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DEMANDE DE RENSEIGNEMENTS Nº 1 DE LA RÉGIE DE L'ÉNERGIE (LA RÉGIE) RELATIVE À LA FIXATION DE TAUX DE RENDEMENT ET DE STRUCTURE DE CAPITAL – PHASE 2 ADRESSÉE AU DR LAURENCE BOOTH

TAUX SANS RISQUE

1.   Références :   (i)   Pièce C-ACIG-0037, p. 2;
(ii)   Pièce C-ACIG-0037, p. 33;
(iii) Pièce C-ACIG-0037, p. 65;
(iv)   Pièce C-ACIG-0037, p. 66;
(v)   Pièce C-ACIG-0037, p. 85;
(vi)   Pièce C-ACIG-0037, p. 99.

Préambule :

(i)   « I base my LTC yield on the forecast from the Parliamentary budget officer and the Federal government's budget briefing which itself was based on consensus values from the private sector. Consequently, <u>I use a forecast LTC Yield of 3.37 %, which is still below the 3.8 % rate I use as a trigger for changing my estimate of the allowed ROE.</u> Further it is also 1.13 % lower than the 4.5 % I used in the 2011 GMI hearing ». [nous soulignons]

(ii)   « *I have no problem with RBC's near-term forecast that the 30-year LTC bond yield is likely to increase moderately from the current level or the PBO's longer term forecast for the ten-year bond yield at 3.0 % by 2024<u>. However, I personally doubt that it will stabilise at 3.0 % and would expect it to increase further particularly if inflation moves to the top of the bank's range</u>. If the average spread to the 30-year bond of 0.37 % is added it means a medium term PBO forecast for the 30-year LTC bond yield of 3.37 %. It is not appropriate to add the current spread between the 10 and 30-year bond yield, since the forecast indicates that this spread will tighten as T. Bill yields increase.* [nous soulignons]

Q. WHAT ARE THE RISKS ATTACHED TO THIS FORECAST?
A. <u>The main risk is political, since neither short nor long term interest rates are currently being determined by private sector investors.</u> Instead, and since the financial crisis, they have largely been determined by the actions of central banks supporting their government's active fiscal policy ». [nous soulignons]

(iii) « *In subsequent testimony, for example before the BCUC <u>in 2016, I recommended that the modified ROE formula only be applied when the forecast LTC yield exceeded 3.8 %</u> since basing a fair ROE in the equity market based on known distortions generated by policy makers in the bond market I could not reconcile as being fair. I just could not accept a negative after-tax yield on a Government of Canada bond as being consistent with any rational equilibrium financial model* ». [nous soulignons]

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(iv)   « Further, <u>the Bank's estimate of the neutral overnight rate of 1.0 % in real terms or 3.00 %</u> <u>nominal implies a "normal" 30-year long Canada yield of 4.25 %</u>, which is still higher than the current forecast for 2024-26 ». [nous soulignons]

(v)   «

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

A.   I would judge the cost of equity based on my CAPM estimates to be in a range 6.55-7.40% or an average of 6.98%, which with the flotation cost adjustment means an ROE of 7.50%.

Risk Premium

	Low	High
Forecast long Canada bond yield	3.37	3.37
Adjustment for bond buying	0.43	0.43
Utility risk premium	2.75	3.30
Adjustment to ROE	0.50	0.50
Estimate	7.05	7.60

»

(vi)   « *Q. WHAT ARE YOUR RECOMMENDATIONS ?*
A. With no material change in their business risk I would recommend the continuation of their current allowed equity ratios of 46 % for Energir (38.5 % common and 7.5 % referred) and 40 % for Gazifere. With business risk adjusted for in their common equity ratios <u>*I regard Energir as*</u> <u>*warranting a generic ROE of 7.5 %*</u> ». [nous soulignons]

Demandes :

