> high book-to-market ratios) imply high expected returns, CAPM cost of equity estimates for such stocks are too low."[8]

As Fama and French (2004) indicate, the low-beta and value characteristics of energy utilities will probably lead the CAPM to estimate a rate of return that is too low. We next examine whether this undervaluation in fact exists in our sample of reference portfolios and utilities.

3.2. Risk Premium Estimates

This section empirically estimates the risk premium with the CAPM using the previously described Canadian and U.S. monthly data.[9] More specifically, we estimate the model using the time-series regression approach pioneered by Black, Jensen and Scholes (1972) with the following equation:

$$R_{GAS,t} - R_{f,t} = \alpha_{GAS} + \beta \times \lambda_{m,t} + \varepsilon_{GAS,t},$$

where $\lambda_{m,t} = R_{m,t} - R_{f,t}$ is the return on the market portfolio in excess of the risk-free return and $\varepsilon_{GAS,t}$ is the mean-zero regression error, at time *t*. In this equation, the CAPM predicts that the alpha (or intercept) is zero ($\alpha_{GAS} = 0$) and the risk premium is $E\left(R_{GAS,t} - R_{f,t}\right) = \beta \times E\left(\lambda_{m,t}\right)$. An alpha different from zero can be interpreted as the risk premium error of the CAPM (see Pastor and Stambaugh, 1999). A positive alpha indicates the CAPM does not prescribe a large enough risk premium compared to its historical value (an underestimation), whereas a negative alpha indicates the CAPM prescribes a risk premium that is too large (an overestimation). It is therefore possible to determine the CAPM risk premium error for energy utilities based on the estimates of the alpha.[10]

We use Hansen's (1982) Generalized Method of Moments technique in order to estimate jointly the parameters α_{GAS} and β of the model and the market risk premium $E\left(\lambda_{m,t}\right)$. As Cochrane (2001, Section 12.1) shows, this method has the necessary flexibility to correct the results for possible econometric problems in the

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[8] Fama and French (2004), p. 43-44.

[9] Our focus is on the estimation of the equity risk premium for energy utilities. To obtain their full cost of equity, we would need to add an appropriate risk-free rate, which could depend on the circumstances. For example, one common choice advocates adding to their equity risk premium the yield on a long-term government bond. But other choices for an appropriate risk-free rate are possible.

[10] The time series regression approach is commonly used when the model factors are returns. Cochrane (2001, Chapter 12) emphasizes that the approach implicitly imposes the restriction that the factors (chosen to fully represent the cross section of returns in the modeling) should be priced correctly in the estimation. While there are other ways to estimate a model like the CAPM, one advantage of the times series regression approach is that it can be easily applied to a restricted set of assets (like energy utilities) as the cross-sectional variations in asset returns are already captured by the correct pricing of the traded factors. Cochrane (2001, Chapter 12) also shows that the approach is identical to a Generalized Least Square cross-sectional regression approach.

data.[11] We take the monthly returns on portfolios of all listed securities weighted by their market value for the market portfolio returns and on the Treasury bills for the risk-free returns.[12] The annualized mean market risk premiums are 5.2% for Canada from February 1985 to December 2006 and 6.0% for the U.S. from February 1973 to December 2006.

Table 2 shows the results of the regressions using each of the four gas distribution reference portfolios. The estimates of the annualized risk premium error (or annualized α_{GAS}), the beta β and the risk premium $\beta \times E(\lambda_{m,t})$ are presented in Panels A, B and C, respectively. For each estimate, the table also shows its standard error, t-statistic and associated p-value.

TABLE 2
CAPM Risk Premium Estimates for the Gas Distribution Reference Portfolios

Portfolio	Estimate	SE	t-stat	Prob > |t|
Panel A: Risk Premium Error (Alpha)				
DJ_GasDi	8.43	3.79	2.22	0.028
CAindex	4.52	2.33	1.94	0.053
DJ_GasUS	7.39	3.34	2.21	0.028
USindex	6.23	1.95	3.19	0.002
Panel B: Beta				
DJ_GasDi	0.21	0.11	1.95	0.053
CAindex	0.34	0.07	4.60	<.0001
DJ_GasUS	0.37	0.09	4.16	<.0001
USindex	0.46	0.06	7.37	<.0001
Panel C: Risk Premium				
DJ_GasDi	1.66	1.28	1.30	0.195
CAindex	1.76	1.11	1.58	0.116
DJ_GasUS	2.74	1.46	1.87	0.063
USindex	2.72	1.33	2.04	0.042

NOTES: This table reports the results of the estimation of the CAPM for the gas distribution reference portfolios. Panels A to C look at the annualized risk premium error or alpha (in percent), the market beta and the annualized risk premium (in percent), respectively. The columns labelled Estimate, SE, t-stat and Prob > |t| give respectively the estimates, their standard errors, their t-statistics and their p-values. The four gas distribution reference portfolios and their sample are described in section 2 and table 1. The annualized mean market risk premiums for their corresponding sample period are 8.1% for DJ_GasDi, 5.2% for CAindex, 7.5% for DJ_GasUS and 6.0% for USindex.

The estimates in Panel A of Table 2 indicate that the risk premium errors are positive. Hence, the CAPM underestimates the risk premium for the gas distribution reference portfolios. The underestimation is not small – a minimum of 4.52% (for CAindex) and a maximum of 8.43% (for DJ_GasDi) – and is statistically greater than zero for all portfolios. Also, as expected, the underestimation comes with low

[11] All standard errors and statistical tests have been estimated using the Newey and West (1987) method, which takes account of the potential heteroscedasticity and autocorrelation in the errors of the statistical models.

[12] The data sources are CFMRC (until 2004) and Datastream (thereafter) for the Canadian returns and the web site of Prof. French for U.S. returns.

beta estimates, with values between 0.21 and 0.46 in Panel B. For example, for CAindex, the beta is 0.34 and the annualized risk premium predicted by the CAPM is 1.76%, an underestimation of the historical risk premium $\alpha_{GAS} = 4.52\%$.

To verify the underestimation is not an artifact of the utilization of the reference portfolios and is robust to other energy utilities, Figure 1 shows the risk premium errors for the utilities that make up the CAindex portfolio (Figure 1a), the gas distributors in the USindex portfolios (Figure 1b) and the four utilities reference portfolios (Figure 1c). Once again, the alphas are always positive, with values between 2.1% and 8.9% for the Canadian utilities, between 3.5% and 8.4% for the U.S. gas distributors, and between 2.1% and 5.0% for the utilities reference portfolios. The constantly positive and often significant errors support the notion that the CAPM might not be appropriate for determining the risk premium in the utilities sector.

FIGURE 1
Risk Premium Errors with the CAPM for Various Utilities

Figure 1a: Firms in the CAindex Portfolio

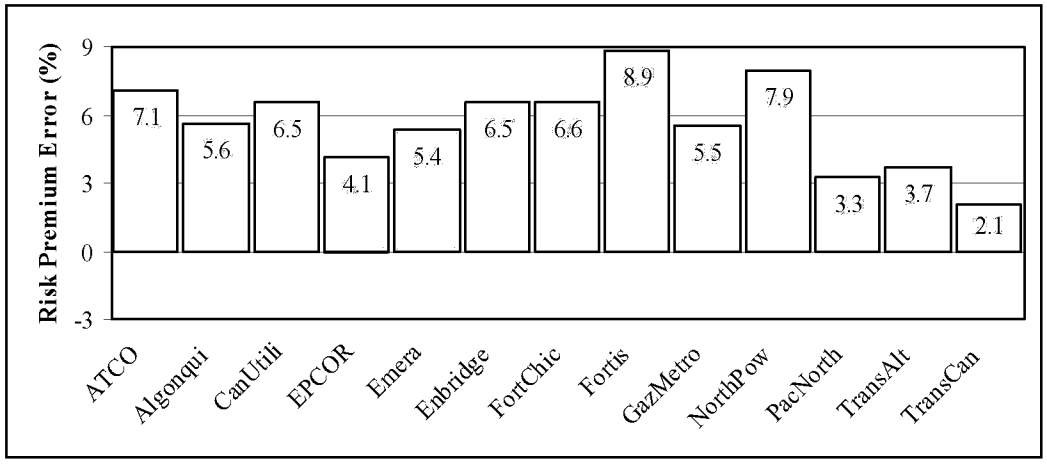


Figure 1b: Firms in the USindex Portfolio

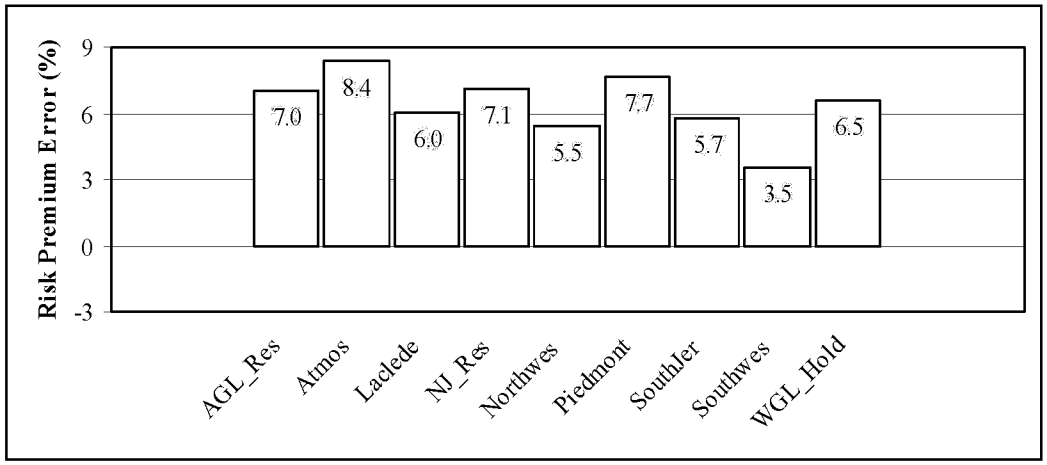
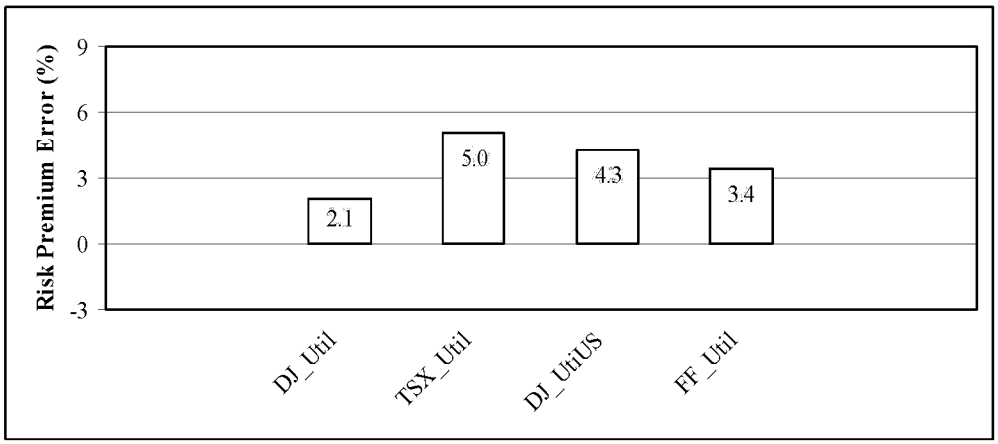


Figure 1c: Utilities Reference Portfolios



NOTES: This figure shows the annualized risk premium errors (or alphas) with the CAPM for the Canadian utilities in the CAindex portfolio (Figure 1a), the U.S. gas distributors in the USindex portfolio (Figure 1b) and the utilities reference portfolios (Figure 1c).

3.3. Discussion

Our results show that the CAPM underestimates the risk premium for the gas distribution sub-sector in particular and for the utilities sector in general. This finding is consistent with the empirical literature that finds that the CAPM tends to underestimate the risk premium of securities or sectors associated with low-beta, value and small-cap investments. In the terminology of asset pricing, the returns on energy utilities are "anomalous" with respect to the CAPM. As the application of the model would not be sensible in evaluating the performance of value-type mutual funds, given the related anomaly, it could be unwarranted in evaluating the cost of equity for energy utilities.

While the magnitude of the underestimation for the utilities is large, it is not unexpected. Fama and French (2004) review the evidence on the large CAPM literature for the *full cross-section* of equity returns. Their figures 2 and 3, in particular, illustrate well the findings for portfolios of stocks formed on their beta and their book-to-market ratio value indicator, respectively. In the cross-section of all stock returns, their figure 2 show visually that the CAPM underestimation is about 3% for the lowest beta portfolio (a beta of about 0.6), while its overestimation is about 3% for the highest beta portfolio (a beta of about 1.8). Their figure 3 indicates that the CAPM underestimation is about 5% for the highest book-to-market ratio portfolio, while its overestimation is about 2% for the lowest book-to-market ratio portfolio. As energy utilities are low-beta and value-oriented stocks, our estimates of the CAPM underestimation for this segment are consistent with the evidence from the full cross-section of equity returns.

Our results are related to numerous studies documenting that the CAPM alphas are different from zero. As a consequence of these rejections, finance researchers have considered various models that generalized the CAPM as well as various empirical improvements to the estimates of the CAPM. Based on this literature, we explore two alternative ways of estimating the risk premium of energy utilities in the next two sections.

4. EQUITY RISK PREMIUM WITH THE FAMA-FRENCH MODEL

The CAPM claims that a single factor, the market portfolio return, can explain expected returns. The most natural extension is to take multiple factors into account. Clearly, if factors other than the market return have positive risk premiums that contribute to explaining expected returns, then the inclusion of those factors should provide a better estimate of the risk premium and potentially eliminate the CAPM errors (see Merton, 1973, and Ross, 1976, for formal theoretical justifications). This section considers one of the most common generalization of the CAPM, a multifactor model by Fama and French (1993). We first describe the model and then use it to estimate the risk premium of energy utilities. We finally discuss the interpretation of our findings.

4.1. Model and Literature

The Fama-French model is a three-factor model developed to capture the anomalous returns associated with small-cap, value and growth portfolios by including risk premiums for size and value. For a gas utility, the expected equity return is given by

$$E(R_{GAS}) = R_f + \beta \times \lambda_m + \beta_{SIZE} \times \lambda_{SIZE} + \beta_{VALUE} \times \lambda_{VALUE},$$

where R_f is the risk-free rate, β, β_{SIZE} and β_{VALUE} are respectively the firm's market, size and value betas, and λ_m, λ_{SIZE} and λ_{VALUE} are respectively the market, size and value risk premiums. The three betas represent sensitivities to the three sources of risk, and the higher are their values, the higher is a firm's risk premium. In cases when the size and value risk factors are not relevant, then the Fama-French model reduces to the CAPM. Theoretical justifications for the size and value premiums are provided by Berk, Green and Naik (1999), Gomez, Kogan and Zhang (2003), and Carlson, Fisher and Giammarino (2004). Fama and French (1993, 1996a) are the two of the most influential empirical tests of the model.

Like the CAPM, the Fama-French model has been used in applications ranging from performance measurement to abnormal return estimation and asset valuation. For the calculation of the cost of equity capital, the model is studied by, among others, Schink and Bower (1994), Fama and French (1997), and Pastor and Stambaugh (1999). It has also proven to be relevant for explaining stock market returns in most countries where it has been examined. For example, in Canada, the model is validated by Elfakhani, Lockwood and Zaher (1998) and L'Her, Masmoudi and Suret (2002). Given that energy utilities are associated with value investments, the Fama-French model has the potential to improve the estimation of their rates of returns. We next assess this possibility for our sample of reference portfolios and utilities.

4.2. Risk Premium Estimates

The risk premium with the Fama-French model is estimated with a methodology that is similar to the one followed for the CAPM using the following equation:

$$R_{GAS,t} - R_{f,t} = \alpha_{GAS}^{FF} + \beta \times \lambda_{m,t} + \beta_{SIZE} \times \lambda_{SIZE,t} + \beta_{VALUE} \times \lambda_{VALUE,t} + \upsilon_{GAS,t},$$

where $\lambda_{m,t} = R_{m,t} - R_{f,t}$ is the return on the market portfolio in excess of the risk-free return, $\lambda_{SIZE,t} = R_{SMALL,t} - R_{LARGE,t}$ is the return on a small-cap portfolio in excess of the return on a large-cap portfolio, $\lambda_{VALUE,t} = R_{VALUE,t} - R_{GROWTH,t}$ is the return on a value portfolio in excess of the return on a growth portfolio and $\upsilon_{GAS,t}$ is the mean-zero regression error, at time *t*. The alpha α_{GAS}^{FF} is still interpreted as the risk premium error. The three beta parameters give the sensitivities to the market, size and value factors. Finally, $\beta \times E(\lambda_{m,t}) + \beta_{SIZE} \times E(\lambda_{SIZE,t}) + \beta_{VALUE} \times E(\lambda_{VALUE,t})$ represents the risk premium from the Fama-French model.

The data for the market portfolio returns and the risk-free returns are the same used in the CAPM estimation. For the Canadian regressions, the small-cap portfolio returns are from a portfolio of all listed securities weighted equally whereas the large-cap portfolio returns are from a portfolio of all listed securities weighted by their market value.[13] The value and growth portfolios are determined from the earnings-to-price ratio. Specifically, the value (growth) portfolio contains firms having an earnings/price ratio in the highest (lowest) 30%.[14] For U.S. regressions, the size and value premiums are the Fama and French (1993, 1996a) SMB and HML variables, which are computed from market capitalization (size) and book-to-market ratio (value).[15] The annualized mean size and value risk premiums are respectively 8.9% and 6.4% for Canada from February 1985 to December 2006 and 2.7% and 6.0% for the U.S. from February 1973 to December 2006.

