Colorado State Assessed Final Capitalization Rates
Tax Year 2009

INTRODUCTION

The narrative describes the methods, sources and calculations for the 2009 Capitalization Rates used by the Division of Property Taxation (DPT). The DPT develops a market capitalization rate for each utility industry group or sub-group with similar risk characteristics using the band of investment method. The cost of capital for each source of capital (common equity, preferred stock and debt) is weighted according to its proportion in the market capital structure and combined to derive a weighted average cost of capital (WACC) for each industry. An example is shown below:

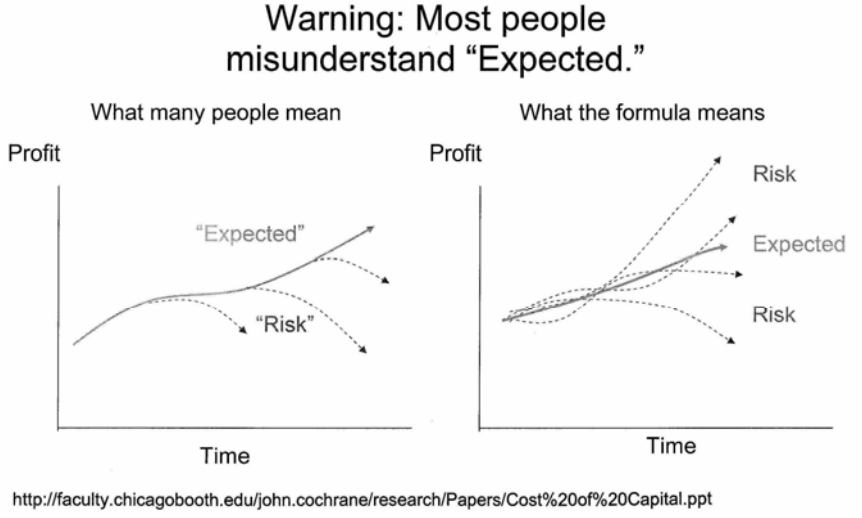
Industry WACC Band of Investment Formula
Equity Rate x Percent Equity + Debt Rate x Percent Debt + Preferred Rate x Percent Preferred = Industry Cap Rate

Example	Capital Structure			
	Rate		Percent	
Equity	12%	X	60%	7.20%
Debt	7%	X	39%	2.73%
Preferred	9%	X	1%	0.09%
			Industry Cap Rate	10.02%

The capitalization rate is a yield rate, or discount rate, that is applied in a direct capitalization fashion, under the assumption of no change in free cash flow and no change in asset value, into perpetuity. After tax net operating income (EBIT – taxes) is substituted for free cash flow under the assumption that capital expenditures equal depreciation, and no change working capital.

The capitalization rate and net operating income are forward looking by definition, but are heavily influenced by historic data through statute or practice. In spite of this, there still is an emphasis on "how important it is that the discount rate developed must be matched conceptually and empirically to the definition of economic income being discounted. Also, the discount rate must reflect the degree of risk."[1] Risk in finance is viewed in terms of the variance in actual returns around the expected return.[2] Risk is not entirely represented through the prism of negative prospects or a list of things that can go wrong. Risk can be realized on either side of what is expected. Those that are company specific (diversifiable), are to be reflected in the cash flow forecast, not the capitalization rate.

[1] Shannon P. Pratt, Robert F. Reilly, Robert P. Schweihs. *Valuing a Business*, p 159 (4th ed. 2000).
[2] Aswath Damodaran, "*What is the riskfree rate? A Search for the Basic Building Block*," December 2008, p 4.



The recent collapse of the national and global economy has left us with difficult January 1st cost of capital inputs. Most willing buyers would likely be adverse to available financing terms that would produce a market value acceptable to a willing seller. We still need to conclude something, and have taken the perspective that the long term cost of capital is fairly consistent. Short term cost of capital swings have counterproductive results without a matching measure of the income to capitalize.

Changes for 2009

The report contains both average and median statistics for the industry groupings. Final capitalization rates are based on averages this year. The actual data volatility and an increase in data "adjustments" reduced the rational for the use of medians.

Affiliated Power Producers (APPs)

APPs are renewable and non-renewable electrical generation facilities that are contracted to sell power through power purchase agreements to regulated utilities. In Colorado's closely-regulated electrical market, APPs sell their power solely to the primary Colorado provider of electrical power for end users.

For 2009, we calculated the capitalization rate for APPs to be the midpoint of the major electric cap rate of 9.52% and the rate we determined for merchant power producers that operate in more unregulated markets of 15.20%. We believe that this midpoint fairly represents the relative risk that Colorado APPs have when they sell their power under purchase power agreements to the primary Colorado provider of power to the public.

The 2009 final APP cap rate is **12.22%** [(9.51% + 14.93%)/2].