1.1   En vous référant à (i), (iii) et (v), veuillez préciser comment le seuil de 3,8 % (3,37 % + 0,43 %) déclenchant la révision de l'estimé du rendement autorisé a été déterminé.
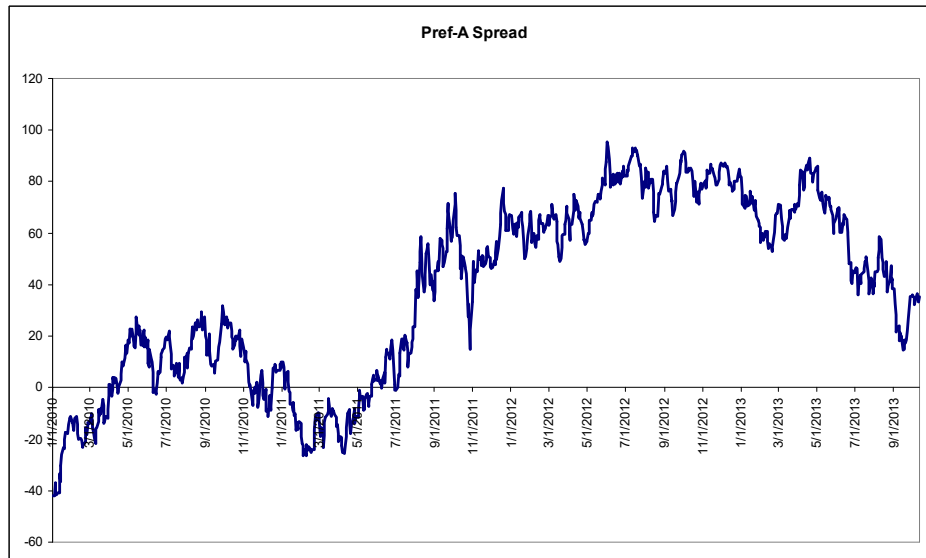
Réponse :

In my 2013 Quebec Hydro evidence (R-3842-2013, pages 42-43[1]), I explained why in the following sections:

« The implication of the change in yields from 2010 to 2012 is that after the Federal Reserve embarked on Operation Twist to twist the US yield curve and lower the yield on long term US government bonds. As a result there was a direct effect in Canada. Moreover, this affected both the government and to a lesser extent the corporate bond market, since yields on both came down after September 2011. However, yields in the preferred share market did not come down to the same degree causing the preferred share yield spread to widen. This is probably because preferred shares are unattractive to foreign investors,

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[1] R-3842-2013, C-AQCIE-CIFQ-0023, p. 42-43.

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since the dividends attract with-holding taxes. The following takes the information in the prior graph and specifically graphs the change in the spread between the preferred share spread and the A spread. If all securities reacted in a similar way to the changes in the long Canada bond market then this spread would average out to zero. However, the change in the spreads clearly indicates that this is not true.

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

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

Unfortunately, the TSX no longer provides the yield on its index of preferred shares. However, I continue to regard 3.8% as a minimum reasonable long Canada bond yield unaffected by the actions of central banks. Note as I discuss in my evidence there are other factors driving the lower LTC yields apart from government bond buying programs. I regard the most important of these being demographic changes and a decrease in the rate of economic growth.

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1.2   En vous référant à (ii), veuillez présenter la fourchette de prévisions des taux des obligations 30 ans du gouvernement du Canada sur un horizon de 1 à 3 ans dans l'éventualité où le taux serait déterminé pour le secteur privé. Veuillez expliquer.

Réponse :

Current (May 3, 2022) yields are as follows:

Marketable bond average yields

Data available as: **CSV**, **JSON** and **XML**

Series	2022-04-26	2022-04-27	2022-04-28	2022-04-29	2022-05-02
Government of Canada marketable bonds					
Average yield					
1 to 3 year	2.43	2.47	2.50	2.60	2.64
3 to 5 year	2.58	2.62	2.64	2.74	2.78
5 to 10 year	2.68	2.75	2.75	2.84	2.91
Over 10 years	2.75	2.82	2.79	2.85	2.91

Selected benchmark bond yields

Data available as: **CSV**, **JSON** and **XML**

Series	2022-04-26	2022-04-27	2022-04-28	2022-04-29	2022-05-02
Government of Canada benchmark bond yields					
2 year	2.47	2.50	2.53	2.63	2.66
3 year	2.52	2.55	2.58	2.67	2.70
5 year	2.60	2.64	2.66	2.75	2.81
7 year	2.59	2.64	2.66	2.75	2.81
10 year	2.72	2.80	2.80	2.88	2.95
Long-term	2.72	2.79	2.75	2.81	2.87
Real return bond					
Long-term	0.84	0.91	0.86	0.93	1.04

Compared to the RBC forecast at the time I prepared my testimony (February 2022) the 2-year bond yield has increased from the 2022Q1 forecast of 1.25% to 2.66% and the 30-year yield from 2.05% to 2.87%. The 2-year yield has increased by 1.41% versus the 0.82% for the 30 -year yield as investors have realised that the Bank's policy rate, the overnight rate, is going to increase faster than anticipated due to higher headline inflation. I fully expect this process to continue with shorter term rates increasing faster than longer term rates. Noticeably the current ten-year yield at 2.95% is almost at the March 2022 PBO forecast for 2024-2026 indicating that most forecasters did not anticipate such a rapid increase. RBC, for example, in their April forecast had the ten-year yield at 2.10%.