Table 3 presents the results of the estimates of the coefficients and the risk premium with the Fama-French model for the four gas distribution reference portfolios previously described. Panel A shows that the annualized risk premium errors are still positive for the four portfolios, ranging from 0.31% (for USindex) to 4.45% (for DJ_GasDi), but the underestimation is now statistically negligible. Panel D confirms that the inclusion of the value risk premium is instrumental in the reduction of the errors. The value betas are highly significant, with values between 0.30 and 0.71. The size betas (Panel C) are low and often not statistically different from zero, whereas the market betas (Panel B) are 0.54 on average. The estimated risk premiums vary between 4.23% and 8.83%.

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[13] These indexes are taken from CFMRC for returns up to 2004 and then completed by the returns of the S&P/TSX Composite Index and the MSCI Barra Smallcap Index, respectively.

[14] Data come from the web site of Prof. French, who also provides specific instructions on the composition of the portfolios. The site gives returns for value and growth portfolios based on four indicators – earnings-to-price, book-to-market, cash flows-to-price and dividend-to-price. Fama and French (1996a) show that these indicators contain the same information about expected returns. Fama and French (1998) confirm the relevance of these indicators in explaining the returns in 12 major international financial markets and emerging financial markets. We chose the earnings-to-price indicator because it is more effective in capturing the premium of value securities compared to growth securities in Canada (see Bartholdy, 1993, and Bourgeois and Lussier, 1994). The indicator book-to-market is less effective in Canada because the value effect is mainly concentrated in more extreme portfolios (highest and lowest 10%) than in those available on the site (see L'Her, Masmoudi and Suret, 2002).

[15] Data again come from the web site of Prof. French. Detailed instructions on the composition of the SMB and HML variables are also provided.

TABLE 3
Fama-French Risk Premium Estimates for the Gas Distribution Reference Portfolios

Portfolio	Estimate	SE	t-stat	Prob > |t|
Panel A: Risk Premium Error (Alpha)				
DJ_GasDi	4.45	3.11	1.43	0.155
CAindex	2.04	1.85	1.11	0.270
DJ_GasUS	1.31	3.01	0.43	0.665
USindex	0.31	1.80	0.17	0.863
Panel B: Beta				
DJ_GasDi	0.41	0.08	5.06	<.0001
CAindex	0.48	0.05	10.38	<.0001
DJ_GasUS	0.63	0.07	9.64	<.0001
USindex	0.64	0.06	11.18	<.0001
Panel C: Size Beta				
DJ_GasDi	-0.01	0.08	-0.11	0.912
CAindex	-0.02	0.05	-0.51	0.613
DJ_GasUS	0.00	0.09	0.04	0.971
USindex	0.20	0.07	2.9	0.004
Panel D: Value Beta				
DJ_GasDi	0.33	0.06	5.12	<.0001
CAindex	0.30	0.04	7.64	<.0001
DJ_GasUS	0.59	0.13	4.41	<.0001
USindex	0.71	0.10	7.21	<.0001
Panel E: Risk Premium				
DJ_GasDi	5.64	1.78	3.17	0.002
CAindex	4.23	1.52	2.78	0.006
DJ_GasUS	8.83	2.32	3.81	0.000
USindex	8.64	2.16	4	<.0001

NOTES: This table reports the results of the estimation of the Fama-French model for the gas distribution reference portfolios. Panels A to E look at the annualized risk premium error or alpha (in percent), the market beta, the size beta, the value beta and the annualized risk premium (in percent), respectively. The columns labelled Estimate, SE, t-stat and Prob > |t| give respectively the estimates, their standard errors, their t-statistics and their p-values. The four gas distribution reference portfolios and their sample are described in section 2 and table 1. The annualized mean market risk premiums for their corresponding sample period are 8.1% for DJ_GasDi, 5.2% for CAindex, 7.5% for DJ_GasUS and 6.0% for USindex. The annualized mean size risk premiums for their corresponding sample period are 12.4% for DJ_GasDi, 8.9% for CAindex, 2.7% for DJ_GasUS and 2.7% for USindex. The annualized mean value risk premiums for their corresponding sample period are 7.4% for DJ_GasDi, 6.4% for CAindex, 6.9% for DJ_GasUS and 6.0% for USindex.

Figure 2 compares the Fama-French and CAPM results. Figure 2a illustrates the risk premium errors of the two models, while Figure 2b shows their explanatory power given by the adjusted R^2. The errors have substantially fallen with the Fama-French model for all reference portfolios. Furthermore, the Fama-French model explains a much larger proportion of the variation in the reference portfolio returns.

FIGURE 2
Comparison of the Fama-French and CAPM Results

Figure 2a: Risk Premium Errors

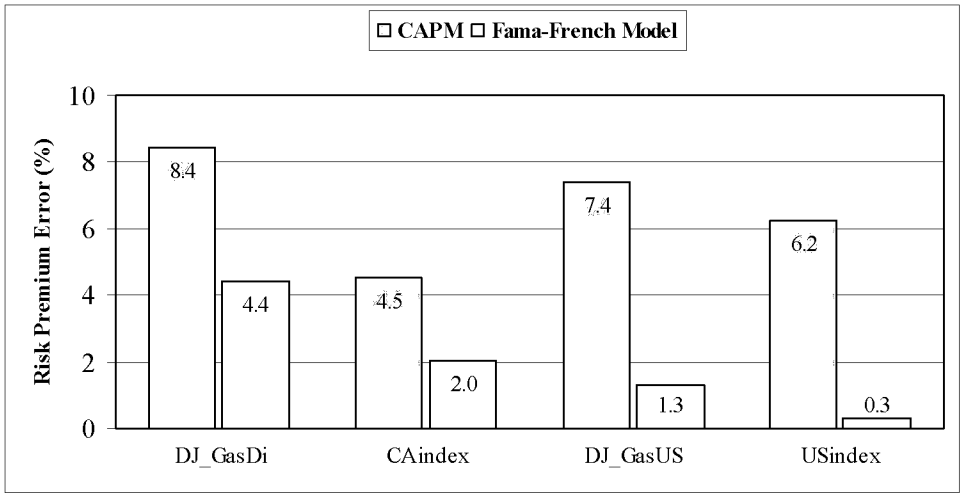
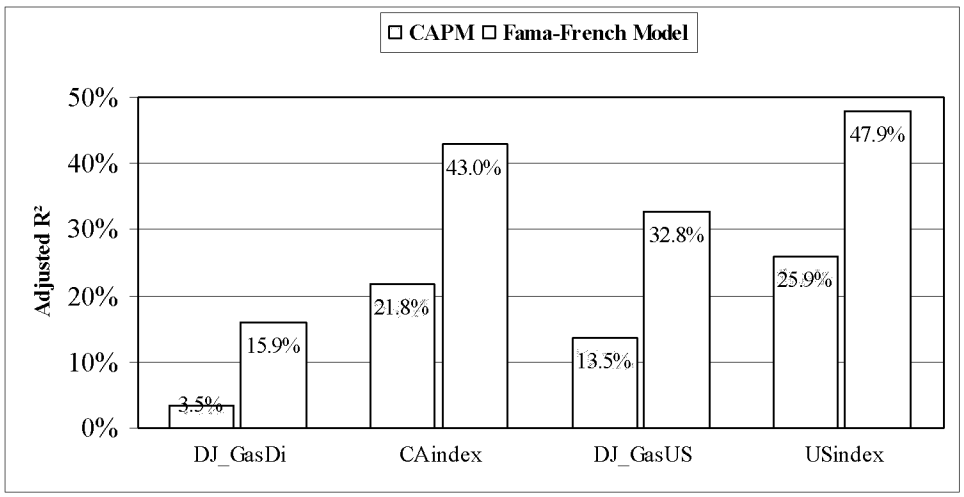


Figure 2b: Adjusted R^2s



NOTES: This figure compares the results of the CAPM (gray bars) and the Fama-French model (white bars) in terms of annualized risk premium errors (or alphas) (Figure 2a) and adjusted R^2 (Figure 2b) for the gas distribution reference portfolios.

Figures 3 and 4 present the risk premium errors and the value betas, respectively, for the utilities that make up the CAindex portfolios (Figures 3a and 4a), the gas distributors in the USindex portfolios (Figures 3b and 4b) and the four utilities reference portfolios (Figures 3c and 4c). A comparison of Figure 3 with Figure 1 shows that the risk premium errors have decreased in all cases. None of the errors are now significantly different from zero. Figure 4 confirms that the reductions in the risk premium errors are caused by the inclusion of the value risk premium. All value betas are greater than 0.23 and statistically significant. For example, the TSX_Util portfolio has a value beta of 0.41 that contributes to reduce its risk premium error from 5.0% with the CAPM to 0.7% with the Fama-French model.

FIGURE 3
Risk Premium Errors with the Fama-French Model for Various Utilities

Figure 3a: Firms in the CAindex Portfolio

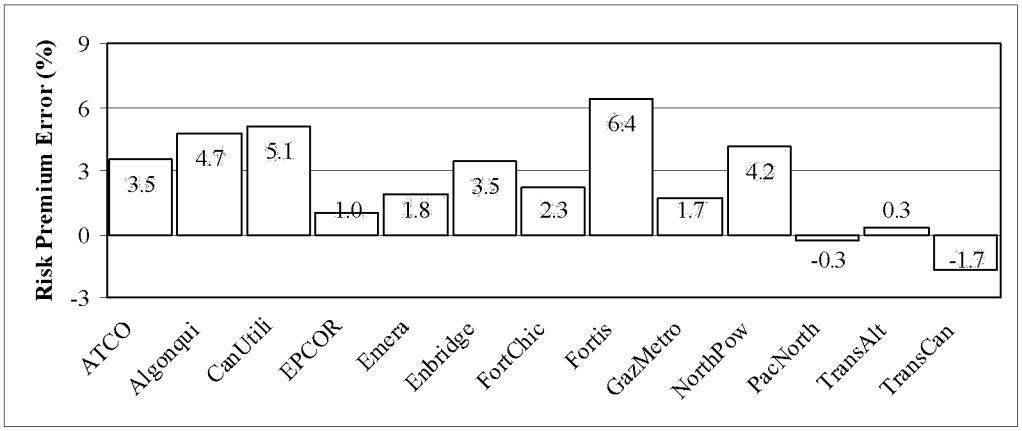


Figure 3b: Firms in the USindex Portfolio

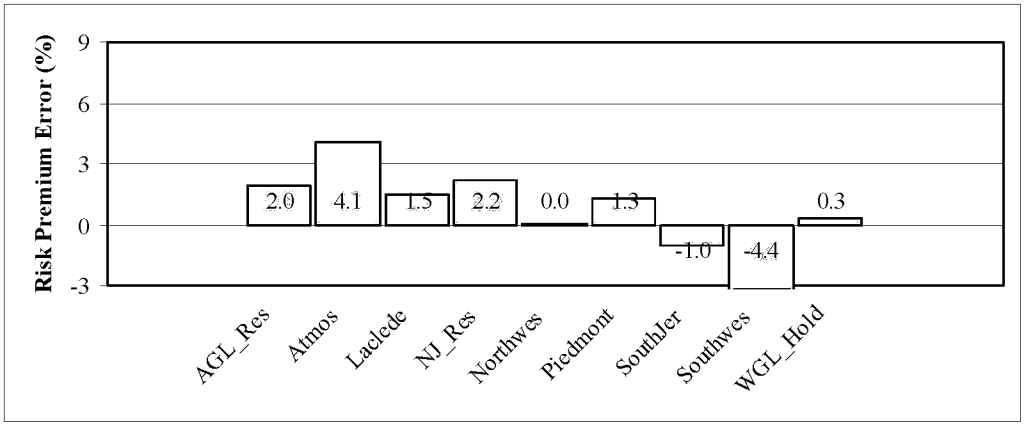
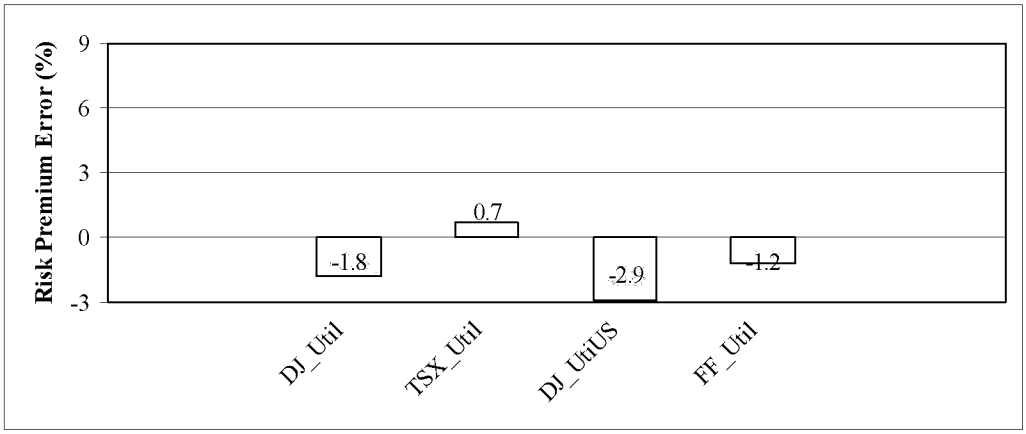


Figure 3c: Utilities Reference Portfolios



NOTES: This figure shows the annualized risk premium errors (or alphas) with the Fama-French model for the Canadian utilities in the CAindex portfolio (Figure 3a), the U.S. gas distributors in the USindex portfolio (Figure 3b) and the utilities reference portfolios (Figure 3c).

FIGURE 4
Value Betas for Various Utilities

Figure 4a: Firms in the CAindex Portfolio

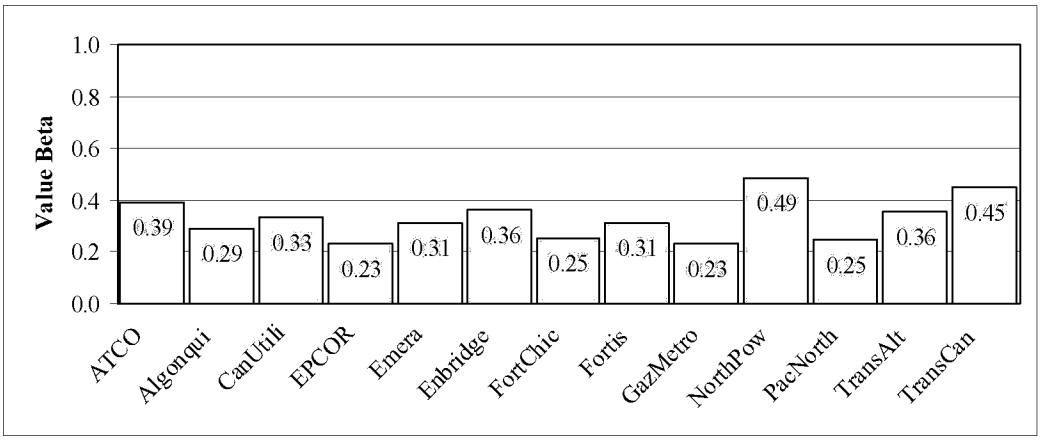


Figure 4b: Firms in the USindex Portfolio

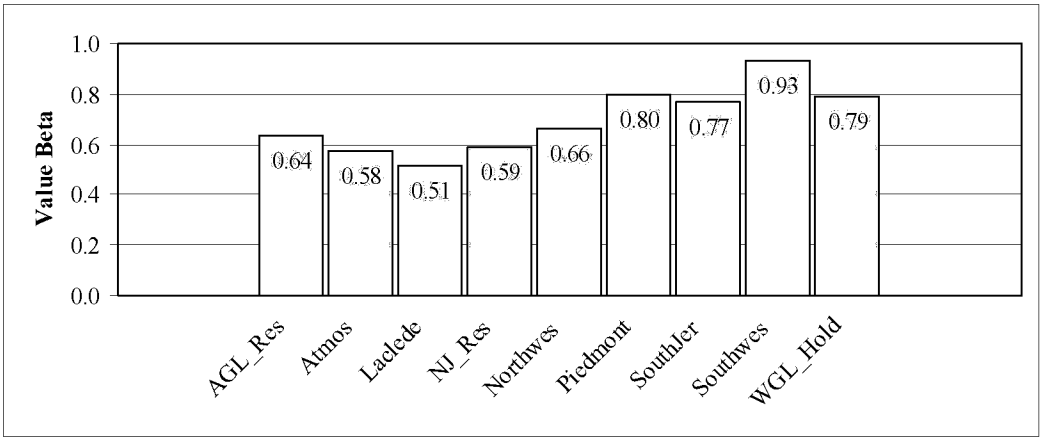
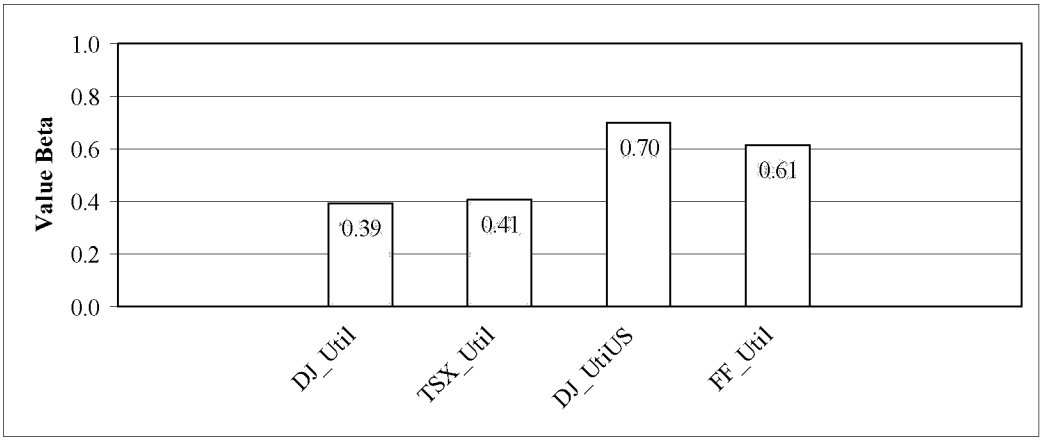


Figure 4c: Utilities Reference Portfolios



NOTES: This figure shows the value betas in the Fama-French model for the Canadian utilities in the CAindex portfolio (Figure 4a), the U.S. gas distributors in the USindex portfolio (Figure 4b) and the utilities reference portfolios (Figure 4c).