INDUSTRY GROUPINGS

The industry groupings are airline, electric, distribution pipeline, fluid pipeline, transmission pipeline, railroad, and telecommunication. Four of the industry groups are further subdivided to reflect different markets.

- The airline industry is divided into passenger airlines and cargo carriers.
- Electric companies are divided into electric utilities (includes both major and rural) and affiliated power producers.
- The railroad industry includes both major and short-line or regional carriers.
- The telephone (telecommunications) industry is divided into:
    - Local exchange companies, long distance providers, and inter-exchange companies
    - Rural telephone companies
    - Mobile telephone companies
    - Telephone resellers including VOIP providers

    We will continue to look at how companies are embracing convergence and may consider consolidation of any or all of the above sub-industries if our analysis indicates they are providing comparable services.

INDUSTRY DATA

We used the on line *Value Line Investment Survey* (Value Line) grouping for all industries published. Stock dates were from 12/26/2008, and the publication closest to the year end was utilized. Some companies in the Value Line industry group were excluded because their activities are not representative of the Colorado utility companies. Within the included companies, non-typical (outlier) factors were closely examined to ascertain whether the impact from any outliers could skew its application in the final market capitalization rate. In the industries where we placed weight on the DCF model, we excluded companies, with equity yields of below 6.5 percent or greater than 20 percent from the cost of equity calculation.

INDUSTRY CAPITAL STRUCTURE

A representative capital structure is developed using the market value of equity and the book values of long-term debt and preferred stock. Using Value Line, the market value of equity is calculated by multiplying the number of shares of actual year-end stock outstanding by the listed recent stock price.

Actual capital structure weighting has shifted away from equity with the recent stock market decline. Where dramatic shifts occurred, we made an expectation of an industry effort at “rebalancing” capital structure, but not implying the use of “optimal” or “targeted” capital structures. The adjustments to capital structure are not listed here, but can be determined in the final three lines of the industry groupings in the Excel file.

Preferred stock was specifically excluded in the calculations of all industry types except the electric industry. Except for the electric industry, the effects of any preferred stock on capital structure were added to the equity capital structure percentage. Refer to the **COST OF**

PREFERRED STOCK section below for additional information about our consideration of preferred stock.

COST OF DEBT

The cost of debt is obtained from *Mergent Bond Record* (Moody's) and *Standard and Poor's Bond Guide* (Standard and Poor's) or Bloomberg. The appropriate rates are incorporated for each company. If both Moody's and Standard and Poor's (Bloomberg) ratings are available, the two are averaged for the debt rate. For those companies where no rate is available, an average of the available rates within the industry for both Moody's and Standard and Poor's (Bloomberg) is utilized. If only one rate is available from either source, that rate is used for the company. Due to abnormalities in the 4th quarter, we relied on the annual month-end daily average for the year for the bond rating.

Neither service provides year-end 2008 bond yields for speculative bond rates. Using both Standard and Poor's End of Year 2008 Bond Guide and the Mergent's January 2009 Bond Guide, we gathered and stratified these bond instruments and calculated the yield to maturity. These rates were used to establish the debt rate for companies having more speculative ratings. Standard and Poor's data was sparse in the CC and C rating categories and did not result in reliable indicators. So, for CCC, CC, and C rated companies we imputed the Caa, Ca, and C ratings from Moody's. BB, BB- and B were available from Standard and Poor's (Bloomberg).

COST OF PREFERRED STOCK

For 2009, preferred stock average rate was calculated only for the electric industry category. The cost of preferred stock is obtained from Moody's. Since electric companies typically have preferred stock, the median preferred stock rate is incorporated in the electric company capitalization rate calculation. If unavailable from Moody's, we imputed the medium grade Baa rate.

COST OF EQUITY *Ke*

The DPT used both the Discounted Cash Flow (DCF) model and the Capital Asset Pricing Model (CAPM) to derive a cost of equity. DCF was not deemed appropriate for airline groups, APPs, and telephone groups; only CAPM was used. For all others, both the DCF and the CAPM were used. The Risk Premium (RP) method to calculate the cost of equity was not utilized for the following reason:

- The Risk Premium (RP) method is broadly general and has application in diversified companies in various industries. For capitalization rate calculation purposes, most estimates of common equity cost require a closer fit to the specific company in a non-diversified utilities industry. CAPM is essentially the Risk Premium method with a beta refinement attempting to remove diversifiable risk. The fundamental idea remains that there's no reason to expect a reward just for bearing risk (being undiversified).[3]

[3] Revisiting the Capital Asset Pricing Model, *Dow Jones Asset Manager*, May/June 1998, pp. 20-28, http://www.stanford.edu/~wfsharpe/art/djam/djam.htm.

Discounted Cash Flow (DCF)

The expected growth rate is the estimated future growth to earnings as presented in Value Line. The dividend yield is also shown in Value Line. The averages of the expected growth rate, the dividend yield, and the equity rate are shown on the average lines.