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I would expect the pace of increasing yields to slacken, but fully expect the near-term forecast (2023Q4) for a ten-year yield to be over 3.00% and the 30-year yield to be closer to my 3.8% minimum private sector rate. Much of this depends on what the Bank of Canada wants to see. They and other banks are wary of an inverted yield curve, where short rates exceed long rates, as this is seen by the markets as a strong recession signal. Consequently, I suspect they will push up short rates but at the same time let their holdings of long bonds run off, thereby increasing long rates as well and avoiding a yield curve inversion.

1.3 En vous référant à (iii), (iv), (v) et (vi), veuillez présenter l'estimation du « benchmark utility » et du rendement autorisé dans l'éventualité que les taux des obligations 30 ans du gouvernement du Canada se situent dans une fourchette entre 3,8 % à 4,25 %. Veuillez expliquer.

Réponse :

At 3.8% I would simply remove the 0.43% adjustment to the 3.37% interest rate forecast so my recommended ROE would be the same at 7.50%. At 4.25% I would probably revert to my forecast market risk premium of 5.0-6.0% that I have used previously at that level of forecast LTC yields and recommend about 7.75%. This was my recommended ROE for GMI in 2011 when the forecast LTC Yield was 4.16%-4.50% (Dr. Booth's report July 2011, page 31).

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FORMULE D'AJUSTEMENT AUTOMATIQUE (FAA)

2.   Références :   C-ACIG-0037, p. 65.

Préambule :

« *In subsequent testimony, for example before the BCUC in 2016, I recommended that the 20 modified ROE formula only be applied when the forecast LTC yield exceeded 3.8% since basing 21 a fair ROE in the equity market based on known distortions generated by policy makers in the 22 bond market I could not reconcile as being fair* ».

Demande :

2.1 Compte tenu du contexte économique et financier actuel, veuillez commenter les avantages et les inconvénients pour Énergir, Gazifère et Intragaz de mettre en place une formule d'ajustement automatique du taux de rendement (ROE formula) en comparaison d'une approche de révision périodique aux trois ans.

Réponse :

I have recommended ROE adjustment mechanisms since the landmark decisions of the BCUC and the NEB (now CER) in 1994. As indicated in my evidence they worked well until the financial crisis when a rush to safety caused corporate bond spreads to go up as lower Canada yields caused utility allowed ROEs to go down. The Regie accepted that a credit spread adjustment solved this particular problem and used such a spread adjusted ROE formula to set the allowed ROEs for both Energir and Gazifere. This was only set aside due to the collapse in long term Canada (LTC) bond yields caused by central bank bond buying. My response was to insert a forecast LTC yield of 3.8% before the ROE formula operated, but since forecast LTC yields never reached my 3.8% "trigger" the result was a constant allowed ROE exactly the same as what was approved by the Regie.

At the current point in time and given the pace of developments in the financial markets, I would recommend a fixed rate based on a forecast LTC yield of 3.8% with a 75% adjustment should the forecast LTC yield exceed 3.8%. The mechanics of this being identical to that adopted by the Regie for both Energir and Gazifere prior to the stabilisation of their allowed ROEs. I would then recommend that a formula ROE mechanism be placed on the issues list for a hearing in three year's time, where the companies should have the right to also enter evidence as Dr. McShane did on behalf of Gazifere in 2010.

I can see no problems with this approach as the utilities are protected from a drop in LTC yields and automatically get compensated for any increase. I have heard many witnesses argue for an inverse relationship between interest rates and utility risk premiums as interest rates decreased and would hope that they support decreased risk premiums as interest rates increase.

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STRUCTURE DE CAPITAL VALEUR AU LIVRE ET VALEUR AU MARCHÉ

3. **Référence :** Pièce C-ACIG-0037, p. 11 et 12.