4.3. Discussion

Our results support the notion that the Fama-French model is well suited to estimate the risk premium for energy utilities, consistent with the findings of Schink and Bower (1994). We obtain lower risk premium errors with the Fama-French model than with the CAPM and significant value betas, similar to the results reported by Schink and Bower (1994), Fama and French (1997) and Pastor and Stambaugh (1999).

While the model is being increasingly considered in practice, an often mentioned limitation is that the economic interpretation of the size and value premiums is still under debate. On one side, starting with Fama and French (1993), the size and value factors are presented as part of a rational asset pricing model, where they reflect either state variables that predict investment opportunities following the theory of Merton (1973), or statistically useful variables to explain the returns following the theory of Ross (1976). On the other side, as first advocated by Lakonishok, Shleifer and Vishny (1994), the size and value factors are thought to be related to investors' irrationality in the sense that large-cap and growth stocks tend to be glamorized whereas small-cap and value stocks tend to be neglected. There is a vast literature on both sides of this debate.[16]

While the debate is important to improve our understanding of capital markets, Stein (1996) demonstrates that the theoretical interpretation of the model is not relevant to its application to determine the cost of capital. On one side, if the Fama-French model is rational, then the size and value factors capture true risks and should be accounted for in the risk premiums of energy utilities. On the other side, if the size and value factors are irrational, then the significant value betas of energy utilities indicate that they are neglected or undervalued firms. In this case, Stein (1996) shows that rational firms should not undertake a project that provides an expected return lower than the return estimated by the potentially irrational Fama-French model. They are better off in rejecting the project and simply buying back their own shares for which they expect an inflated future return because of the undervaluation. Thus, the potentially irrational Fama-French estimates serve as the appropriate hurdle rate for project investments. Hence, for both interpretations, the equity cost of capital of energy utilities generated by the Fama-French model is a useful guideline of a fair rate of return for regulators.

Arguably, the Fama-French model is one of the most widely used models of expected returns in the academic finance literature (Davis, 2006). Nevertheless, the literature on the cross-section of equity returns has identified numerous other factors that could be relevant in the multifactor approach. For examples, other influential factors include the labor income factor of Jagannathan and Wang (1996), the momentum factor of Jegadeesh and Titman (1993) and Carhart (1997), the liquidity factor of Pastor and Stambaugh (2003) and the idiosyncratic volatility factor of Ang *et al.* (2006, 2009). These advances in the literature on the cross-section of returns could eventually lead to a better understanding of the equity risk premium

[16] A third interpretation, following Lo and MacKinlay (1990) and Kothari, Shanken and Sloan (1995), is that the results of the Fama-French model are spurious, due to biases like data snooping or survivorship. However, the fact that similar size and value premiums have been found in countries outside the U.S. has rendered this explanation less appealing.

for energy utilities.[17] The next section looks at a second approach that goes beyond the CAPM to estimate the equity risk premium.

5. Equity Risk Premium with the Adjusted CAPM

This section considers two empirical adjustments to the CAPM estimates proposed in the academic literature to account for their deficiencies. We call the CAPM with the addition of the two modifications the "Adjusted CAPM". Unlike the CAPM and the Fama-French model, the Adjusted CAPM is not an equilibrium model of expected returns. It contains adjustments to the CAPM that are empirically justified in a context where the known difficulties of a theoretical model need to be lessened for improved estimation. We first introduce the Adjusted CAPM. Then we implement it to estimate the risk premium of energy utilities. We finally offer a brief discussion of our findings.

5.1. Model and Literature

The Adjusted CAPM is based on the CAPM but provides more realistic estimates of the rate of return by considering the empirical problems of the CAPM. More specifically, the Adjusted CAPM is a model in which the expected equity return of a gas utility is arrived at by

$$E(R_{GAS}) = R_f + \alpha_{GAS} \times \left(1 - \beta^{Adj}\right) + \beta^{Adj} \times \lambda_m .$$

Compared to the CAPM, this equation incorporates a modification to take into account that estimated betas can be adjusted for better predictive power and a modification to take account of the fact the alpha (risk premium error) is high for low-beta value-oriented firms in the CAPM.

The first modification originates from the works of Blume (1971, 1975). Blume (1971) examines historical portfolio betas over two consecutive periods and finds that the historical betas, from one period to another, regress towards one, the average of the market. He also shows that the historical betas adjusted towards one predict future betas better than unadjusted betas. Blume (1975) builds a historical beta adjustment model to capture the tendency to regress towards one. He discovers that the best adjustment is to use a beta equal to $0.343 + 0.677 \times \beta^{His}$, a finding that led to the concept of "adjusted beta". Merrill Lynch, which popularized the use of adjusted betas based on Blume (1975)'s results, advocates the adjustment $\beta^{Adj} = 0.333 + 0.667 \times \beta^{His}$. Merrill Lynch's adjusted beta, now widely used in practice, represents a weighted-average between the beta of the market and the historical beta, with a two-thirds weighting on the historical beta.

The second adjustment is initially proposed by Litzenberger, Ramaswamy and Sosin (1980), who consider solutions to the problem that the CAPM gives a cost of equity capital with a downward bias for low beta firms, as discussed in section 3.1. They note that one way of remedying the problem is to add a bias correction to the CAPM risk premium. To be effective, the correction must take account of the

[17] Some of the documented effects, like momentum, are short-lived. Hence, their related factor might be irrelevant for estimates of the cost of equity capital.

importance of the risk premium error and the level of the firm's beta because these two elements influence the magnitude of the problem. To do this for low beta securities, Litzenberger, Ramaswamy and Sosin (1980) propose the bias correction $\alpha_{GAS} \times (1 - \beta)$. As desired, the correction increases with the risk premium error of the CAPM, and decreases with the beta. The correction is nil for a firm for which the CAPM already works well (when $\alpha_{GAS} = 0$) or for a firm having a beta of one, two cases where the CAPM produces a fair rate of return on average. Morin (2006, Section 6.3) presents an application of this adjustment in regulatory finance through a model he calls the empirical CAPM.

In summary, the two modifications incorporated in the Adjusted CAPM involve first using the adjusted beta instead of the historical beta and second including the bias correction in the risk premium calculation. Considering the documented usefulness of the two adjustments, the Adjusted CAPM has the potential to estimate a reasonable risk premium for the energy utilities.

5.2. Risk Premium Estimates

To compute the Adjusted CAPM estimates for our utilities, the starting point is the estimates of the CAPM of Section 3.2, given in Table 2. The beta estimates are now understood as the unadjusted historical betas β^{His}. The gas utility risk premium with the Adjusted CAPM can then be expressed as

$$\alpha_{GAS} \times (1 - \beta^{Adj}) + \beta^{Adj} \times E(\lambda_{m,t}),$$

where $\beta^{Adj} = 0.333 + 0.667 \times \beta^{His}$. The Adjusted CAPM risk premium error is arrived at by

$$\alpha_{GAS}^{Adj} = E(R_{GAS,t} - R_{f,t}) - \left[\alpha_{GAS} \times (1 - \beta^{Adj}) + \beta^{Adj} \times E(\lambda_{m,t})\right].$$

Table 4 shows the Adjusted CAPM estimates using the four gas distribution reference portfolios. The estimates of the risk premium error α_{GAS}^{Adj}, the adjusted beta β^{Adj}, the bias correction $\alpha_{GAS} \times (1 - \beta^{Adj})$ and the risk premium are shown in Panels A, B, C and D, respectively. The risk premium errors are still positive for the four portfolios, with values ranging from 1.39% (for CAindex) to 2.89% (for USindex), but the underestimation is only significant for USindex. The reduction in errors comes from the use of adjusted betas, which are 0.56 on average, and the bias corrections, which are 2.96% on average. Lastly, the risk premiums vary between 4.88% and 8.27%, findings comparable to the estimates obtained with the Fama-French model.

TABLE 4
Adjusted CAPM Risk Premium Estimates
for the Gas Distribution Reference Portfolios

Portfolio	Estimate	SE	t-stat	Prob > |t|
Panel A: Risk Premium Error (Alpha)				
DJ_GasDi	1.82	2.00	0.91	0.365
CAindex	1.39	1.54	0.9	0.366
DJ_GasUS	2.68	1.97	1.36	0.176
USindex	2.89	1.37	2.11	0.035
Panel B: Adjusted Beta				
DJ_GasDi	0.47	0.07	6.69	<.0001
CAindex	0.56	0.05	11.38	<.0001
DJ_GasUS	0.58	0.06	9.84	<.0001
USindex	0.64	0.04	15.44	<.0001
Panel C: Bias Correction				
DJ_GasDi	4.46	2.28	1.96	0.052
CAindex	1.99	1.10	1.81	0.071
DJ_GasUS	3.12	1.61	1.94	0.054
USindex	2.26	0.77	2.94	0.004
Panel D: Risk Premium				
DJ_GasDi	8.27	2.71	3.05	0.003
CAindex	4.88	2.11	2.31	0.021
DJ_GasUS	7.45	2.52	2.96	0.004
USindex	6.05	1.89	3.21	0.002

NOTES: This table reports the results of the estimation of the Adjusted CAPM for the gas distribution reference portfolios. Panels A to D look at the annualized risk premium error or alpha (in percent), the adjusted market beta, the bias correction and the annualized risk premium (in percent), respectively. The columns labelled Estimate, SE, t-stat and Prob > |t| give respectively the estimates, their standard errors, their t-statistics and their p-values. The four gas distribution reference portfolios and their sample are described in section 2 and table 1. The annualized mean market risk premiums for their corresponding sample period are 8.1% for DJ_GasDi, 5.2% for CAindex, 7.5% for DJ_GasUS and 6.0% for USindex.

Figure 5 shows the risk premium errors for the utilities that make up the CAindex portfolios (Figure 5a), the gas distributors in the USindex portfolios (Figure 5b) and the four utilities reference portfolios (Figure 5c). The errors are generally insignificant and a comparison with Figure 1 indicates that they have decreased considerably for all portfolios. For example, for the TSX_Util portfolio, the error is down from 5.0% with the CAPM to 0.9% with the Adjusted CAPM.

FIGURE 5
Risk Premium Errors with the Adjusted CAPM for Various Utilities

Figure 5a: Firms in the CAindex Portfolio

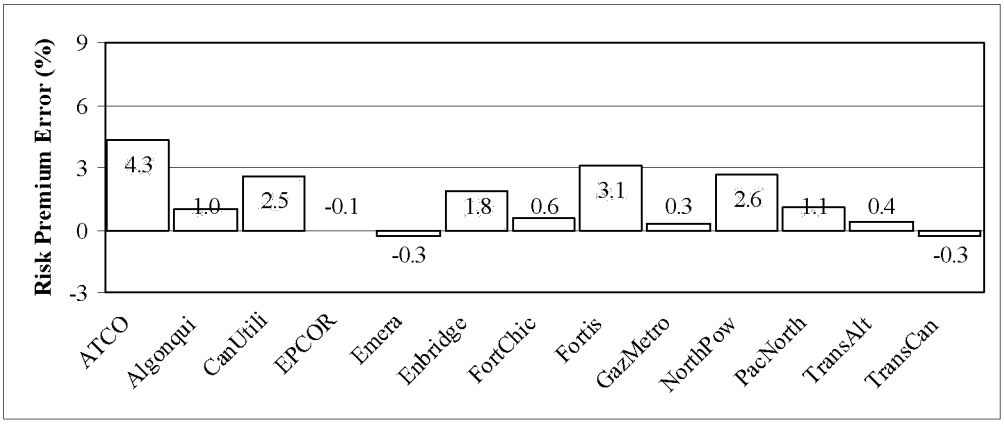


Figure 5b: Firms in the USindex Portfolio

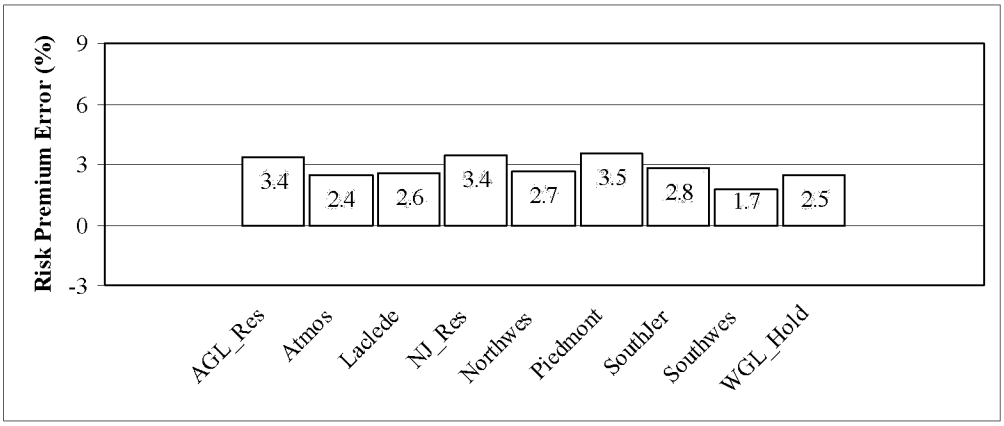
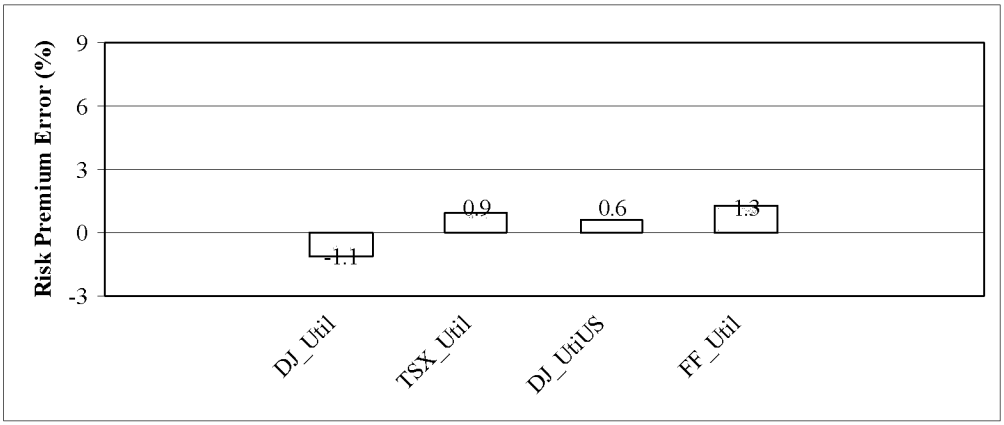


Figure 5c: Utilities Reference Portfolios



NOTES: This figure shows the annualized risk premium errors (or alphas) with the Adjusted CAPM for the Canadian utilities in the CAindex portfolio (Figure 5a), the U.S. gas distributors in the USindex portfolio (Figure 5b) and the utilities reference portfolios (Figure 5c).

5.3. Discussion

Our results support the validity of the Adjusted CAPM for determining the rate of return on energy utilities. While its risk premium estimates are in the same range as the Fama-French estimates, it arrives at its results from a different perspective. The Fama-French model advocates the use of additional risk factors to reduce the CAPM risk premium errors. The Adjusted CAPM, through its bias correction, effectively estimates the risk premium as a weighted-average of the CAPM risk premium and the realized historical risk premium, with a weighting of beta on the former.

The Adjusted CAPM thus recognizes that the CAPM is an imperfect model that can be improved with the information contained in the historical returns. Pastor and Stambaugh (1999) propose a similar strategy by demonstrating how to estimate the cost of equity by using Bayesian econometrics to incorporate the CAPM risk premium error (or alpha) in an optimal manner based on the priors of the evaluator. Consistent with our results, they also show evidence of higher costs of equity for energy utilities using their technique than using the CAPM alone.[18] As the Adjusted CAPM does not require additional risk factors like size and value, the model might be easier to interpret for regulators already familiar with the standard CAPM in their decisions.

6. Conclusion

It is difficult to overstate the importance of the evaluation of the expected rate of return in finance. For a firm's management group, the expected rate of return on equity (or the equity cost of capital) is central to its overall cost of capital, i.e. the rate used to determine which projects will be undertaken. For portfolio managers, the expected rate of return on equity is an essential ingredient in portfolio decisions. For regulatory bodies, the expected return on equity is the basis for determining the fair and reasonable rate of return of a regulated enterprise. This paper is interested in evaluating the rate of return in the context of regulated energy utilities.