As in prior years, we eliminated DCF equity rates that fell below 6.50 percent, and used the CAPM formula to derive the equity rate for these companies. For railroad companies, equity rates were determined by weighting the DCF and CAPM equity determinations 25 percent and 75 percent, respectively. For all others, an equal weighting was placed on DCF and CAPM.

Capital Asset Pricing Model (CAPM)

The CAPM is also a measure of the equity rate. The return consists of three components; the beta selection, the ex post (historical) and ex ante (forward looking) add-on for equity risk, and the risk free rate. The final CAPM rate is the average of the ex post and ex ante estimated cost of equity.

Beta Selection: Beta is the variable in the CAPM that measures an asset's level of systematic risk. A stock with a beta of 1 is equal in risk to the overall market index, and thus will provide investors with an expected return equal to that of the market index. Stocks with betas greater or less than 1.0 have risk levels and expected returns that are respectively higher or lower than that of the market index. The source used in this year's study is Value Line. The Value Line beta is derived from a regression analysis of the relationship between weekly percentage changes in the New York Stock Exchange Index over a period of five years. In case of short price histories, a smaller time period is used, but two years is the minimum.

Risk Free Rate: Historically, the Division has used year-end data from the Federal Reserve. The year end Long-Term Risk Free Rate, from the Federal Reserve Bulletin, 20-year Treasury bond yields with a constant maturity is 3.05%. Due to the abnormalities in the 4th quarter of 2008, we have relied on the annual month-end daily average for 2008 of 4.36 percent.

Ex Ante Cost of Equity: In the context of the CAPM, the expected equity risk premium is an expected future return less the expected future risk free rate. Ideally, one should forecast both the risk free rate of return and the return on the market. In our analysis, the expected risk free rate of return required by investors is the annual month-end daily average long-term Treasury Bond Yield as of December 31, 2008. **The market rate of return, the expected rate of return of the S & P 500, is calculated on the next page of this narrative summary at** 13.08 percent. The result is an equity risk premium of 8.72 percent (13.08 percent – 4.36 percent).

The formula for the ex-ante CAPM is:

Cost of Capital	Risk Free Rate	Beta	Equity Risk Premium (ERP) (Return on Market (R_m) Less Risk Free Rate (R_f))]
Ke =	Rf +	B	(R_m-R_f)
	4.36 +	B	(13.08-4.36)
Ke =	4.36 +	**B**	**8.72%**

Ex Post Cost of Equity: According to the *Risk Premium over Time Report: 2009,* Key Variables in Estimating the Cost of Capital, published by Ibbotson Associates (Risk Premium), the equity risk premium as of the end of 2008 is 6.5 percent. The risk premium is based on the difference between historical arithmetic mean total returns of large company stocks and long-term government bonds between 1926 and 2008.

The formula for the ex-post CAPM is:

Ke = [beta x risk premium (6.5%)] + the risk free rate (4.36%)

Expected Future Rate of Return on the S & P 500: The use of an ex-ante CAPM model requires an estimate of the expected future rate of return on the market portfolio. The average of the following two discounted cash flow calculations estimate the rate.

$$k_M = \frac{D_0(1+g)}{P_0} + g$$

k_M = The expected future rate of return on the market portfolio (S & P 500).
D_0 = $28.39, source: Standard and Poors.com.
P_0 = $1,215.09, annual average closing price of the S & P 500 monthly closing prices, source: http://finance.yahoo.com/indexes/
g = 10.5 %, long-term projected earnings growth rate (weighted average), S & P 500, December 31, 2008. source: amalgamation of industry reports.
$\frac{D_0}{P_0}$ = The dividend yield.

$$k_M = \frac{\$28.39 \quad (1+.105)}{\$1,215.09} + .105$$

$$k_M = 13.08\ \%$$

The final estimated rate of return on the S & P 500 used in an ex ante CAPM model is:

Final Estimated Ex Ante CAPM
13.08 percent

CONCLUSION

All of the referenced rates are shown on the Summary Statistics on page 9 of the Capitalization Rate Study.

The factors for the WACC for each industry are shown on the CAP RATE CALCULATION line. The cap rate for the industry is based on the following formula:

Equity Rate x Percent Equity
+ Debt Rate x Percent Debt
+ Preferred Rate x Percent Preferred
= Industry Cap Rate

Based on a 2007 study completed by the Division, we will not include flotation costs as part of the capitalization rate.

2009 EQUALIZATION FACTOR

Pursuant to Colorado statute 39-1-102 (3)(b), C.R.S., the Division has completed the 2009 public utility equalization factor calculation. **For 2009, the equalization factor is 100 percent.** A copy of the equalization factor study can be found at the Division's website at http://dola.colorado.gov/dpt/state_assessed/index.htm

ASSESSED VALUE

Assessed value is 29 percent of the Colorado actual value.

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