Préambule :

« *Dr. Villadsen's procedure follows the same general approach as the Brattle evidence in 2009. First, estimate the after-tax weighted average cost of capital or ATWACC as in BV 4.7 using the multi-stage DCF equity cost to get 5.6 % and BV 4.11 using the CAPM equity cost estimate to get 4.8 %. Second, <u>determine the ROE that results from the use of book value capital structure weights to be consistent with the ATWACC estimates using market value weights</u>. I discuss this approach at length in my Appendix E. However, since the equity market values of Dr. Villadsen's sample firms exceed the regulated book value of equity for the Quebec distribution utilities, this process automatically increases the ROE. For example, in BV-4.8 Dr. Villadsen had the average ATWACC, using the multi-stage DCF average DCF equity cost of 8.71 %, at 5.60 %. However, using the lower book equity weights this increases or levers up the estimated return on equity to 10.50 % or a 1.8 % increase* ». [nous soulignons], [note de bas de page omise]

Demande :

3.1 En assumant que le coût de la dette, le coût des actions privilégiées et le taux d'impôt demeurent constants, veuillez préciser si, selon le Dr. Booth, il y a une différence quant au coût moyen pondéré du capital après impôt résultant de (1) l'application d'un taux de rendement sur l'avoir propre de X %, établi à partir d'un échantillon d'entreprises comparables, en utilisant une structure de capital qui refléterait les valeurs au marché et (2) l'application d'une structure de capital reflétant plutôt les valeurs aux livres, laquelle est moins fortement pondérée en capitaux propres, tout en ajustant à la hausse le taux de rendement X % pour prendre en compte l'écart entre la structure de capital calculée à partir des valeurs au marché et celle calculée à partir des valeurs au livre. Veuillez expliquer.

Réponse :

The utility cost of capital with book value weight is

$$ UCC = K_D(1-T)\frac{D}{A} + ROE\frac{S}{A} $$

Where S is the book value of equity (shares) and D for debt so that they sum to the book value of invested capital or assets (A), where for convenience I ignore preferred shares since Gazifere has none while for Energir they are deemed. Putting in numbers if the regulated common equity is $40 the allowed net income is the allowed ROE of 8% times $40 or $3.2 and if the after-tax interest rate is 3% the after-tax interest cost is $1.8. So the UCC is this $5 divided by $100 or 5% (0.4*8+0.6*3).

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In contrast, the standard weighted average cost of capital WACC is as follows:

$$WACC = K_D(1 - T)\frac{D}{V} + K_E\frac{E}{V}$$

By assumption the after-tax interest cost of \$1.8 is assumed constant, so what varies is the equity cost versus the allowed ROE and the market value of equity versus the book value. Assuming the perpetuity model (otherwise no comparison is possible) the equity market value (E) is determined from the perpetuity equation,

$$E = \frac{ROE * S}{K_E}$$

This is simply the forecast net income (ROE times book equity) discounted back at the market equity cost in perpetuity. Substituting this into the WACC we get

$$WACC = K_D(1 - T)\frac{D}{V} + ROE\frac{S}{V}$$

Note that the forecast interest payments and net income are exactly the same as in the UCC, but the WACC deviates from the UCC cost, since these forecast payments are divided by what we term the total enterprise value: the market vale of equity plus debt (E+V) rather than their book amounts.

For example, if the market equity cost is 6% the forecast net income is valued at \$3.2 divided by the 6% equity cost or \$53.33, so the total enterprise value is \$113.33. So while it is true that in the WACC the lower equity cost is applied to "more" equity and in the UCC with book weights the higher ROE is applied to less equity this doesn't mean the UCC is equal to the WACC. With the example numbers, the estimated WACC is the forecast net income of \$5 divided by the total enterprise value of \$113.33 or 4.44%.

The lower estimated WACC is correctly forecasting that the investors are happy and the market to book ratio is above 1.0 at 1.33. The Brattle approach is that the book debt equity ratio of 1.5 (60/40) is higher than the market debt equity ratio of 1.125 (60/53.33) so the allowed ROE needs to be *increased*, which is totally incorrect. Logically they are asking the Regie to believe that the stockholders who are very happy at the moment with a high allowed ROE above their equity cost need even more compensation by way of an even higher allowed ROE.

The AUC saw through this fallacy and stated:

"The Board would be derelict in its statutory responsibilities to recognize market capitalization ratios that are derived from a market value capitalization that deviates from the intrinsic long-run value of the regulated firm."

I have never seen a board with such an explicit rejection of an approach put forward by a witness on behalf of a utility.

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4. **Référence :** Pièce B-0143, p. 17, 18 et 21.