The academic literature contains numerous theories for determining the expected rate of return on equity. As those theories are based on simplified assumptions of the complex world in which we live, they cannot be perfect. Even if the theoretical merit of the different models can be debated, the determination of the most valid approach to explain the financial markets really becomes an empirical question – it is necessary to answer the question "which theory best explains the information about actual returns?" This paper empirically examines the validity of the model the most often used in the rate adjustment formula of regulatory bodies, the CAPM, one of the most prominent academic alternatives, the Fama-French model, and a version of the CAPM modified to account for some of its empirical deficiencies, the Adjusted CAPM.

Our empirical results show that the risk premiums for energy utilities estimated with the CAPM are rejected as too low compared to the historical risk premiums.

[18] Pastor and Stambaugh (1999) obtain risk premiums that vary between the CAPM estimates, when they assume that there is zero prior uncertainty on the CAPM, and the historical estimates, when they assume that there is infinite prior uncertainty on the CAPM. Our bias correction corresponds approximately to a prior uncertainty on the CAPM between 3% and 6% in their setup.

The rejections are related to the well-documented CAPM underestimation of the average returns of low-beta firms and value firms. The Fama-French model and the Adjusted CAPM appear statistically better specified, as we cannot reject the hypothesis that their risk premium errors are equal to zero. They suggest equity risk premiums for gas distribution utilities between 4% and 8%. Overall, our findings demonstrate that models that go beyond the CAPM have the potential to improve the estimation of the cost of equity capital of energy utilities. They are thus interesting avenues for regulators looking to set fair and reasonable equity rates of return.

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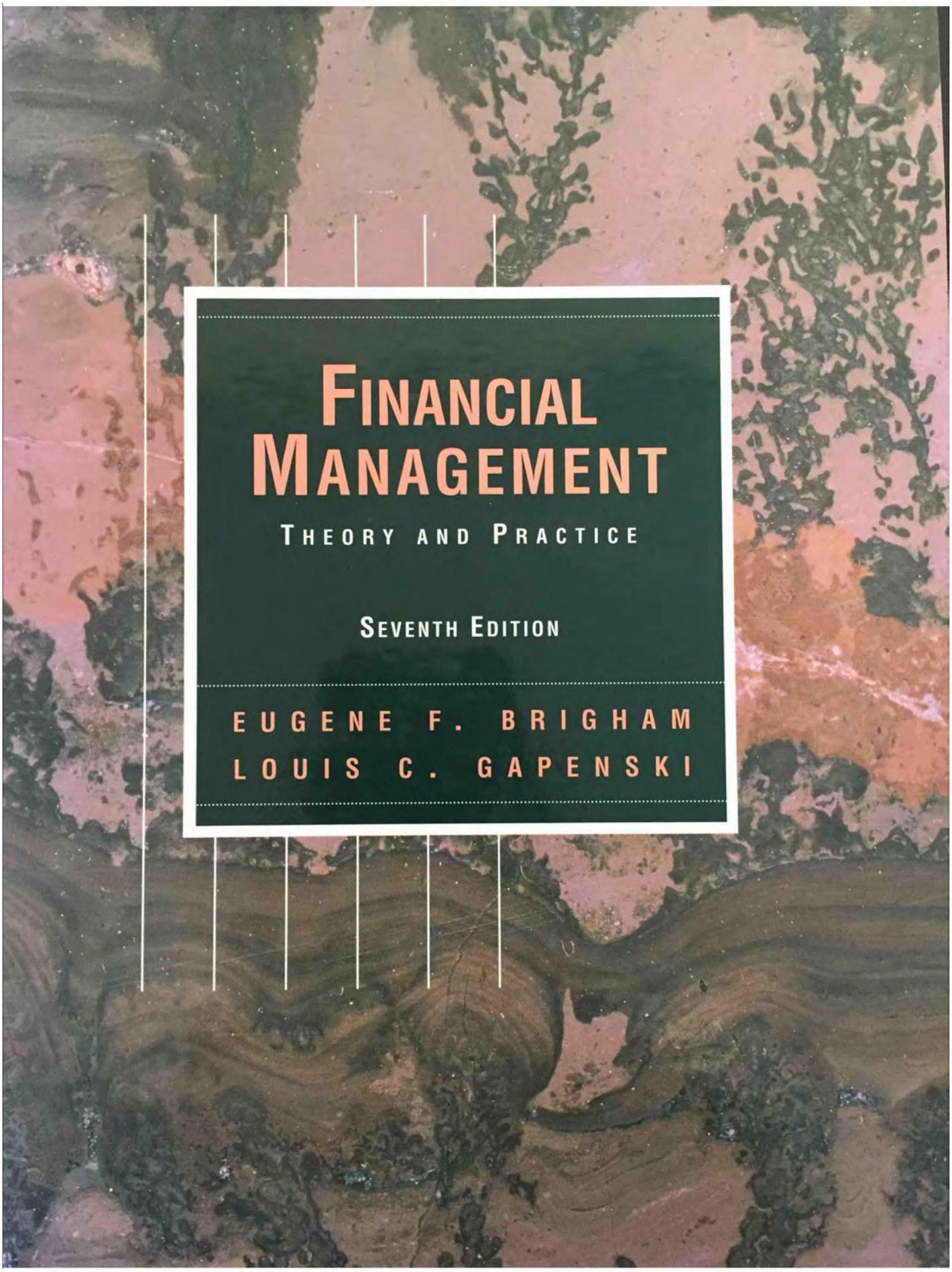
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this is its business risk, which is defined as the uncertainty inherent in projections of future ROE, assuming the firm is financed solely with common stock. If a firm uses debt and preferred stock (financial leverage), this concentrates its business risk on the common stockholders. To illustrate, suppose ten people decide to form a corporation to manufacture steel roof trusses. There is a certain amount of business risk in the operation. If the firm is capitalized only with common equity, and if each person buys 10 percent of the stock, then each investor shares equally in the business risk. However, suppose the firm is capitalized with 50 percent debt and 50 percent equity, with five of the investors putting up their capital as debt and the other five putting up their money as equity. In this case, the five investors who put up the equity will have to bear all of the business risk, so the common stock will be twice as risky as it would have been had the firm been financed only with equity. Thus, the use of debt, or *financial leverage,* concentrates the firm's business risk on its stockholders.

To illustrate the concentration of business risk, again consider Strasburg Electronics. Strasburg has $175,000 in assets and is all-equity financed.[5] If the firm were using Plan A from Figure 12-2, then its expected ROE would be 12.0 percent with a standard deviation of 8.0 percent. Now suppose the firm decides to change its capital structure by issuing $87,500 of debt at k_d = 10% and using these funds to replace $87,500 of equity. Its expected return on equity (which would now be only $87,500) would rise from 12 to 18 percent:

	New (Leveraged) Situation		Old (Unleveraged) Situation (See Table 12-2)
Expected EBIT (unchanged)	$35,000		$35,000
Interest (10% on $87,500 of debt)	8,750		0
Earnings before taxes	$26,250		$35,000
Taxes (40%)	10,500		14,000
Net income	$15,750		$21,000
Expected ROE = $15,750/$87,500 =	18%	$21,000/$175,000 =	12%

Thus, the use of debt would "leverage up" the expected ROE from 12 percent to 18 percent.

However, financial leverage also increases risk to the equity investors. For example, suppose EBIT actually turned out to be $5,000 rather than the expected $35,000. If the firm used no debt, then ROE would decline from 12.0 percent to

[5] A firm in business for at least ten years would likely have far more than $175,000 in assets. We are purposely keeping Strasburg Electronics small so that we may focus on the concepts without being overwhelmed by the numbers. Also note that, to be consistent with capital structure theory, we should be working with market values of securities rather than book values of assets. We are using book values at this point to simplify the illustration, but we will discuss market value relationships later in the chapter. In this regard, see Haim Levy and Robert Brooks, "Financial Break-Even Analysis and the Value of the Firm," *Financial Management,* Autumn 1986, 22–26.

1 of 100 DOCUMENTS

New England Telephone & Telegraph Company v. State

No. 4184

SUPREME COURT OF NEW HAMPSHIRE

98 N.H. 211*; *97 A.2d 213*; *1953 N.H. LEXIS 50

June 2, 1953, Decided

DISPOSITION: [***1] *Appeal dismissed.*

HEADNOTES

In an appeal from the decision of the Public Utilities Commission fixing permanent intrastate rates to be charged by a telephone utility rendering both interstate and intrastate service, the commission did not err in adopting a formula for separation of the subscribers' line plant investment, expense and revenues between the two services based upon local conditions of use and equating the unlimited local exchange use to measured or toll use by dividing the former use by three, in determining the proper allocation for intrastate valuation.

Nor, in such case, did the commission err in its cost allocation of the utility's plant, installed and maintained to handle peak-load usage, on the basis of peak-load use during the summer months, when the number of toll calls are appreciably higher, rather than on the average annual use.

The Public Utilities Commission is not required to accept or adopt any single formula or combination of formulas in the separation of a utility's plant devoted both to interstate and intrastate service in determining a proper rate base allocation for intrastate valuation.

The commission may adopt any practical method of allocation which recognizes the different uses and reflects in a reasonable way their relative proportion in establishing rates which are just and reasonable on a telephone utility's intrastate valuation.

While under established legal principles the standard of separation is the relative use actually made of the facilities, the commission's jurisdiction over intrastate rates authorizes a departure from a uniform method of separation used elsewhere.

The Public Utilities Commission's determination of a just and reasonable rate of return upon a utility's capital structure different from the actual capital structure of the company at the time the matter was adjudicated was proper since debt ratio substantially affects the cost of money upon which rate of return is predicated.

Whether the Public Utilities Commission, in determining the cost of equity capital in a rate case, should rely upon the expert testimony presented by the State in preference to that offered by the utility or vice versa is within the sound discretion of the commission on the evidence presented.

The allowance by the commission of a rate of return of 5.75% to a telephone public utility with a cost of money to the company of 5.59 to 5.76% was not confiscatory, unreasonable or unjust under all the circumstances.

Whether and to what extent certain cash accruals, which the utility has the use of prior to disbursements, should be deducted from the working capital required is essentially a question of fact for the Public Utilities Commission to decide upon all the circumstances of the particular case.

SYLLABUS

APPEAL, under the provisions of R. L., *c.* 414, *ss.* 6, 7, from an order of the Public Utilities Commission known as order 6138 fixing permanent rates to be charged by the appellant company.

On September 1, 1951, the company pursuant to the provisions of R. L., *c.* 292, filed with the commission a new tariff calculated to produce a gross revenue increase of $ 1,638,000 effective October 1, 1951. On September 25 the commission suspended this tariff pending investigation and hearing. On April 1, 1952, pursuant to the provisions of R. L., *c.* 292, *s.* 6, as amended, the company placed in effect, under bond, the filed schedule of exchange rates (but not toll rates) calculated to produce an additional $ 1,480,000 of annual exchange revenues.

After hearings, the commission on September 29, 1952, issued the order which is the subject of this appeal. This order disallowed the rates filed in the tariff of September 1, 1951. It ordered the company to file forthwith, for approval by the commission, exchange rates designed to produce annual revenues of $ 350,318 more than produced by the rates in effect prior to April 1, 1952, to be effective, [***2] as of the latter date, when approved. On November 14, 1952, this court suspended the order of the commission upon the filing of a repayment undertaking by the company. *New England Tel. & Tel. Co. v. State, 97 N.H. 555, 92 A.2d 408.*

The position of the parties and the main issues in controversy were set out by the commission in its report. "Out of the records... (the) testimony of the... witnesses... and the many Exhibits introduced, there emerges two basic questions and, upon the proper decision of these two issues, rests the entire case... *namely*, separation of the plant to determine the intrastate investment, and the rate of return to be earned in that investment. Counsel for the Company argues that it is entitled to, and requires, a 7 1/2% rate of return on a rate base of $ 21,176,077 for the "test year' 1951, or $ 21,283,700 for 1952. Counsel for the State submit that a rate of return between 5.25% and 5.75% on a rate base of $ 18,344,119 for the "test year' 1951 or $ 18,729,015 for 1952 is just and equitable."

The commission found for the "test year" 1951 a net plant of $ 18,243,569, added thereto working capital of $144,093, making the total rate base $ 18,387,662. For [***3] 1952, it found a net plant of $ 18,782,982, added working capital of $ 241,575, for a total rate base of $ 19,024,557. The commission allowed a rate of return of 5.75% thereon.

The company contends that the effect of the commission's order is to require it to provide intrastate telephone service in New Hampshire at rates and charges which are unjust and unreasonable and insufficient to yield a fair return on its property in violation of R. L., *c.* 292, *s.* 7, and Const., *Pt. I, Art.* 12. More specifically the company claims that the commission erred in determining what portion of the company's property was used and what portion of its expenses was incurred in rendering intrastate service. This issue has been denominated "Separations." The company also contends that the rate of return allowed is less than reasonable within the concept of *New England Tel. & Tel. Co. v. State, 95 N.H. 353, 361, 64 A.2d 9*, and is in fact less than the cost of capital to the company and hence confiscatory. Other facts appear in the opinion.

COUNSEL: *Sulloway, Jones, Hollis & Godfrey*, and *T. Baxter Milne* and *John M. Gepson* (both of Massachusetts). (*Mr. Hollis* and *Mr. Godfrey* [***4] orally), for the company.

John N. Nassikas, Deputy Attorney General, for the State.

JUDGES: BLANDIN, J., dissented in part: the others concurred.

OPINION BY: LAMPRON

OPINION

[*213] [**216] The issue dealing with separations arises because subscribers use most of the plant of the company in New Hampshire in common for local or exchange calls, intrastate toll calls and interstate toll calls. The company's books of accounts, however, have to be kept according to a "Uniform System of Accounts" prescribed by the Federal Communications Commission which does not provide for the showing of intrastate and interstate results separately. The commission having jurisdiction over intrastate operations only, the company's investment, expenses and revenues have to be apportioned between intrastate and interstate.

The company contends that under applicable legal principles this separation must be made on the basis of the actual relative use of the facilities in the two services. The State maintains that these principles do not demand an apportionment on that basis, but require no more than

an apportionment by a practical and reasonable method by which the different uses of the property may be recognized as [***5] an element of arriving at an intrastate valuation, provided that such recognition will result in just and reasonable rates.

For a considerable period of years, representatives of the Federal and State regulatory bodies and of telephone companies have co-operatively considered methods and procedures of effectuating this [*214] separation. Two plans in particular have evolved. One is the Separations Manual of 1947: "The fundamental basis on which separations among exchange, state toll and interstate services are made, is the use of telephone plant in each of these services.... Separations are made on the actual use' basis, which gives consideration to relative occupancy and relative time measurements." The other is a revision of the above made in 1951 and is generally referred to as the Charleston Plan: "The exchange plant has become increasingly complex in nature in recent years.... This complexity has correspondingly increased the work involved in the preparation of the separation studies. It, therefore, would be desirable to incorporate as great a degree of simplification as can be employed consistent with reasonable separations procedure.... While it has been concluded that [***6] sound separations procedures should be based on the use' principle, it has been recognized that there are different methods by which these measurements may be employed to allocate the plant."

The commission found "long standing dissatisfaction with the Separations Manual and its results, when applied to New Hampshire." It also found that "the Charleston Plan... increases the amount of plant and associated expenses assigned to interstate toll service, thus partially relieving [subsidization of the toll plant]... but... it still fails to properly evaluate the true state of conditions here in New Hampshire." It further found that the State introduced "a plan of separations which more equitably meets the actual situation....

"The New Hampshire Plan [so called]... is based on local conditions of use, with the principles of the 1947 Manual being used fully in grouping the various items of plant, and local factors used to arrive at an allocation." It "modifies the 1947 Manual only in dividing the local exchange minutes of use by three, and using the same categories of plant and factors as contained in that Manual. The allocation is made, however, at the time of maximum use [July-August] [***7] in contrast to the average annual usage as determined by the Company."

The company argues that by so doing the commission adopted a method of separations which departed not only from the [**217] standard methods but from the basic principle of actual relative use; that its apportionment was inherently arbitrary, without substantial support in the evidence, and constituted error as a matter of law.

The separation on which the parties disagree affects about 65% of [*215] the company's total plant in New Hampshire, commonly referred to as the "subscribers' line plant." It consists of the telephone instruments and associated equipment on the premises of the subscribers, the lines from those telephones to the central office, including supporting structures, and much of the local central office equipment. The company contends that by adopting the New Hampshire Plan, the commission excluded for the year 1952 over $ 1,450,000 of property and $ 250,000 of expense from intrastate operations. The State maintains the difference in investment is $ 1,194,618 and $ 135,000 in expenses.

We shall first consider the division of the exchange use by three. The Separations Manual provides that the subscribers' [***8] line plant be apportioned as follows: multiply the number of intrastate toll calls, interstate toll calls and exchange calls, respectively, by the average time each type of call uses this plant thus obtaining the total minutes of use. Calculate the relationship of the minutes of interstate use to the total minutes of use. The percentage thus obtained is called the subscriber line use factor commonly abbreviated to "SLU factor." This percentage is applied to the cost of the subscribers' line plant and to the associated expenses to arrive at the amount in dollars which should be apportioned to interstate, the balance being intrastate.

The State agrees that the separation of that plant should be made on the basis of the relative use of its facilities for intrastate and interstate services. But it argues that this comparison must be made between comparable use units. Witness Gerrish, called by the State as an expert, testified in substance that unlimited exchange calls for which the subscriber pays a flat monthly charge are not comparable to toll calls. The latter are a timed message conversation. A price consideration is attached to each call. Unlike an exchange call, an additional charge [***9] is assessed for each extra

minute of use over the initial rate. The use is constricted both in the inception and duration by the price tag on each call. On the contrary the subscriber may make exchange calls at will unrestrained by any price consideration for the initiation or the duration of the call except for limited or metered service.

