%. With 60% debt in the capital structure, the asset return, or WACC, declines to 6.2%.



In this example, we fix after tax WACC, or the after tax asset return, at 6.47%, per the previous sheet. We can then look at the impact on ROE when we vary the percentage of debt in the capital structure. As more debt is added to the capital structure, ROE increases. Intuitively, this is because equity grows riskier with the addition of debt. Debt is less risky - it is paid out first and consequently it has a lower interest rate. Algebraically, as 6% debt is making up a greater percentage of the capital structure, per the formula $(1-T) * 6\% * D$, a smaller percentage of equity with a higher ROE is required to maintain the 6.47% WACC. With 60% debt in the capital structure, we see that the ROE is 10.4%.

WACC determines the return component of the revenue requirement. The return provides reimbursement to all holders of capital (debt and equity) for the risk they bear for their investment. The asset itself, in this case the LDC, determines the appropriate level of that risk, as quantified by the comparable companies. How the LDC chooses to finance its rate base does not change WACC, the asset return, or the risk inherent in the LDC. This is why we can see different ROEs associated with the same WACC of 6.47%. In the example above, we vary capital structure to produce these ROEs. On the next tab, the calculations fix capital structure and vary debt interest rates to produce different ROEs.

Question 5 Response:

Staff applies a shortcut formula to calculate the equity beta; with this equity beta, they calculate the equity return. **The shortcut formula assumes that the debt beta equals zero. When the debt beta equals zero, the debt interest rate is not 6%.** A debt interest rate of 6% yields a debt beta of <0.23>. A debt beta of <0.23> results in a different equity beta and equity return from that which staff calculated.

We provide below the calculations. The results described in our presentation on September 19, are in Column H and are based on a 6.47% WACC, resulting in a 10.5% equity return. The 6.47% WACC corresponds to the risk associated with the comparable companies with a 51:49 E:D ratio.

In Column J, we provide calculation of equity returns using both our method and Staff's method using a WACC of 6.2%. The 6.2% is the WACC for the comparable companies re-levered to a 60:40 D:E ratio. While we do not believe this WACC is appropriate, we provide the calculation to demonstrate that the debt interest rate used in Staff's calculation is incorrect. Staff's method results in an equity return of 7.9% and a debt rate of 7.8%; our method results in an equity return of 9.8% and a debt rate of 6%.

WACC determines the return component of the revenue requirement. The return provides reimbursement to all holders of capital (debt and equity) for the risk they bear for their investment. The asset itself, in this case the LDC, determines the level of that risk. How the LDC chooses to finance its rate base does not change WACC, the asset return, or the risk inherent in the LDC. This is why, in column J, we can see different equity and debt rates associated with the same WACC of 6.2%.

Data from 60-month, All Rate Regulated Case (Staff - Appendix A) Column H Column J

Other assumptions:	%D	%E	Rd	Rf	Rm
	60%	40%	0.06	5.01%	10.06%

Companies	60-month Equity Beta	Tax Rate	Equity	D/E	After Tax Unlev Beta at 51:49	After Tax Unlev Beta at 40:60
ATCO	0.34	0.36	47.8%	1.09	0.20	0.17
Canadian Utilities	0.28	0.36	42.9%	1.33	0.15	0.14
Coast Mountain Power	-0.43	0.36	98.4%	0.02	-0.43	(0.22)
Enbridge Inc.	0.09	0.36	33.9%	1.95	0.04	0.05
Maxim Power corp	0.74	0.36	51.8%	0.93	0.46	0.38
Pacific Northern Gas	0.59	0.36	45.9%	1.18	0.34	0.30
TCPL	0.14	0.36	31.8%	2.14	0.06	0.07
Fortis	0.27	0.36	32.9%	2.04	0.12	0.14
TransAlta Power	0.44	0.36	52.6%	0.90	0.28	0.22
Canadian Hydro Developers	1.10	0.36	59.2%	0.69	0.76	0.56
Manitoba Telecom Services	0.52	0.36	58.1%	0.72	0.36	0.27
TELUS Corp.	1.61	0.36	59.9%	0.67	1.13	0.82
Averages	0.474	0.360	0.513	1.139	0.289	0.242

CORRECT CALCULATION		Result with 51:49 E:D	Result with 40:60 E:D	
<u>When debt is at 6% then Bd is <0.23>, not zero:</u>				
Formula:	$(1-T) * Rd = Rf + Bd * (Rm - Rf)$, so $Bd = \frac{Rf - (1-T) * Rd}{Rm - Rf}$ $Bd = \frac{0.05 - (1 - 0.36) * 0.06}{0.10 - 0.05} = 0.23$	(0.23)	(0.23)	Debt Beta if Debt Rate = 6%
<u>If Bd = <0.23>, then Be is not 0.57:</u>				
Formula:	$Ba = D * Bd + E * Be$, so $Be = \frac{Ba - D * Bd}{E}$ Column H $Be = \frac{.289 - .6 * <0.23>}{.4} = 1.09$	1.09	0.95	Equity Beta if Debt Rate = 6%
<u>Since Be is not 0.57 then ROE is not 7.87%:</u>				
Formula:	$Re = Rf + Be * (Rm - Rf)$ Column H $Re = 0.05 + 1.09 * (0.10 - 0.05) = 10.5\%$	10.5%	9.8%	Equity Return if Debt Rate = 6%
<u>WACC Calculation:</u>				
Formula:	$Ra = WACC = (1-T) * D * Rd + E * Re$ Column H $WACC = .64 * .6 * .06 + .4 * .105 = 6.5\%$	6.5%	6.2%	Asset Return, or WACC

INCORRECT CALCULATION		Result with 40:60 E:D	
<u>Lazar & Prisman's shortcut method for calculating Be assumes that Bd = 0:</u>			
Formula:	$Ba = [Be * E + Bd * D * (1-T)] / [E + (1-T) * D]$ $Ba = [Be * E + 0 * D * (1-T)] / [E + (1-T) * D]$ so $Be = Ba * [1 + (1-T) * D/E] = .289 * [1 + .64 * 60/40] = 0.57$	0.57	Equity Beta if Bd = 0
<u>Lazar & Prisman's Equity Return When Bd = 0:</u>			
Formula:	$Re = Rf + Be * (Rm - Rf)$ $Re = 0.05 + .57 * (0.10 - 0.05) = 7.9\%$	7.9%	Equity Return if Bd=0
<u>If Bd = 0 then the cost of debt cannot be 6%:</u>			
	$(1-T) * Rd = Rf + 0 * (Rm - Rf)$ so $Rd = Rf / (1-T) = 0.05 / 0.64 = 7.8\%$	7.8%	Debt Rate if Bd=0
<u>WACC Calculation:</u>			
Formula:	$Ra = WACC = (1-T) * D * Rd + E * Re$ $WACC = .64 * .6 * .078 + .4 * .079 = 6.2\%$	6.2%	Asset Return, or WACC