Préambule :

« *(iii) Les tableaux (Panel) A à H de l'annexe BV-4.3 contiennent les renseignements relatifs à l'évaluation des structures de capital selon la valeur au marché et au livre de chacune des entreprises de l'échantillon « Canadian Sample » en date du deuxième trimestre des années 2016 à 2021.*

(iv) Les tableaux (Panel) A à Q de l'annexe BV-5.3 contiennent les renseignements relatifs à l'évaluation des structures de capital selon la valeur au marché et au livre de chacune des entreprises des échantillons « Gas Sample » et « Water Sample » au deuxième trimestre des années 2016 à 2021.

À partir des annexes BV-4.3 et BV-5.3 des références (iii) et (iv), la Régie a produit le tableau suivant présentant les ratios cours sur valeurs aux livres (C/VAL) des titres formant les 3 échantillons d'entreprises comparables proposées, en date du 2ᵉ trimestre 2021.

Échantillon Gazières américaines	C/VAL	Échantillon Dist. eau américains	C/VAL	Total US C/VAL	Échantillon Canadiens	C/VAL
Capitaux propres : valeurs au marché / valeurs aux livres						
Atmos Energy	1,67	Amer. States Water	4,52		Algonquin Power & Utilities	2,35
Chesapeak Utilities	2,85	Amer. Water Works	4,30		AltaGas Ltd	1,22
New Jersey Resources	2,39	Artesian Res. Corp	2,09		Canadian Utilities Limited	1,89
NiSource	2,07	Californie Water	2,95		Emera Incorporated	1,78
Northwest Natural	1,78	Essential Utilities	2,41		Enbridge Inc	1,84
ONE Gas	1,75	Global Water Resources	12,33		Fortis Inc	1,53
South Jersey Inds	1,60	Middlesex Water	4,17		Hydro One Limited	1,70
Southwest Gas	1,36	SJW Group	1,95		TC Energy Corporation [*]	2,18
Spire Inc	1,55					
Moyenne gazières américaines	**1,89**	**Moyenne distrib. eau américains**	**4,34**	**3,04**	**Moyenne échantillon canadien [*]**	**1,81**
Dette à long terme : valeurs au marché / valeurs aux livres						
Atmos Energy	1,15	Amer. States Water	1,19		Algonquin Power & Utilities	1,12
Chesapeak Utilities	1,04	Amer. Water Works	1,20		AltaGas Ltd	1,10
New Jersey Resources	1,15	Artesian Res. Corp	1,16		Canadian Utilities Limited	1,26
NiSource	1,19	Californie Water	1,14		Emera Incorporated	1,18
Northwest Natural	1,14	Essential Utilities	1,13		Enbridge Inc	1,13
ONE Gas	1,10	Global Water Resources	1,13		Fortis Inc	1,18
South Jersey Inds	1,04	Middlesex Water	1,04		Hydro One Limited	1,22
Southwest Gas	0,79	SJW Group	1,19		TC Energy Corporation (*)	1,18
Spire Inc	1,15					
Moyenne gazières américaines	**1,08**	**Moyenne distrib. eau américains**	**1,15**	**1,11**	**Moyenne échantillon canadien**	**1,17**
(*) À noter que le ratio C/VAL de TC Energy a été modifié pour tenir compte du cours moyen de 63,52 $ au 2ᵉ trimestre 2021 plutôt que 30 $ figurant au Panel H du tableau BV-4.3 (pièce B-0015, p. 152)						

[…]

5.5 Veuillez indiquer si, du fait que les actions des entreprises de l'échantillon des services d'eau Américains se transigent sur le marché à 4,34 fois la valeur aux livres en moyenne, plutôt qu'à 1,89 fois la valeur aux livres en moyenne pour les distributeurs de gaz de l'échantillon Américain (référence (iv)), de sorte que la proportion de capitaux propres dans les structures de capital des distributeurs d'eau, à 69,5 % (référence (v)), dépasse nettement celle des distributeurs de gaz, à 55,2 % lorsque calculée à partir des valeurs au marché, les distributeurs d'eau sont significativement moins risqués aux yeux des investisseurs que les distributeurs de gaz. Si oui, veuillez expliquer de quelle manière.

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Réponse :
Water utilities due to their lower leverage have a higher cushion in case of adverse conditions.
Specifically, the additional equity means that the companies are better able to withstand, for
example, financial market declines as seen during the early months of the COVID-19 pandemic ».
[nous soulignons]

Demandes :

4.1 Veuillez indiquer si, selon le Dr. Booth, une plus forte proportion de capitaux propres, calculée à partir des valeurs au marché, qui découlerait du fait que les actions des distributeurs d'eau se transigent à un ratio cours/valeur au livre beaucoup plus élevé que les actions des distributeurs de gaz Américains, signifie que les distributeurs d'eau bénéficient d'un levier financier plus faible et que cela leur procure un coussin en cas de conditions adverses. Veuillez expliquer.