Gerrish further testified that it was his opinion, corroborated by the company's own experience with extended area service, that where short haul toll charges are removed between certain exchanges, calls not only triple in number but their duration also increases. Hence the determinants of the SLU factor, viz; number of calls and time [*216] each type of call uses the plant, are thereby affected. To the same effect a company engineer assumed a 35% constriction or curtailment of service would result if coin box charges were to be increased in this state from 5 cents to 10 cents for local messages. In support of the same principle witness Burroughs testified that when the company desires to stimulate the toll calling rate in order to maintain maximum use from the toll plant, it reduces its toll rates for evenings, Sundays and holidays.

Because [***10] of these factors, it was Gerrish's opinion that to make exchange and toll calls comparable units from which to determine the relative use of the subscribers' line plant, the free and unlimited exchange use must be equated to measured or toll use. This is to be accomplished by dividing the exchange use by three (or multiplying the toll use by three) because the company's experience demonstrates that their respective use would be affected at least in that proportion if their differentiating charges factors were removed. The evidence supports the commission's finding that as a comparable measure of relative use actual exchange use is more nearly equivalent to actual toll use if the former is divided by three.

The company has criticized, as based upon a distortion or mis-understanding, the State's claim that the Charleston Plan departs from the basis of actual use because it involves dividing or equating exchange minutes of use by two. However, the State logically argues that on an exchange call of [**218] five minutes duration the actual use of each subscriber's station (instrument) and loop is five minutes, and this constitutes a total of ten minutes of actual use of the two stations and loop [***11] involved. It further argues that under the Charleston Plan of measurement which considers it as being five message minutes of use or total call minutes (T. C. M.) that in fact constitutes a division of the exchange use by two and results in toll minutes of use being weighted two to one for exchange minutes of use. It could be found that this plan would not be as practical and equitable a method of recognizing the relative uses of the company property as the New Hampshire Plan which involves a division of the exchange use by three.

We direct our attention next to the apportionment of the company's plant and expenses on the basis of July-August calls or on a peak-load theory, so-called. The company asserts that this accounts for a difference in net plant allocation of $ 640,400 and in operating expenses (excluding Federal income tax) of $ 114,000.

As we have seen, the interstate SLU factor is, in broad terms, the [*217] percentage that interstate subscriber line usage represents of total subscriber line usage for all types of calls. The two fundamental components of the SLU factor are therefore (1) number of messages and (2) the holding time. The number of calls can be readily [***12] determined with almost mathematical accuracy. This is not so however as regards to holding time. To determine the composite holding times component the company took a total sample of 900,000 observations of call use in the state out of a total annual call use of 210,000,000. This measurement is influenced also by the period of time when the study is made, the selection of sample offices and the application of the results so obtained to non-study offices.

Gerrish testified that the telephone plant is planned to provide a satisfactory service at all times. Since, however, it cannot be installed and removed from hour to hour and day to day, it must be designed to provide for the maximum use, and is always so built by the company. The volume of toll traffic during the months of July and August is far above the average for the year. To make a cost allocation of the plant installed to take care of this high usage on the basis of average annual use is unsound and unreasonable. Only if the relative use between one type of service and another were constant could reasonable results be obtained in this manner. Since the toll usage is the portion that markedly increases in the summer, especially [***13] the long line and interstate toll, and the plant as constructed is installed to provide sufficient equipment to handle this particular load, then the allocation at this time reflects the true cost and also the relative costs to be assigned each type of service. This

substantial seasonal influence which aggravates the peak load to a greater degree than in other states served by the company is in his opinion unique to New Hampshire and Maine.

The commission in accordance with this testimony modified the SLU factor in this manner. It applied the company's average annual holding times to the number of calls made during July and August instead of to the average annual number of calls. The State maintains that by so doing the commission did not ignore the actual use of the plant for the other ten months because it applied the company's holding time averages which are based on annual use to the number of calls during the peak use to properly reflect the unique situation which prevails in New Hampshire and thereby effect an equitable allocation as between the two classes of services. This is evident it maintains when we consider that telephone facilities are provided for combined peak load [***14] requirements of exchange, [*218] intrastate toll and interstate toll users. The demand measured by minutes of use of both interstate and intrastate toll users reaches its peak in July and August. The demand measured by minutes of use of exchange users reaches its peak in August, and July-August average exchange demand is almost coincident with annual average demand for exchange service.

The company argues that because the property and expenses of the company are jointly used and incurred in rendering both [**219] inter-state and intrastate service and because regulatory jurisdiction is divided between State and Federal authority the need for a firm and definite standard to delineate the respective fields of authority is apparent. Under long established legal principles this standard is the relative use actually made of the facilities by each service. *The Minnesota Rate Cases, 230 U.S. 352, 57 L. Ed. 1511, 33 S. Ct. 729*; *Smith v. Illinois Bell Tel. Co., 282 U.S. 133, 75 L. Ed. 255, 51 S. Ct. 65*; *Norfolk* v. *Chesapeake &c. Tel. Co., 192 Va. 292, 64 S.E.2d 772*. Accordingly, the standard methods of separations which have been adopted by the Federal Communications Commission and the National Association of Railroad and Utilities Commissioners [***15] and used by the company in this case are based on actual relative use. It also claims that by departing radically from these methods and this basis the commission excluded from intrastate substantial amounts of the company's investment and expenses which are not recognized as interstate under the standard separation methods, with the result that the company is compelled to devote this property and these expenses to the public service without compensation. This action it maintains is contrary to law.

It is true that as much uniformity as possible is desirable in the method of separation to be used by Federal and State authorities. However if the argument of uniformity that the State of New Hampshire must necessarily use the same methods of separation as those used by the Federal Communications Commission is carried to its ultimate conclusion then it runs afoul of the fundamental legal meaning of the term "appropriate recognition of the competent governmental authority in each field of regulation." *Lindheimer v. Illinois Tel. Co., 292 U.S. 151, 155, 78 L. Ed. 1182, 54 S. Ct. 658.*

The commission is not bound by law to the service of any single formula or a combination of formulas in determining a proper rate [***16] base. *New England Tel. & Tel. Co. v. State, 95 N.H. 353, 357, 64 A.2d 9*; *Chicopee Mfg. Co. v. Company, 98 N.H. 5, 10, 93 A.2d 820*; *Federal Power Commission v. Pipeline Co., 315 U.S. 575, 86 L. Ed. 1037, 62 S. Ct. 736.* It is clear that the dominant standard of our statutes is that rates shall be just and reasonable. [*219] *New England Tel. & Tel. Co. v. State, supra; Chicopee Mfg. Co. v. Company, supra, 9.* Since our statutes do not provide a formula for the commission to follow we are not warranted in rejecting the one employed by it unless it plainly contravenes the statutory scheme of regulation or violates our law in some other respect. *Colorado Interstate Gas Co. v. Federal Power Comm'n, 324 U.S. 581, 587, 89 L. Ed. 1206, 65 S. Ct. 829.*

We do not believe that the only legally acceptable method of separation is one based on actual relative use as interpreted by the company. Agencies to whom this legislative power of rate-making has been delegated are free, within the ambit of their statutory authority, to make pragmatic adjustments which may be called for by particular circumstances. *Federal Power Com. v. Pipeline Co., supra, 587.* "The variables due to local conditions are numerous; and experience teaches us [***17] that it is much easier to reject formulas presented as being misleading than to find one apparently adequate." *Groesbeck v. Duluth, S. S. & A. R. Co., 250 U.S. 607, 614, 63 L. Ed. 1167, 40 S. Ct. 38.* The determination of the extent of the use, in either intrastate or interstate operation, of property used in common for both, and the

ascertainment of comparable use-units which will afford a basis for a reasonable division of property and expenses between such uses. (*Minnesota Rate Cases, supra*, 461) is not a process which can be held correct or incorrect to a mathematical certainty. Too many variables or judgment factors are involved to permit "extreme nicety" which is not required. *Smith v. Illinois Bell Tel. Co., supra, 150.* A practical method which recognizes the different uses and reflects in a reasonable way their relative proportion is not to be condemned because it differs from other methods in use.

[**220] It is our opinion that the formula applied by the commission in this case, The New Hampshire Plan, so-called, was warranted by the evidence. We are of the further opinion that certain of its departures from methods of apportionment now in use elsewhere are justified by variables due to local [***18] conditions. In other respects there is no such departure from the legally acceptable principles of separation based on the different uses made of the company's property as to be in violation of them. We are not satisfied that a rate base fixed thereby is unjust or unreasonable.

The commission found that a rate of return of 5.75% was reasonable and that "under the present conditions, and for the purposes of this case, we find that a range of 45% to 50% debt ratio is proper for this company. It is our opinion that this range of debt ratio [*220] will allow the company to attract new capital in the foreseeable future."

The company contends that such a rate of return is not only unreasonably low but it is also confiscatory. It claims that the commission's rate of return finding was based upon two fundamental errors. First, the commission disregarded the actual capital structure of the company and substituted a hypothetical structure without warrant in the evidence. Second, the commission failed to find a cost of equity money to the company and completely ignored the evidence presented by it on that question.

We held in *New England Tel. & Tel. Co. v. State, 95 N.H. 353,* [***19] *361, 64 A.2d 9*, that "the proper rate of return is a matter for the judgment of the commission, based upon the evidence before it. In fixing the rate the cost of capital may not be ignored, but what that cost may be is also a matter for determination by the commission upon the evidence."

When the case was tried the capital structure of the company was equity capital 61.9%, long term debt 32.7% and short term debt 5.4%. Its debt ratio has fluctuated between a low of 36.2% in 1945 to a high of 58.5% in 1949 with a seven year average of 47.5%.

Although the determination of whether bonds or stocks should be issued is for management, the matter of debt ratio is not exclusively within its province. Debt ratio substantially affects the manner and cost of obtaining new capital. It is therefore an important factor in the rate of return and must necessarily be considered by and come within the authority of the body charged by law with the duty of fixing a just and reasonable rate of return. *New England Tel. & Tel. Co. v. Department of Pub. Util., (Mass.) 327 Mass. 81, 97 N.E.2d 509, 514*; *Petitions of New England Tel. & Tel. Co., 116 Vt. 480, 80 A.2d 671.* The commission could therefore legally determine a just and [***20] reasonable rate of return upon a capital structure different from the actual structure of the company at the time the case was adjudicated. *Chesapeake & Potomac Tel. Co. v. Public Service Comm'n, (Md.) 201 Md. 170, 93 A.2d 249, 257.*

The commission virtually adopted the recommendations of witness Kosh, an expert called by the State, in its determination of a reasonable capital structure. He testified that there are two measures of capital structure; viz; (1) debt ratio which reflects the balance sheet and indicates what proportion of total capital is in the form of debt; (2) absorption ratio which reflects the income account and is the percent of gross income available for return [*221] absorbed by interest charges. The latter being, in his opinion, the soundest approach to determine a safe and economical capital structure, he developed the "Absorption Ratio Factor" which measures the relative ability of different companies to carry fixed charges during periods of differing economic conditions. He then proceeded to analyze the financial history of the Bell System and of the company and found that the latter could have a 14% higher absorption ratio than the former. He also compared [***21] the absorption ratios of five other telephone companies and those of a group of electric companies including the Public Service Company of New Hampshire. He concluded that an absorption ratio of 30% would be conservative for the company.

It was agreed that the present cost of debt capital is 3.56%. Kosh testified that in [**221] his opinion the

cost of hiring new debt would be 3.15-3.25%. He further testified that the cost of debt is virtually unaffected by variations in capital structures.

To determine the cost of equity capital to the company Kosh made an analysis of American Telephone and Telegraph Company dividend yields and found the cost of capital and fair rate of return to the Bell System as a whole. To determine the extent of the applicability of this cost of capital and rate of return, he compared the financial and operating characteristics of the Bell System as a whole with those of the company including the economic characteristics of the markets they serve. He concluded that the company was a substantially similar investment opportunity to the Bell System. Having so found he next determined the cost of equity capital to the Bell System by using the dividend yield as his basic [***22] measure. Proceeding under the theory that the best measure of the cost of equity capital to the company is to determine the cost of equity capital of telephone utilities which are equivalent and comparable investment opportunities carrying corresponding risks he found the cost to be between 7.41% and 7.84% on a dividend yield of 6%, pressure of 10% and dividend payouts of 90% and 85% respectively.

The company's witnesses, considering the capital structure of the company as it actually existed, testified that the current cost of equity capital was approximately 10%. Some of their conclusions were derived from a study of the debt structure of Class I railways and "the most soundly financed companies in the electric industry."

Whether the commission should rely upon the expert testimony presented by the State in preference to that offered by the company [*222] or vice versa cannot be decided as a matter of law. It is a matter for its judgment based upon the evidence presented. *New England Tel. & Tel. Co. v. State, 95 N.H. 353, 361, 64 A.2d 9.* It could properly find from the evidence that the cost of money to the company is 5.59-5.76%. This is based on a cost of debt of 3.56% and a [***23] cost of equity of 7.41-7.84%. It could also properly find from the evidence that the cost of debt and the cost of equity used above are higher than the bare cost of capital. While the rate of return allowed in this case was not the only sustainable rate that could be allowed it was not confiscatory and we cannot say that it was unreasonable or unjust. *Chicopee Mfg. Co. v. Company, 98 N.H. 5, 12, 93 A.2d 820.*

The commission established $ 144,093 as an adequate working capital allowance to add to the "test year" 1951 rate base, and $ 241,575 for 1952. A working capital allowance has for its purpose and should be sufficient to provide for (1) the necessary amount of operating materials and supplies, (2) the maintenance of required minimum cash balances, (3) the payments for operating expenses made before reimbursement therefor from revenues. Because of the lag between receipt by the company and payment by it of certain cash received mostly from taxes collected by it, the company has the use of this cash to meet certain of the above obligations. Whether and to what extent such funds should be deducted from the cash working capital required is essentially a question of fact within the province [***24] of the commission to decide under the circumstances of the case before it. We see no error in the method adopted or the results reached by the commission in this case. *Chicopee Mfg. Co. v. Company, 98 N.H. 5, 14, 93 A.2d 820*; *Chesapeake & Potomac Tel. Co. v. Public Service Comm'n, supra, 256.*

Appeal dismissed.

DISSENT BY: BLANDIN

DISSENT

BLANDIN, J., *dissenting in part:* To determine the relative amount of plant and associated expenses which should be apportioned to intrastate and interstate operations respectively, the majority report of our commission divided the minutes of exchange use by three. It thereby credited to exchange use only a fraction of the minutes so used and thus departed from all previous separations formulae here or elsewhere which are based on actual use. The report itself concedes that this drastic procedure [**222] goes beyond that adopted in [*223] any other jurisdiction. However, justification is sought by claiming that this division by three is only an extension of the so-called Charleston separations formula which makes a similar division by two. This formula was unanimously adopted by the Federal Communications Commission after exhaustive study less than [***25] a year before our commission's report. At the meeting at which this plan was adopted two of our Commissioners were present and supported the plan. The reason for the division by two in the Charleston Plan is that in exchange calls, under the company's recording system, the time used by the person making the call is added to the

practically identical time consumed by the one receiving it. Thus if Jones in Lebanon calls Brown in Lebanon and they talk for five minutes, the result would be a credit of ten minutes to this exchange call. It may be argued with some logic that this results in a disproportionate amount of cost being credited to the exchange operations, so the ten minutes is divided by two. However, if Jones in Lebanon calls Brown in Boston and they talk for five minutes this all should be and is credited to interstate service. This obvious explanation has been recognized in other jurisdictions and we know of none where the reason for the division is otherwise interpreted. It seems therefore clear that the Charleston Plan does not depart from the actual use principle in its separations procedure. Furthermore, the plan itself states unequivocally that "sound separations procedures [***26] should be based on the "use' principle" (*company's exhibit* 32a *p.* 1), and this plan is so based. Nowhere in the Charleston Plan is there mention or suggestion of "equating" toll and exchange use or of dividing or multiplying to equate such use by the introduction of any element of value of service. It seems to me that any surmise that this plan embodies anything of this sort is without foundation in fact.

Supply (cost of service) and demand (value of service) are separate and independent factors in the determination of utility rates. The object of separating joint plant and apportioning it among local exchange, intrastate toll and interstate toll uses is to ascertain the costs applicable to each kind of service. The measure of the cost of such service under existing rate structures must be the actual use of the plant in rendering each kind of service. To introduce, as would our commission, the demand or *value* of the service in reckoning this cost is to give weight to an extraneous and unrelated factor. The aggregate value of each service to consumers may be measured by the total revenue derived therefrom. But to [*224] separate the cost of property on this basis is [***27] clearly improper for it entails circuity of reasoning. If the property were so separated, then the relative total revenues would be used to determine a rate base for each kind of service and this rate base in turn would be used to determine the rates necessary to produce the revenue required to cover operating expenses and an adequate return on investment. Yet in dividing by three the actual minutes that the plant was used for local exchange cost in the reckoning of relative use, the commission was introducing the element of value based on the rates consumers are willing to pay for the services. Such a procedure incorporates indirectly a factor which so far as we know no jurisdiction has permitted to be brought in directly.