Réponse :

Dr. Booth would state that leverage for any company is based on book values not market, values which has traditionally been the judgment of bond rating companies where they rely on financial ratios from the firm's financial statements such as the interest coverage ratio, the book debt ratio and the cash flow, however, defined, to debt ratio. Only when the market value of the debt falls below book value do we look at option-based valuation models to imply default probabilities. But this is really no more than looking at the credit default spread.

4.2 Veuillez expliquer si, pour évaluer le levier financier et le risque financier d'une entreprise, du point de vue de l'actionnaire, il est généralement préférable d'examiner les états financiers et les valeurs au livre plutôt que les valeurs au marché.

Réponse :

Dr. Booth agrees with the rating agencies that primary reliance should be placed on traditional financial analysis of the financial statements. Market values mainly come into consideration when they are significantly below book values indicating serious concerns about future profitability and the ability to service the debt.

5. Références : (i) Pièce B-0143, p. 42 et 43;
(ii) Pièce B-0143, p. 46;
(iii) Pièce B-0143, p. 50 et 51.

Préambule :

(i) « *À partir des états financiers annuels au 31 décembre 2020 de chacune des entreprises de l'échantillon Canadien proposé et des rapports Form 10-K de la dernière année fiscale disponible pour chacune des entreprises faisant partie des échantillons Américains proposés, la Régie a produit le tableau suivant présentant notamment la structure de capital élargie (Capitalisation*

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totale incluant la dette à court terme) exprimée en pourcentage de l'actif :

Comparaison de la structure des bilans (en % de l'actif)	Moyenne des 9 comparables US- Gaz	Moyenne des 8 comparables US- Eau	Moyenne des 17 comparables US	Moyenne des 9 comparables CDA	
Capitalisation totale *(dette à court et long terme*[1] *+ actions priv. + actions ordinaires)*	**70,9%**	**65,6%**	**68,2%**	**79,7%**	[1]
- dont *Total Actions ordinaires (Total shareholder's commom equity)*	30,4%	28,3%	29,3%	32,2%	[2]
Passifs réglementaires et autres à long terme *(Regulatory and Other Noncurrent Liabilities)*	21,5%	30,0%	25,8%	14,5%	[3]
- dont *Impôts différés (Deferred Income taxes)*	7,2%	6,9%	7,0%	5,0%	[4]
- dont *Contributions nettes aide à la construction (Net contributions in aid of construction)*		9,8%			[5]
Capitalisation totale / Immobilisations corporelles nettes *(Net Property, Plant and Equipment)*	99,1%	83,1%	91,1%	122,7%	[6]

[1] Incluant les contrats de location à long terme, le total des dettes, billets et notes à court terme ainsi que la portion de la dette à long terme échéant à moins d'un an.

La Régie constate que, si la proportion de capitaux propres à l'intérieur de la structure de capital est un peu plus faible pour l'échantillon des entreprises Canadiennes par rapport à celle des entreprises américaines, lorsque calculée à partir des valeurs aux livres, la structure de capital élargie des entreprises canadiennes représente une portion significativement plus importante de l'actif total des entreprises, soit 79,7 % contre 68,2 % pour les entreprises américaines (ligne 1 du tableau). De plus, la proportion des capitaux propres des entreprises canadiennes par dollar d'actifs, soit 32,2 %, est plus importante que celle de la moyenne des deux échantillons Américains proposés, soit 29,3 % (ligne 2 du tableau).

(ii)   « *7.4.1 Veuillez confirmer si le levier financier mesuré par le ratio de la proportion de capitaux propres par dollar d'actif peut constituer un indicateur utile afin de déterminer le risque financier d'une entreprise. Si non, veuillez expliquer pourquoi.*

Réponse : Not confirmed. The amount of book equity per dollar assets is a useful indicator to determine the risk of default (assuming the company in question has taken needed impairments). It would not be a measure of financial leverage from an equity investor perspective ». [nous soulignons]

(iii)   En réponse à la question 7.11 de la DDR No 1, Dr Villadsen a fourni la réponse suivante :

« *7.11 Veuillez indiquer si le fait que la proportion des capitaux propres des entreprises de l'échantillon Canadien par rapport à l'actif total des entreprises, soit de 32,2 % (référence (iv)), est plus importante que celle de la moyenne des deux échantillons Américains proposés (29,3 %), a été ou devrait être prise en considération dans l'appréciation du risque financier des entreprises aux fins du présent dossier. Veuillez expliquer pourquoi.*

Réponse :
To Dr. Villadsen's knowledge, the major credit rating agencies do not consider the proportion of equity to total business assets when determining the financial risk profile a company. For purposes of establishing a regulated utility's authorized capital structure, Dr. Villadsen finds it more relevant to look at the metrics used by credit rating agencies in their methodology (e.g., FFO to debt, FFO coverage, EBIT coverage), which are primarily cash flow or financial leverage based metrics.

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Demandes :

5.1   Veuillez confirmer si le levier financier mesuré par le ratio de la proportion de capitaux propres par dollar d'actif peut constituer un indicateur utile afin de déterminer le risque financier d'une entreprise. Dans la négative, veuillez élaborer.

Réponse :

The standard starting point in financial analysis is to use the Dupont formula. The first slide that follows is slide 17 from Dr. Booth's introductory MBA corporate finance class, which is taken from his textbook. The starting point is the return on equity (ROE) which is expanded into the return on assets (ROA) and the leverage ratio, which is total assets divided by shareholder's equity. This is done simply by multiplying and dividing by total assets to break one equation into two. The leverage ratio is the reciprocal of the measure referenced above as the ratio of equity per dollar of assets. So, it is the basic *starting point* for analysing leverage and is called the leverage ratio. We then take the return on assets and divide it into the profit margin and turnover ratios to measure other aspects of the firm's performance. This is the initial high-level analysis of corporate performance. The slide that follows (Slide 40 from my lecture) I took from Scotia Itrade, as it then was, which again defines the leverage ratio in the same way.

DuPont Formula

- Expand ROE by multiplying top & bottom by TA to define the ROA and the leverage ratio
- Then expand ROA by multiplying top and bottom by revenues & Sales/Revenues
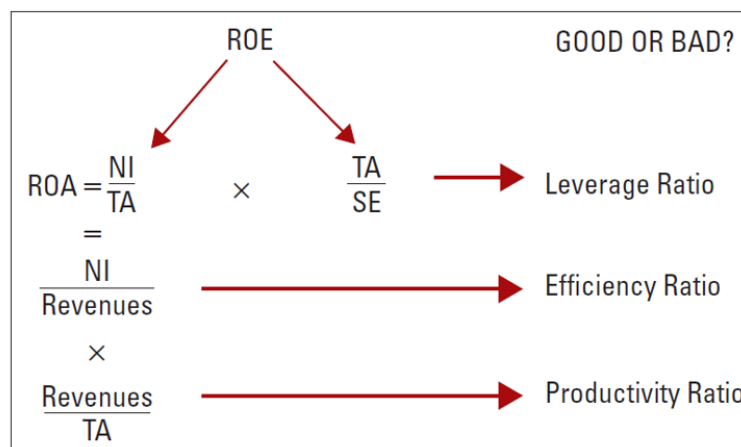
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TABLE 4-1 Scotia iTRADE's ROE Analysis for Tim Hortons, Inc.

Return on Equity	12/31/2008	12/31/2007
(1) Net sales	1,348,025	1,248,574
(2) Pretax income	423,924	408,402
(3) Net income	284,678	269,551
(4) Total assets	1,992,627	1,797,131
(5) Shareholders' equity	1,140,404	1,002,083
Pretax margin % (2/1)	31.45	32.71
x Tax retention % (3/2)	67.15	66.00
= Profit margin % (3/1)	21.12	21.59
x Assets utilization % (1/4)	67.65	69.48
= ROA % (3/4)	14.29	15.00
x Leverage (4/5)	174.73	179.34
= ROE % (3/5)	24.98	26.90

Source: Data from the Scotia iTRADE website at www.scotiaitrade.com.

- This is Tim Horton's liquidity Analysis from 2008 edition
- When Scotia Acquired Etrade they dropped this.

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The graphic that follows is for Canadian Pacific's comparable firms (CN and a US industry average) which we use throughout the textbook to show how finance is applied in Canada.