Our commission concededly without precedent or experience upon which to base such action makes a radical departure from the use principle by dividing the actual minutes of exchange use by three. In so doing it violates the long established principle that the separation must be based on actual use. *Smith v. Illinois Bell Tel. Co., 282 U.S. 133, 150, 151, 75 L. Ed. 255, 51 S. Ct. 65*; *Norfolk* v. *Chesapeake &c. Tel. Co., 192 Va. 292, 64 S.E.2d 772*. As the commission admits "the full effects of [***28] the Charleston plan are not yet fully known, or realized." In other words, this plan while possessing a findably logical basis has not yet completely proved itself and is to an extent an unknown. Upon this unknown the majority opinion of our Court would permit the commission to superimpose another unknown factor in the hope of obtaining a fair result. I am unable [**223] to find an adequate justification in law or logic for such a procedure. Unquestionably the matter of separations is one of great difficulty and reasonable latitude must be granted the commission in the performance of its task. *New England Tel. & Tel. Co. v. State, 95 N.H. 353, 357, 64 A.2d 9. Federal Power Commission v. Pipeline Co., 315 U.S. 575, 86 L. Ed. 1037, 62 S. Ct. 736*. But its conclusions must be based on "facts and reason." *New England Tel. & Tel. Co. v. State, supra, 359*. Here it is not a fact that dividing the minutes of actual use on exchange calls by three can by any rational processes lead to a fair separation based on actual use as the law requires. *Smith v. Illinois Bell Tel. Co., supra, 150, 151*. Nor does it seem the hope that somehow this figure three arbitrarily chosen will produce a just result is a sufficient reason [***29] to permit its use. To say, as does in effect the majority opinion of our court, that the method of arriving at the result is immaterial so long as a fair result is reached seems to me to beg the question. It is impossible to tell in this case whether a fair result has been [*225] obtained since it rests upon errors of law and fact. Assuredly, it is the duty of our court to supervise the methods employed by the commission to the extent that such methods shall not be arbitrary but shall be based on reason. *Cf. Wisutskie v. Malouin, 88 N.H. 242, 245, 186 A. 769*. For us to do otherwise would be to destroy eventually the integrity and effectiveness of the whole regulatory process. "The public, as well as the parties, is entitled to a finding of the public good on a hearing without error of law." *Parker-Young Co. v. State,*

98 N.H. 211, *225; 97 A.2d 213, **223;
1953 N.H. LEXIS 50, ***29

83 N.H. 551, 560, 145 A. 786; *Boston & Maine R. R. v. State, 97 N.H. 380, 384, 89 A.2d 764*. It seems to me the commission has erred as a matter of law in its apportionment of property and expenses between intrastate and interstate services and that as a result of this error the petitioner's constitutional rights are violated. Therefore, I would remand the case for a redetermination [***30] of this issue and for such revision of the order as may result therefrom.

1 of 100 DOCUMENTS

COMMUNICATIONS SATELLITE CORPORATION, PETITIONER v. FEDERAL COMMUNICATIONS COMMISSION AND UNITED STATES OF AMERICA, RESPONDENTS AMERICAN BROADCASTING COMPANIES, INC., ET AL. THE EUROPEAN BROADCASTING UNION, INTERVENOR

No. 75-2193

UNITED STATES COURT OF APPEALS, DISTRICT OF COLUMBIA CIRCUIT

611 F.2d 883*; *198 U.S. App. D.C. 60*; *1977 U.S. App. LEXIS 11187*; *41 Rad. Reg. 2d (P & F) 1051

January 27, 1977, Argued
October 14, 1977, Decided

PRIOR HISTORY: [**1] Petition for Review of Order of the Federal Communications Commission

COUNSEL: Lloyd N. Cutler, Washington, D. C., with whom J. Roger Wollenberg, Sally Katzen, Robert B. McCaw, Marianne K. Smythe, William H. Berman and Lawrence M. DeVore, Washington, D. C., were on the brief, for petitioner.

John E. Ingle, Counsel, F.C.C., Washington, D. C., with whom Ashton R. Hardy, Gen. Counsel, Daniel M. Armstrong, Associate Gen. Counsel, F.C.C., Barry M. Grossman and Michael Pugh, Attys., Dept. of Justice, Washington, D. C., were on the brief, for respondents.

Howard Monderer, Washington, D. C., was on the statement in lieu of brief, for intervenor NBC, Inc.

Joseph M. Kittner and Norman P. Leventhal, Washington, D. C., were on the statement in lieu of brief for intervenors American Broadcasting Companies, Inc., et al.

Joseph DeFranco, New York City, was on the statement in lieu of brief for intervenor CBS, Inc.

Robert D. Hadl, Washington, D. C., entered an appearance for intervenor The European Broadcasting Union.

JUDGES: Before Mr. Justice CLARK, * of the Supreme Court of the United States, and MacKINNON and ROBB, Circuit Judges.

* Mr. Justice Tom C. Clark, United States Supreme Court, Retired, sitting by designation pursuant to 28 U.S.C. § 294(a). Justice Clark heard oral argument in this case but subsequently died and did not participate in the decision.

Opinion for the court filed by MacKINNON, Circuit Judge.

[**2]

OPINION BY: MacKINNON

OPINION

[*885] The Communications Satellite Corporation (COMSAT) was created by the Communications Satellite Act of 1962, 76 Stat. 719, *47 U.S.C. §§ 701-744 (1970)*, for the purpose of developing a profitable commercial international telecommunications technology using earth satellites to relay signals. The corporation was not to "be an agency or establishment of the United States Government," *47 U.S.C. § 731*, yet it was subject to the regulation of the President, NASA, and the FCC in important specified respects. *47 U.S.C. § 721*. As a communications common carrier, COMSAT was placed under the supervisory authority of the Federal

Communications Commission (FCC) in order to guarantee that the rates it charged its customers (all common carriers) were "just and reasonable." *47 U.S.C. § 721(c)(2)*.

In June of 1964, COMSAT conducted the only public offering in its career. It sold 50 million shares of common stock to the public [*886] at large, at $ 20 per share. [1] This 200 million dollar capitalization (less underwriting expenses) was initially devoted to COMSAT's [**3] pursuit of an international satellite system, but COMSAT was soon able to carry on its international satellite activities (INTELSAT) with less than the 200 million dollars that had been raised. A domestic satellite venture to be carried on by a separate corporate subsidiary, COMSAT General, was approved by the FCC in 1972. [2] It was to this subsidiary that COMSAT devoted the funds not required for INTELSAT. COMSAT General's operations are not at issue here; the proceedings on review before this court concern only COMSAT's rates for international satellite telecommunications (INTELSAT) operations.

1 The equal division of ownership was required by the statute. *47 U.S.C. § 734(b)(2)*.

2 *Establishment of Domestic Communications Satellite Facilities by Non-Governmental Entities, 35 FCC2d 844, 853 (1972)*. See also *Applications of Communications Satellite Corp., 45 FCC2d 288, 444 (1974)* (funding decision).

On May 28, 1965, COMSAT filed with the FCC its first [**4] set of rates for international telecommunications services, pursuant to *47 U.S.C. § 204*. Protracted hearings, stays, and delays followed, [3] culminating in the 1975 decision which is the subject of the present review before this court, *Communications Satellite Corp., 56 FCC2d 1101 (1975)*. In that decision, the FCC decided to consider only COMSAT's future rates, setting a maximum rate of return that COMSAT may earn and requiring COMSAT to file appropriately lowered rates. COMSAT was permitted to retain the revenues derived from the rates that it had charged in the past. Pursuant to a stay order issued by this court on June 16, 1976, lower rates consistent with the Commission's decision have not been collected, but the excess payments have been escrowed by COMSAT to protect the interests of the rate payers.

3 The procedural history will be treated in more detail below. See p. -- - of *198 U.S.App.D.C., p. 886* of 611 F.2d, Infra.

COMSAT has appealed the FCC's [**5] decision to this court. Several broadcasting companies have intervened. Jurisdiction is vested in this court by *47 U.S.C. § 402(a) (Supp. V 1975)* and *28 U.S.C. § 2342(1) (Supp. V 1975)*:

> The court of appeals has exclusive jurisdiction to enjoin, set aside, suspend (in whole or in part), or to determine the validity of . . . all final orders of the Federal Communications Commission made reviewable by *section 402(a)* of title 47 . . . .

The scope of our review is in keeping with the Administrative Procedure Act: conclusions by the Commission will not be set aside unless arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law; [4] findings of fact will not be upset if supported by substantial evidence. [5]

4 *5 U.S.C. § 706(2)(A) (1970)*.

5 *5 U.S.C. § 706(2)(E) (1970)*.

I. THE NECESSITY FOR A PRELIMINARY DECISION

Initially a question of procedure is raised concerning the Commission's [**6] decision. The rate proceeding was exceptionally drawn out, commencing in June of 1965, [6] postponed [7] and then resumed [8] in 1971, suspended again in 1974, [9] and taken up again for the last time in September of 1974. [10] The 1965 order required that the hearing examiner bypass an initial decision, certifying the record directly to the Commission, but it did provide that the Chief of the Common Carrier Bureau should prepare and issue a recommended decision. (J.A. 124; 38 FCC 1286, 1296). The 1971 resumption order reversed the procedure ordered in [*887] 1965: the hearing examiner was to prepare an initial decision but the Chief of the Common Carrier Bureau was not. (J.A. 129-130; 27 FCC2d 930-931). The final order modifying the procedure occurred in 1974. The Commission had interrupted the proceedings earlier that year in the hopes of accommodating a negotiated settlement. (J.A. 135, *45 FCC2d 286*). When that did not materialize, it was considered crucial, in order to avoid adding to the already extensive delay, that all intermediate opinions be omitted, and the Commission so ordered. The hearing before the

administrative law judge was [**7] ordered resumed, and a timetable for finishing imposed:

> 6 Communications Satellite Corp., 38 FCC 1286 (1965).
> 7 *Communications Satellite Corp., 27 FCC2d 927 (1971).*
> 8 *Communications Satellite Corp., 32 FCC2d 533 (1971).*
> 9 *Communications Satellite Corp., 45 FCC2d 286 (1974).*
> 10 *Communications Satellite Corp., 48 FCC2d 86 (1974).*

> We believe that it is reasonable to require that cross-examination herein be resumed no later than the first week in September, 1974 and that all remaining testimony be completed and the record closed within approximately 3 months thereafter, i. e. no later than December 1, 1974. In this connection, perhaps it is unnecessary to call attention to the powers entrusted to the presiding judge to require, among other things, that testimony be submitted in writing and that cross-examination be limited to that "required for a full and true disclosure of facts." *5 U.S.C. 556* [**8] *(d)*. Upon the closing of the record we shall require the judge to certify the record to the Commission for final decision by it. In our opinion this is required under the circumstances of this case for due and timely execution of our functions. Finally, we believe that all proposed findings and briefs and replies should be submitted by no later than February 1, 1975, thereby permitting the Commission sufficient time to have such oral argument as it may deem necessary or desirable and to render its final decision by April 1, 1975. The Commission requests all parties to cooperate fully in adhering to the schedule we have set forth herein.

(J.A. 138-139; *48 FCC2d 86, 87-88).*

COMSAT challenges this procedure bypassing an initial decision by the administrative law judge. The Communications Act and the Administrative Procedure Act are both cited by COMSAT as requiring that the administrative law judge conducting the hearing is obliged to file an "initial, tentative, or recommended decision," unless the Commission finds on the record "that due and timely execution of its functions imperatively and unavoidably" require that the record be certified to the Commission without [**9] initial decision. *47 U.S.C. § 409 (1970)*; *5 U.S.C. § 557(b)(2) (1970).*

At the start, it should be noted that COMSAT was afforded a full adversary hearing, with the right of cross-examination as described in the Commission's order quoted above. What COMSAT did not obtain was the right to object to specific recommendations that might have been made by the administrative law judge. Had COMSAT requested a rehearing under *47 U.S.C. § 405 (1970)*, of the Communications Act, it would have had an opportunity to rebut specific findings, but it made no such request. However, this is not a case like *Pacific Gas Transmission Co. v. FPC, 175 U.S.App.D.C. 366, 536 F.2d 393*, Cert. denied, *429 U.S. 999, 97 S. Ct. 527, 50 L. Ed. 2d 610 (1976)*, where the statute requires the filing of a petition for rehearing as an exhaustion prerequisite to challenging a Commission order. Hence, while there is no adequate reason given to explain why COMSAT did not seek rehearing if it were truly concerned about its inability to respond to specific findings, and there is no proffer by COMSAT of any information that had [**10] not been brought out over the long course of the administrative hearing, that situation does not preclude COMSAT from asserting a right to an initial decision.

An initial decision by the administrative law judge, however, is not required for all Commission determinations. The Administrative Procedure Act calls for an initial decision "when a hearing is required to be conducted in accordance with *section 556* of this title." *5 U.S.C. § 557(a) (1970). Section 556*, by its own terms, applies "to hearings required by section 553 or 554 of this title to be conducted in accordance with this section." *5 U.S.C. § 556(a) (1970).* Section 553 specifies "When rules are required by [*888] statute to be made on the record after opportunity for an agency hearing, *sections 556* and *557* of this title apply instead of this subsection."

Hence, the requirement for an initial decision is

imposed in the present case only if the Commission's action can be termed adjudication, [11] or if the Satellite Act or the Communications Act requires a hearing.

> 11 The Communications Act requires an initial decision only for a "case of adjudication (as defined in the Administrative Procedure Act) which has been designated by the Commission for hearing." *47 U.S.C. § 409(a) (1970)*. Hence, both the Communications Act and the Administrative Procedure Act require an initial decision for adjudication. In light of the disposition we make of this issue, we do not decide whether there is merit in COMSAT's argument that rate-making for a single company is adjudication, even when the proceeding has future effect only, and the Administrative Procedure Act classifies "the approval or prescription for the future of rates" as a rule-making process. *5 U.S.C. § 551(4) (1970)*.

[**11] The Communications Act of 1934 specifies the following procedure for FCC review of new charges filed with it:

> Whenever there is filed with the Commission any new charge . . . the Commission may either upon complaint of upon its own initiative without complaint, upon reasonable notice, enter upon a hearing concerning the lawfulness thereof; . . . and after full hearing the Commission may make such order with reference thereto as would be proper in a proceeding initiated after it had become effective.

47 U.S.C. § 204 (1970). This specified procedure does require a decision "made on the record after opportunity for an agency hearing," so an initial decision is necessary unless the exception applies that "due and timely execution of (the Commission's) functions imperatively and unavoidably" requires proceeding at once to final Commission decision. *47 U.S.C. § 409 (1970)*; *5 U.S.C. § 557(b)(2) (1970)*.

(1) We hold that the exception does apply because the Commission specifically found that "under these circumstances due and timely execution of (its) functions Imperatively and unavoidably requires the omission [**12] of the Judge's initial decision." (J.A. 142; *49 FCC2d 221, 223)* (emphasis in original). The reason cited, the exceptional delay that had already plagued the proceedings, was a thorough justification for avoiding additional delay. Nor does the fact that the Commission omitted the precise words "imperatively and unavoidably" [12] in its original order undercut the basis for that order as set forth at the time it issued. The Commission's explanation of its concern for delay at the time of the order adequately supports a conclusion that "due and Timely Execution" of its functions "imperatively and unavoidably" required a streamlined procedure, even if those precise words were not used until later. This is especially true in light of the other procedural shortcuts ordered by the Commission at the same time: taking written testimony, limiting cross-examination, ordering a strict briefing schedule, etc. See quotation at p. -- - of *198 U.S.App.D.C., p. 887* of 611 F.2d, Supra. *Channel 16 v. FCC, 97 U.S.App.D.C. 179, 229 F.2d 520 (1956)*, is distinguishable, since there the Commission's insistence on expedition was belied by its contemporaneous procedural [**13] orders. (It required an initial decision for five of the six issues in the case, and bypassed that step only for one determination. See *97 U.S.App.D.C. at 182-83, 229 F.2d at 523-24*). Here, the Commission's valid concern with completing the delayed rate-making process was consistently demonstrated.

> 12 The phrase was used in a later opinion that same year; it is this later opinion that is quoted in the text.

In sum, in the circumstances presented by this greatly prolonged case, there was overwhelming justification to implement the procedural shortcut involved in bypassing an initial hearing by the administrative law judge.

II. THE RATE BASE

A. "Sustaining Capital" and the Method of Evaluation

In June of 1964, the sale of its 10 million shares of common stock at $ 20 per share [*889] netted COMSAT just under 200 million dollars of equity capital. Because of early technological successes with the synchronous satellite concept, and a diplomatic breakthrough as well in the establishment of [**14] a multi-member international consortium, [13] COMSAT soon found that it did not require the full 200 million dollars for its INTELSAT (international satellite)

operations. As explained above, part of the equity was diverted into COMSAT General. The total amount of equity devoted to INTELSAT, therefore, came to 136 million dollars. It is this sum that COMSAT considers as the foundation of its 1964 rate base. As of 1973, in addition to the value of currently useful equipment, COMSAT wishes to add to the rate base 152 million dollars in "return deficiencies": these are sums calculated as representing the difference between the actual rate of return that COMSAT realized between 1964 and 1973 and what COMSAT considers should have been a normal rate of return on its rate base over that period.

13 The Commission's opinion states:

> Three separate developments combined to make possible a smaller capital investment in the satellite system: (a) an agreement providing for financial contributions by foreign telecommunications entities was concluded; (b) the Early Bird program, utilizing the technologies of the SYNCOM program, demonstrated the commercial feasibility of a synchronous satellite system in lieu of the more costly medium-altitude system; and (c) whereas Comsat's financing was predicated upon full ownership of the U.S. earth stations, joint ownership of earth station facilities with other U.S. international carriers reduced Comsat's capital requirements.
>
> J.A. 40-41; *56 FCC2d at 1140-41*.

[**15] The question of return deficiencies will be considered in the next subsection. Turning our attention to the 136 million dollars in the original rate base, we observe that the Commission disallowed a 25 million dollar item in the account called "sustaining capital." (J.A. 85; *56 FCC2d at 1185*). The principal component of this account, which included some reserve for depreciation as well, was a contingency fund set aside from operating capital, out of which COMSAT, as a self-insurer, planned to provide funds in case of launch failure or similar catastrophe. By 1973, the only remaining item of capital left in the "sustaining capital" account was this catastrophe reserve.

(2) The Commission found that COMSAT had inadequately explained why a line of credit could not have been established to provide the requisite financial security for this contingency. (J.A. 42; *56 FCC2d at 1142*). Indeed, COMSAT had been issued a line of credit in 1964 (J.A. 58; *56 FCC2d at 1158*). Also, the Commission found that it was unrealistic for COMSAT to have presumed that no other funding would be available to it in the event of catastrophe. Even if COMSAT could not [**16] feasibly go into the general debt market at the early stages of its corporate career, it could have sought additional financing in the nature of debt from those with the most serious interest in the financial stability of the company: the shareholders, half of whom were common carriers. One possible plan for such financing is discussed in the Commission's opinion. Id. Perhaps most realistic, especially considering COMSAT's continual insistence that it had a crucial governmental mandate (though this was something short of a guarantee), is the potential for COMSAT to have sought an appropriation from the federal government in the rare circumstance of severe technological failure. Finally, the Commission did allow other expenditures to minimize the risk of launch failure and its deleterious impact on COMSAT, and the Commission allowed these to be recouped. (J.A. 42-43; *56 FCC2d at 1142-43*). We hold that there is substantial evidence to uphold the Commission's decision not to include this 25 million dollars as "sustaining capital" in COMSAT's 1973 rate base.

The discussion of sustaining capital introduces the essential difference between the method of rate-base calculation [**17] suggested by COMSAT, and that adopted by the Commission. The Commission measures a public utility's rate base as "the net book cost of plant service, that is, the total value of utility plant devoted to public service, less accrued depreciation." (J.A. 19; *56 FCC2d* [*890] *at 1119*). The FCC summarized its rationale for employing this method as follows:

> It has been concluded that by recognition in the rate base of deferred start-up costs, R&D and failed satellites and launches in addition to property "used and useful" in providing service, Comsat's rate base could fairly be regarded as conventional. We believe this choice to be in furtherance of recognized regulatory principles; it maintains for the benefit of the public a sense of consistency with other monopoly utility operations providing needed public services. We thus determined not to give rate base treatment to the incorporeal and hypothetical

> claimed assets which, as proposed, constituted approximately one-half of Comsat's rate base. Rather, in a manner again reflecting established regulatory principles, we determined that to the extent the record justified recognition of elements of risk associated with [**18] such items, they should be melded into the determination of Comsat's rate of return allowance.

(J.A. 84; *56 FCC2d at 1184*).

By contrast, COMSAT claims that its rate base should follow the "prudent investment" theory; that is the term given to the method proposed by the opinion of Justice Brandeis "dissenting from opinion (of the majority)" in *Southwestern Bell Telephone Co. v. Public Service Commission, 262 U.S. 276, 290, 43 S. Ct. 544, 547, 67 L. Ed. 981 (1923)*:

> The thing devoted by the investor to the public use is not specific property, tangible and intangible, but capital embarked in the enterprise. Upon the capital so invested the Federal Constitution guarantees to the utility the opportunity to earn a fair return. (footnote: Except that rates may, in no event, be prohibitive, exorbitant, or unduly burdensome to the public. . . .) Thus, it sets the limit to the power of the State to regulate rates. The Constitution does not guarantee to the utility the opportunity to earn a return on the value of all items of property used by the utility, or of any of them.

The motivation for Justice Brandeis' opposition to the rate base methodology [**19] of reproduction cost, or "trended historical cost" approved by the majority in Southwestern Bell, was the imprecision of that calculation. By using capital embarked on the enterprise, Justice Brandeis hoped to avoid the variability inherent in estimating such cost elements. "The rate base would be ascertained as a fact, not determined as matter of opinion. It would not fluctuate with the market price of labor, or materials, or money." *262 U.S. at 306-307, 43 S. Ct. at 553*. The reliance of earlier cases on other methods was to be explained by the fact that before the growth of public commission regulation, it had not always been easily determinable how much capital had been invested in any given company. *262 U.S. 276 at 309, 43 S. Ct. 544, 67 L. Ed. 981.*

When understood in its context, therefore, Justice Brandeis' opinion advocating his dissenting theory might not have objected to the use of book cost less depreciation as the science of accounting has since standardized the various permissible methods of calculating depreciation.

Most important of all in this methodology debate, however, is the fact that the "prudent investment" approach has Never been [**20] adopted by the Supreme Court as the sole method of rate base determination. Southwestern Bell, itself, approved the application of a replacement cost approach. While Justice Brandeis and Holmes concurred in the result, which found the rate of return to be non-compensatory under the circumstances of that case, their opinion was a minority one and was explicitly labeled a dissent from the majority's reasoning.

The position that has been taken by the Supreme Court since at least 1944, and reiterated on several subsequent occasions, is that the widest latitude is to be permitted public regulatory commissions in their determination of a rate base. The Court has recognized that any of a large number of rate base theories are acceptable, and requires only that the chosen theory be consistently applied, and result in a reasonable [*891] rate of return. The leading case is *FPC v. Hope Natural Gas Co., 320 U.S. 591, 64 S. Ct. 281, 88 L. Ed. 333 (1944)*. "The Commission, Beginning with book cost, made certain adjustments not necessary to relate here and found the "actual legitimate cost' of the plant in interstate service to be (a certain sum). It Deducted accrued depletion [**21] and depreciation . . . . And it added (another sum) for future net capital additions . . . ." *320 U.S. at 596, 64 S. Ct. at 284-85* (emphasis added). The described method of rate base determination is largely analogous to the one used by the FCC in the present case.

(3) In Hope, "(t)he Circuit Court of Appeals set aside the order of the Commission for the following reasons. . . . It held that the rate base should reflect the "present fair value' of the property, that the Commission in determining the "value' should have considered reproduction cost and trended original cost, and that "actual legitimate cost' (prudent investment) was not the

proper measure of "fair value' where price levels had changed since the investment." *320 U.S. at 599-600, 64 S. Ct. at 286.* [14] It was this reversal that was set aside by the Supreme Court. The Court held that the public regulatory commission "was not bound to the use of any single formula or combination of formula(s)" in setting a rate base. *320 U.S. at 602, 64 S. Ct. at 287.* The determining principle for valuating rate-base schemes announced in Hope is that:

> 14 The Court seems to be using the term "prudent investment" in a different sense than it was used by Justice Brandeis in Southwestern Bell, but the outcome reached by the Supreme Court in reversing the Court of Appeals' substitution of its own rate base theory for that of the Commission did not turn on the precise theory advanced by either the Commission or the Court of Appeals.

[**22]

> Under the statutory standard of "just and reasonable" it is the result reached not the method employed which is controlling. . . . It is not theory but the impact of the rate order which counts. If the total effect of the rate order cannot be said to be unjust and unreasonable, judicial inquiry under the Act is at an end. The fact that the method employed to reach that result may contain infirmities is not then important.

320 U.S. at 602, 64 S. Ct. at 287-88. The Commission's choice in this case of a book-value less depreciation method (the same method, in basic terms, that was approved in Hope) cannot be upset.

In 1968, the Court again embraced this principle of wide choice. *In the Permian Basin Area Rate Cases, 390 U.S. 747, 767, 88 S. Ct. 1344, 20 L. Ed. 2d 312 (1968)*, the Court cited Hope with approval, and then went on to emphasize that there was a "zone of reasonableness" within which any rate determined by a regulatory commission could not be set aside. [15] Permian Basin did introduce greater detail into the obligations of a reviewing court, but none of these in any way compromised the general rule that a wide variety of rate-base determinations [**23] (including the one at issue in Hope and in this case) were permissible. The Court held:

> 15 The Court's "zone of reasonableness" test originated in an earlier case, *FPC v. Natural Gas Pipeline Co., 315 U.S. 575, 585, 62 S. Ct. 736, 86 L. Ed. 1037 (1942).*

> It follows that the responsibilities of a reviewing court are essentially three. First, it must determine whether the Commission's order, viewed in light of the relevant facts and of the Commission's broad regulatory duties, abused or exceeded its authority. Second, the court must examine the manner in which the Commission has employed the methods of regulation which it has itself selected, and must decide whether each of the order's essential elements is supported by substantial evidence. Third, the court must determine whether the order may reasonably be expected to maintain financial integrity, attract necessary capital, and fairly compensate investors for the risks they have assumed, and yet provide appropriate protection to the relevant [**24] [*892] public interests, both existing and foreseeable.

390 U.S. at 792, 88 S. Ct. at 1373.

The point to be stressed here is that the Supreme Court leaves entirely up to the Commission the method of regulation to be selected. [16]

> 16 Each of these three aspects of review will be applied to the Commission's COMSAT decision. First, there is no dispute that the Commission was statutorily empowered to pass upon the reasonableness of COMSAT's charges. It has also ordered that certain capital items be amortized out of the rate base, and has applied a hypothetical level of debt to the capital structure, but both of these decisions were only in the context of deciding upon the proposed rates. No abuse of authority can fairly be alleged on this record. Second, the elements of the regulation method

> employed by the Commission will be carefully scrutinized. The Commission set out to estimate a rate base by the book-cost-less-depreciation method. Several aspects of that determination are scrutinized in the following sub-section, p. -- - of *198 U.S.App.D.C., p. 892* of 611 F.2d, Infra. As for the rate of return to be applied to that rate base, whether there was substantial evidence for the Commission's decision will be addressed in the next main section, p. -- -, p. 897 of 611 F.2d, Infra. Finally, the overall impact of the rate to be permitted was given serious consideration and the adequacy of its determination will be the subject of the final section, p. -- -, p. 909 of 611 F.2d, Infra.

[**25] Permian Basin affords no suggestion whatsoever that the choice of rate-base methodology available to a regulatory commission is restricted to the "capital embarked in the enterprise" or "prudent investment" standard. Nor has subsequent decision law from the Supreme Court narrowed a Commission's freedom in that regard. On the contrary, the Hope standard has been explicitly reiterated. In *FPC v. Memphis Light, Gas & Water Division, 411 U.S. 458, 466, 93 S. Ct. 1723, 36 L. Ed. 2d 426 (1973)*, the Court held that "the broad discretion of the Commission delineated in Hope Natural Gas " would apply fully, unless there were evidence in the legislative history of a contrary Congressional intention. Most recently, the Court has stated "(T)here is no single cost-recovering rate, but a zone of reasonableness: "Statutory reasonableness is an abstract quality represented by an area rather than a pinpoint. It allows a substantial spread between what is unreasonable because too low and what is unreasonable because too high.' *Montana-Dakota Util. Co. v. Northwestern Pub. Serv. Co., 341 U.S. 246, 251 (71 S. Ct. 692, 695, 95 L. Ed. 912) (1951)*." *FPC v. Conway Corp., 426 U.S. 271, 278, 96 S. Ct. 1999, 2004, 48 L. Ed. 2d 626 (1976)*. [**26]

We therefore affirm the choice of the rate-based determination method adopted by the Commission. Three particular objections to the composition of that rate-base are raised: that the Commission erred (1) in not including a fund for "return deficiencies" the amount by which previous earnings had fallen short of COMSAT's concept of the reasonable rate to which it considered itself to be entitled; (2) in its choice of interest rate, in applying the "interest during construction" method of compensating for certain start-up costs; and (3) in requiring the amortization of laboratory investments out of the rate base over the next five years.

B. Specific Inclusions

1. Return Deficiencies

In the case-law development of the reasonable rate of return concept, a great variety of methodologies have been allowed by courts. This has been in keeping with the Supreme Court's governing rule established in Hope Natural Gas as detailed above. However, one proposal for rate-base inclusion has met with almost uniform rejection across more than half a century of Supreme Court precedent, and that is the notion that the losses of a utility sustained in previous years must be capitalized into a rate base [**27] so that the payments of utility users in future years can help alleviate the earlier deficiencies.

In arguing for its "return deficiencies" concept, COMSAT has placed great reliance on the wisdom of *Justice Brandeis, in Galveston Electric Co. v. Galveston, 258 U.S. 388, 395, 42 S. Ct. 351, 66 L. Ed. 678 (1922)*. It is an appropriate starting place, accordingly, to refer to the opinion for the Court [*893] of Mr. Justice Brandeis on the question of capitalizing past losses:

> The fact that a utility may reach financial success only in time or not at all, is a reason for allowing a liberal return on the money invested in the enterprise; but it does not make past losses an element to be considered in deciding what the base value is and whether the rate is confiscatory. A company which has failed to secure from year to year sufficient earnings to keep the investment unimpaired and to pay a fair return, whether its failure was the result of imprudence in engaging in the enterprise, or of errors in management, or of omission to exact proper prices for its output, cannot erect out of past deficits a legal basis for holding confiscatory for the future, rates which would, [**28] on the basis of present reproduction value, otherwise be compensatory.

258 U.S. at 395, 42 S. Ct. at 354. [17] The Southwestern Bell dissent of Mr. Justice Brandeis, on which COMSAT premises its claim that a rate base consists of "capital

embarked upon an enterprise," was concurred in by Mr. Justice Holmes. However, Justice Holmes was also quite clear in his belief, expressed for the *Court in San Diego Land & Town Co. v. Jasper, 189 U.S. 439, 23 S. Ct. 571, 47 L. Ed. 892 (1903)*, that "if a plant is built . . . for a larger area than it finds itself able to supply, or . . . if it does not, as yet, have the customers contemplated, neither justice nor the Constitution requires that, say, two thirds of the contemplated number should pay a full return." *189 U.S. at 446-47, 23 S. Ct. at 574*. Whatever their ideas on a proper rate base, both of these jurists were unequivocal in their rejection of the capitalization of past deficiencies.

> 17 To be entirely precise, we must note that Justice Brandeis used the term "confiscatory" in a sense different from the meaning "not just and reasonable." Although *FPC v. Natural Gas Pipeline Co., 315 U.S. 575, 585, 62 S. Ct. 736, 743, 86 L. Ed. 1037 (1942)* unequivocally ruled that "by long standing usage in the field of rate regulation, the "lowest reasonable rate' is one which is not confiscatory in the constitutional sense (citing prior Supreme Court cases)," Justice Brandeis commented in his Southwestern Bell dissent that the "margin between a reasonable rate and a merely compensatory rate" should be preserved. *262 U.S. at 296, 43 S. Ct. at 549*. However, as the logic of Mr. Justice Brandeis' quoted statement makes clear, he cannot be interpreted to hold that capitalization of past losses was required to make a rate reasonable, while not required to make the rate compensatory. His criticism clearly ran to including previous losses in the capital structure no matter what the standard.

[**29] The two foregoing authorities were relied upon in what has become, perhaps, the clearest statement of the Supreme Court's refusal to require that previous losses be capitalized, *FPC v. Natural Gas Pipeline Co., 315 U.S. 575, 62 S. Ct. 736, 86 L. Ed. 1037 (1942)*:

> But regulation does not insure that the business shall produce net revenues, nor does the Constitution require that the losses of the business in one year shall be restored from future earnings by the device of capitalizing the losses and adding them to the rate base on which a fair return and depreciation allowance is to be earned. . . . The deficiency may not be thus added to the rate base, for the obvious reason that the hazard that the property will not earn a profit remains on the company in the case of a regulated, as well as an unregulated, business.

315 U.S. at 590, 62 S. Ct. at 745. It is important to observe that the foregoing statement was in the context of the Court's holding that excess capacity Might be defended as part of the rate base as "a part of the utility's equipment used and useful in the regulated business . . . . When so included, the utility gets its return [**30] . . . provided the business is capable of earning it." *315 U.S. at 590, 62 S. Ct. at 745*. That holding is directly applicable to the COMSAT situation. COMSAT makes claim to "sustaining capital" to be included in its rate base. That is principally constituted by the reserve for launch failures and other catastrophes. It may be analogized to the excess capacity in Natural Gas Pipeline ; both are investments deemed necessary at the start but not actually put into use. [*894] Without deciding the question, we can assume for present purposes that the sustaining capital was "used and useful in the regulated business" in some sense. Where the return on the rate base including such an item as sustaining capital is alleged to be deficient, however, the clear holding of Natural Gas Pipeline is that the amount of the deficiency may Not be capitalized into the rate base for future years. To do so would unfairly privilege the ratepayers of previous years at the expense of the ratepayers of future years. One or the other must bear the loss, and in the mandate that rates be reasonable there is no justification for shifting that burden.

The fairness of not permitting the capitalization [**31] of previous earnings shortfalls is further emphasized by the fact that COMSAT in determining its rate base and as special items for recoupment was allowed liberal expense allowances for many of the factors that contributed to the overall earnings deficiency, including interest during construction, satellite incentive payments, depreciation, and amortization. (J.A. 74; *56 FCC2d at 1174*). In all, $ 91,596,300 of the claimed $ 91,605,000 losses were allowed. Id. at 75; 1175. Compare *FPC v. Hope Natural Gas Co., 320 U.S. at 591 at 598-99, 64 S. Ct. 281, 88 L. Ed. 333* .