Comparables

- Turnover ratios tend to be similar across the industry & variability in the ROE comes from cost control (net profit margins)
- CN has tended to have a higher ROA than CP or the industry average, but *CP's higher leverage has raised its ROE*

TABLE 4.2 Canadian National and U.S. Industry Average DuPont Ratios

	Canadian National			U.S. Industry Average		
	2018	2017	2016	2018	2017	2016
ROE	0.2453	0.3293	0.2453	0.2430	0.3778	0.1645
ROA	0.1050	0.1457	0.0982	0.0882	0.1663	0.0574
Net profit margin	0.3022	0.4205	0.3024	0.2547	0.4987	0.1786
Turnover	0.3475	0.3466	0.3248	0.3453	0.3274	0.3180
Leverage	2.3363	2.2592	2.4969	2.7258	2.3126	2.8794

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Dr. Villadsen is correct that the rating agencies rely on other measures as well and these are in the third slide (Slide 22 in my lecture). The "stock" of debt is measured in three ways relative to total assets (the debt ratio) or shareholders equity, (the debt equity ratio) as well as the leverage ratio itself. But we are also concerned about the ability of the firm to make the statutory payments on the debt and use various "coverage ratios"

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such as the times interest earned ratio and the fixed burden coverage ratio. As I mention in the slide there are huge variations in this latter ratio including using funds flow and cash flow instead of EBITDA. The ratios are also often mix and matched using a mixture of stock and flow values such as the cash flow to debt ratio.

Assessment of *Financing Management*

- *Financial leverage (stock ratios)*
  - Debt ratio (D/TA) *normally* total liabilities (TA-SE)
  - Debt-equity ratio (D/SE) *normally* actual debt issued
  - Leverage (*TA/SE*)
- *Coverage ratios (flow ratios)*
  - Times interest earned ($EBIT/INT$)
  - Fixed charge coverage (*huge variation in definitions*) ($EBITDA / [INT + L + SF / (1-T)]$)
  - Includes lease (L) and sinking fund payments (*SF*)
- *Effective interest expense*
  - compare average interest cost across firms
  - Maturity structure: % short term debt
- *More later when we discuss Continental Carriers*
- *Similar ratios for mortgages: debt service ratio (flow) and minimum equity say 20% means debt-equity ratio of 4:1 (stock).*

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5.1.1. Veuillez préciser si la proportion de capitaux propres, calculée selon les valeurs au livre, par dollar d'actif, ainsi que le ratio Actifs totaux / capitaux propres selon les valeurs au livre constituent des mesures du levier financier et du risque financier fréquemment utilisés par les analystes et les investisseurs boursiers. Veuillez commenter.

Réponse :

Please see response to Request 5.1.

5.2 Veuillez indiquer si le fait que la proportion des capitaux propres des entreprises de l'échantillon Canadien par rapport à l'actif total des entreprises, soit de 32,2 % (références (i) et (iii)), laquelle est plus importante que celle de la moyenne des deux échantillons américains proposés (29,3 %), devrait être prise en considération dans l'appréciation du risque financier des échantillons de comparables Canadiens et Américains. Veuillez expliquer pourquoi.

Réponse :

Generally, the focus in financial analysis is invested capital, that is, capital that has been specifically invested in the firm. As a result, we tend to ignore accounting items such as accrued wages and accounts payable, since neither "normally" reflects a conscious

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decision to invest or lend to the firm. Instead, we tend to focus on both short and long-term debt. With this qualification the debt ratio is normally very similar to the leverage ratio. The slide below from my lecture (slide # 24) shows the major values we used to assess CP against CN and the US industry average. They all tell the same story.

CP Financing

- *All the financing ratios tell the same story: CP has a higher leverage, debt and debt equity ratio and a lower coverage ratio.*

- *CP Boosts its ROE by using more debt*

TABLE 4.3 Canadian Pacific, Canadian National, and U.S. Industry Average Leverage Ratios

	Canadian Pacific			Canadian National			U.S. Industry Average		
	2018	2017	2016	2018	2017	2016	2018	2017	2016
Leverage	3.2028	3.1280	4.1550	2.3363	2.2592	2.4969	2.7258	2.3126	2.8794
Debt ratio	0.6878	0.6803	0.7593	0.5720	0.5574	0.5995	0.6295	0.5668	0.6522
D/E ratio	1.3104	1.2675	1.8772	0.7125	0.6501	0.7369	0.9988	0.6953	0.8476
TIE	6.7130	6.2812	5.5690	12.6196	11.5800	11.2646	8.2871	8.2954	7.3217

BOOTH: RSM1232-3 2022