(4) In recent years, the Supreme Court has not

retreated from its opposition to any requirement that past losses be capitalized. See, e. g., *FPC v. Tennessee Gas Transmission Co., 371 U.S. 145, 152, 83 S. Ct. 211, 9 L. Ed. 2d 199 (1962)*. And this court has explicitly endorsed that view as settled law. [18] See, e. g., *Payne v. Washington Metropolitan Area Transit Commission, 134 U.S.App.D.C. 321, 330* & n. 39, *415 F.2d 901, 910* & n. 39. We reaffirm that principle today. [19]

18 At oral argument, counsel for COMSAT suggested that there was support for the "capital embarked upon the enterprise" theory in the concurring and dissenting opinion in *Democratic Central Committee of D.C. v. WMAT Comm'n, 158 U.S.App.D.C. 7, 485 F.2d 786 (1973)*, Cert. denied, *415 U.S. 935, 94 S. Ct. 1451, 39 L. Ed. 2d 493 (1974)*. However, neither the majority nor separate opinions in that case required the regulatory commission to follow the "capital embarked upon the enterprise" method of rate base evaluation. The transit commission had not lowered fares to reflect the appreciation in real property owned by the Commission. This decision was set aside by the majority in light of special "equities" that argued for passing along the increase in value in the form of lower fares. The separate opinion (per MacKinnon, J.) would have upheld the Commission's choice of consistent accounting methodology which took account of neither exceptional appreciation nor depreciation in real estate values.

This was not because of a preference perceived by the concurring and dissenting opinion for one method of accounting over another, but in response to "another very powerful judicial doctrine that of deference to agency adherence to rules promulgated under statutory authority unless Arbitrary and capricious." *158 U.S.App.D.C. at 65, 485 F.2d at 844*. The Commission was free to choose the accounting method imposed by the majority in Democratic Central Committee as an original matter. The concurring and dissenting opinion stated that the Commission "would undoubtedly be upheld had the agency in fact adopted" that method. Id. Hence, nothing in the separate opinion in Democratic Central Committee can be taken to favor the capital-embarked-upon-the-enterprise over the present fair value approach. Indeed, the concurring and dissenting opinion only reinforces the position taken here: that Hope Natural Gas permits any of a wide variety of rate base methods to be employed, and the regulatory agency's choice among methods should be upheld unless arbitrary and capricious.

[**32]

19 Where the rates that a regulated company can charge have for some time been under strictures set by an administrative agency, the case for "return deficiencies" could be different. The fact that a reasonable rate of return was not earned might then be explainable by the Commission's miscalculation, and the company, unable to have conducted its affairs in any manner different than it did, might be entitled to recover its losses. That is not this case, however, and nothing we hold today is intended to prejudge that question. COMSAT is before this court challenging the first administrative review of its rates. While it was admonished by the Commission to keep its rates competitive to other means of international telecommunication, the fact that it did so was explainable simply in terms of competitive economics rather than deference to the Commission's order. *Inquiry Into Policy To Be Followed in Future Licensing of Facilities for Overseas Communications, 30 FCC2d 571, 574 (1971)*. The steps taken by COMSAT to lower its charges as technological achievements were realized could also be traceable to its understanding of its statutory mandate; but the timing of those decisions, and the amount of the cut in rates, were entirely matters of managerial decision. Nor is a case made out on any of the evidence in the record before us that COMSAT relied on being able eventually to capitalize its past losses. Such reliance would strain credulity in any event: it would present a case where a company had the means to avoid present loss and yet chose not to employ them in the hope (for which no formal assurance of any kind had been obtained) that all would eventually be recompensed.

What happened in this case was simply that the early years of COMSAT's development entailed less profit than it was able to generate upon reaching maturity. That is an entirely expectable business life story, except for the fact

that COMSAT now claims a right to be compensated for the years of less than maximum profitability.

[**33] [*895] 2. Interest During Construction

Several methods are available to take account of the costs incurred by a regulated industry during its start-up period. The most common alternatives are either to include the plant under construction in the rate base even before it is completed, [20] or to keep account of the interest payable on the funds tied up in construction, and capitalize that account at the end of construction. [21] COMSAT proposed a third approach involving a current expensing of interest, inclusion of plant under construction in the rate base, and the capitalization of the interest account; while recognizing COMSAT's more complicated proposal as theoretically acceptable, the Commission chose not to follow it. (J.A. 33; *56 FCC2d at 1133*). Instead, it decided on the method of capitalizing interest during construction at the time the new plant was brought into service. This choice was entirely proper for the Commission to make and is not challenged by COMSAT.

20 See, e. g., *Goodman v. Public Serv. Comm'n, 162 U.S.App.D.C. 74, 80, 497 F.2d 661, 667 (1974).*

[**34]

21 See, e. g., *New Eng. Tel. & Tel. Co. v. Department of Pub. Util., 360 Mass. 443, 454, 275 N.E.2d 493, 501 (1971).*

It is objected, however, that the Commission did not correctly apply the method it chose. The advantage of the interest during construction method is that by capitalizing such an account, the future rate-payers will be obliged to subsidize the construction of plant that benefits them; and present rate-payers are not burdened with that cost. [22] The question arises, however, as to what interest rate should be used in computing the total, compounded sum which will be added to the rate base at the time the new plant is ready.

22 Under the first alternative (capitalizing plant under construction into the rate base) present rate-payers would be obliged to contribute to the construction of plant that would not be of immediate benefit. Using "plant under construction" presents no problem with an interest rate, however, since the estimated value of the plant to be constructed is merely added to the ordinary rate base.

[**35] The theory behind compensating for interest during construction is that the cost of an addition to the existing plant structure includes payments not only for physical materials but for the finance charges of borrowed money as well. The only question is the means by which, in this theoretical framework, the regulated company is assumed to have borrowed the money: by loans from commercial banks, or by floating debt obligations of its own in the bond market. Each method has its advantages, and the Commission is free to exercise its own judgment as to the most realistic assumption for COMSAT.

The most relevant portion of the Commission's holding on this question is as follows:

> We are . . . impressed with the argument that the risk associated with these (construction funds) tends to be lower than the investment in plant in service by virtue of Comsat having the benefit of collateral contractual protection from its hardware suppliers. Accordingly, we view the prevailing annual average (a "13-point average") prime interest rate as the most appropriate rate for Comsat's IDC (Interest During Construction) account commencing 1974. Clearly, considering Comsat's minimal business risks . [**36] . . the prime rate should invariably exceed the interest rate [*896] on Future issues of Comsat corporate bonds. (footnote in original: We anticipate that Comsat should readily be regarded as a low risk, prime Borrower in the corporate bond markets. See note 117, Infra.) We regard application of this prime rate concept as fair to both future authorized users and Comsat alike.

J.A. 36, *56 FCC2d at 1136* (emphasis added). Footnote 117 referred to in the foregoing states:

> We are confident that given Comsat's present all equity capital structure and its level of performance it would qualify for AA-rated utility bonds, possibly even AAA. Thus we presume that Comsat's

> actual cost of debt would in fact be lower than that imputed.

J.A. 73, *56 FCC2d at 1173*.

From these references, it is unmistakable that the Commission was hypothesizing that COMSAT would go to the bond market to raise the funds needed for construction of more plant. The reference to the prime rate in the first quotation indicates that COMSAT would have to pay in the bond market. The immediately following sentence stating the Commission's belief that "the prime rate should [**37] invariably exceed the interest rate on future issues of Comsat corporate bonds" would be meaningless if the Commission were assuming that COMSAT was to raise funds by borrowing from lending institutions. There was no discussion in the Commission's opinion of COMSAT's credit-worthiness with lending institutions. Both footnotes confirm that COMSAT's qualifications as a borrower in the Bond market were at issue. The prime rate was serving simply as a reference point.

The difficulty that has arisen as a result of this approach is that the Commission's prediction about the future prime rate has proven inaccurate. COMSAT's brief to this court states the matter most clearly:

> The Commission's justification for requiring Comsat to use the prime rate is simply wrong. The prime interest rate is now 7.25%; during 1975 the yield on new issues of Aaa utility bonds ranged from 8.97% To 9.68%; and the Commission elsewhere in its Decision finds that Comsat's cost of debt is 10.2%. Thus, the prime interest rate does not exceed even the interest rate on Aaa utility bonds and certainly could not "invariably" exceed the interest rate on Comsat corporate bonds. (Aaa is a rating by Moody's that corresponds [**38] to Standard and Poor's AAA).

Brief of Petitioner at 39 (footnote omitted).

(5, 6) The Commission's response to this miscalculation has been to attempt to justify the choice of the prime rate in its own right, rather than as a ceiling estimate of COMSAT's future debt service cost. The Commission offers no response to the error it made in predicting the future relationship of the prime rate vis-a-vis the rate at which high grade utility bonds would be issued. Instead it asserted that such error was harmless in light of the Commission's available alternative reliance on the theory that COMSAT would borrow from financial institutions rather than in the bond market. See Brief of Respondent at 41, n. 65. But that is not an adequate response. It is the Commission's own rationale for its decision, not the justification posited by appellate counsel, that must control our consideration. *Securities and Exchange Commission v. Chenery Corp., 318 U.S. 80, 95, 63 S. Ct. 454, 87 L. Ed. 626 (1943)*. Nor is this merely a formalistic insistence. The Commission has given attention to COMSAT's ability to borrow in the debt market; there is no indication that it has given attention [**39] to COMSAT's ability to borrow from lending institutions. If it gave attention to the latter matter, it might determine that COMSAT did not qualify for the prime rate, or might uncover a wealth of other information potentially applicable to COMSAT's commercial borrowing capability. We cannot extrapolate from the Commission's finding that COMSAT could float high-rated bonds to the conclusion that the record supports the conclusion that COMSAT could borrow freely at the prime rate.

Accordingly, we remand the question of interest during construction to the Commission. The Commission must first determine [*897] what the most realistic borrowing assumption for COMSAT was. It might reassess its implicit decision on this record that COMSAT would go to the bond market rather than to commercial banks or institutional lenders. If it decides that the bond market is appropriate, it would have to apply the figure reached elsewhere in the opinion as to what interest COMSAT bonds would have to bear. Reference to corporate bond yields in general is not adequate when the Commission has already estimated the likely cost to COMSAT of issuing its own bonds. If, however, the Commission decides that [**40] the lending institution market is appropriate, then it must base its conclusion concerning the interest COMSAT would have to pay on record evidence specifically directed to that issue.

3. Laboratory Costs

In establishing the communications satellite system pursuant to the congressional mandate, COMSAT made a

rather sizable investment in laboratory plant and equipment. In 1973, over 16 million dollars in the claimed rate base was accounted for by laboratories. This was in keeping with the explicit instruction of the Act: "Included in the activities authorized to the corporation for accomplishment of the purposes indicated . . . are, among others not specifically named . . . to conduct or contract for research and development related to its mission." *47 U.S.C. § 735(b)(1) (1970)*, 76 Stat. 425 (Aug. 31, 1962).

The Commission has ordered COMSAT to amortize its laboratory investment over the next five years. Costs of operating the laboratories will still be permitted as operating expenses in each year, but the intent of the Commission's order is to remove the investment in laboratories as a permanent rate-base fixture upon which a return would be earned each year.

[**41] As a reason for requiring the phase-out of laboratory capital, the Commission took note of the fact that "(n)either The Bell Telephone Laboratories nor the R&D laboratories of any other carrier are given rate base treatment, but expenses are allowed." (J.A. 25; *56 FCC2d at 1125*). COMSAT vigorously contests this, citing the Commission's decision in *American Telephone & Telegraph, 9 FCC2d 30, 39 (1967)*, wherein Bell Telephone Laboratories, Inc., is included in the list of "subsidiaries not consolidated" in the statement of capital stocks owned by AT&T. However that dispute may be resolved, the Commission does not base its phase-out decision upon a comparison with AT&T.

Rather, the Commission's order to remove laboratories from the rate base "does not rest on any assessment of the value of Comsat's R&D efforts to the INTELSAT system, but it does lay to rest problems we have noticed in the record, namely that R&D has been allocated to the international ratepayer, when it is clear that the fruits of the R&D are applicable to satellite technology generally." (J.A. 25; *56 FCC2d at 1125*). At the start of COMSAT's development, international satellite [**42] operations were its only concern, so at that time there was no difficulty in including laboratories in the rate base. Whatever the laboratories produced redounded to the benefit of the jurisdictional enterprise. Now that COMSAT General and foreign subscribers as well as COMSAT's INTELSAT operations benefit from the laboratory research, it cannot be said that all the benefits go to INTELSAT. Unwilling to attempt an appropriate estimated allocation of the laboratory plant, the FCC has chosen to remove it entirely.

(7) In light of the explicit statutory authorization for research and development, and the necessary reliance by COMSAT on innovative technology, it is not inappropriate that COMSAT maintain laboratory plant and equipment in its rate base. It is an inadequate response to refuse inclusion of so expectible an element of plant and equipment merely because of accounting difficulty in estimating a reasonable allocation formula. The Commission has often had to develop such separation estimates where communications companies were involved in both intrastate and interstate operations. See, e. g., *American Telephone &* [*898] *Telegraph Co., 9 FCC2d 30, 88 (1967)* [**43] (discussing separation formulae developed in 1947, 1952, 1956, 1962, 1965, and for 1967).

These two factors, COMSAT's statutory justification and the Commission's demonstrated expertise, combine to defeat the Commission's weak suggestion that determining a proper allocation would be administratively burdensome. The FCC's staff did not object to allocating the cost of COMSAT's laboratory plant between the various beneficiaries of its activities on the grounds some of the recipients were not involved in this proceeding; and they have made no suggestion that an appropriate allocation formula could not be developed. As we have held in *American Smelting & Refining Co. v. FPC, 161 U.S.App.D.C. 6, 24, 494 F.2d 925, 943*, Cert. denied, *419 U.S. 882, 95 S. Ct. 148, 42 L. Ed. 2d 122 (1974)*, and recently reaffirmed in *City of Willcox v. FPC (June 30, 1977), 185 U.S.App.D.C. 288 at 306, 567 F.2d 394, at 413*, "The mere fact that the solution is complicated cannot justify the Commission in refusing to provide just and reasonable . . . procedures."

On remand, the Commission will be required to develop an appropriate allocation formula, or base its decision [**44] to require the rapid amortization of laboratory investments on a rationale, supported by substantial evidence, other than its own inconvenience.

III. RATE OF RETURN

The Commission's conclusion that a 10.8% Rate of return on capital, with the possibility of an 11.8% Return based on economies achieved by COMSAT, was the product of two separate decisions, each of which is challenged on appeal. The 10.8% Figure was the

weighted average of a 10.2% Cost of debt and an 11.3% Rate of return on equity (J.A. 73; *56 FCC2d 1173*). The weighting formula was 45% Debt; 55% Equity: this was a hypothetical capital structure that the Commission felt COMSAT was able to sustain. In light of the fact that COMSAT was actually 100% Equity financed, the permissibility of that weighting formula is challenged. Also, the 11.3% Figure for equity is objected to; it is COMSAT's position that a minimum of 15% Was necessary to afford a just and reasonable rate of return. (J.A. 46-57; 56 FCC2d 1146-47). [23] We will first consider COMSAT's claim that the 11.3% Rate of return on equity is inadequate.

> 23 No objection has been raised to the 10.2% Estimate of COMSAT's debt cost, if it were to obtain debt financing.

[**45] A. The Equity Rate of Return

Several different methods of computation were presented in the evidence before the Commission. Discounted cash flow, an Arthur Anderson study of four public utilities' authorized rates of return, a "modern" portfolio theory, and a capital asset pricing model were all presented to the Commission, discussed in the opinion, and dismissed as unreliable. (J.A. 63-70; 56 FCC2d 1163-1170). The method that was accepted was described by the Commission as follows:

> The methodology we employ is to determine as riskless a return on invested capital as we can find, and add to it a risk premium reflecting the risks found present in Comsat's fulfillment of its statutory mission. We also find it useful, as a yardstick to compare Comsat's risks and cost of capital to AT&T. On these bases we are of the opinion that the return we are allowing Comsat on its INTELSAT rate base is adequate and fair and that such return, when considered together with the separate and discrete factors underlying Comsat's capital attraction capability for its non-INTELSAT undertakings, will permit investors to more intelligently evaluate Comsat's stock as an investment risk. [**46]

(J.A. 63; *56 FCC2d at 1163*).

COMSAT has no quarrel with the rate of return evaluation theory employed by the Commission. The Commission's opinion comments, "It is interesting to note that in its Summary filed May 18, 1975 Comsat has almost exclusively focused on, to the exclusion [*899] of other empirical evidence it has sponsored, this type of approach." Id., n. 102. After the Supreme Court's Hope Natural Gas holding, as re-affirmed in *Permian Basin Area Rate Cases, supra*, it would have been very difficult to mount a successful argument that the FCC was obliged to use some alternative approach. [24]

> 24 Measuring the return to an equity holder by reference to the return on an investment with corresponding risk was a method explicitly approved by the *Supreme Court in FPC v. Hope Nat'l Gas Co., 320 U.S. 591, 603, 64 S. Ct. 281, 88 L. Ed. 333 (1944)*.

For years prior to 1973, the Commission estimated a riskless rate of return from long-term U.S. Government [**47] bonds and added to it a risk premium in excess of the risk premium estimated for AT&T. As of 1973, however, the Commission found that COMSAT could no longer be entitled to a higher risk premium than AT& T, and it is here that the crux of COMSAT's appeal on this point lies. The Commission's logic proceeds as follows. (1) In 1972, AT&T's cost of common equity was 10.5%, and "10.5% Was a valid assessment into the foreseeable future." (2) In 1973, U.S. Treasury Bonds were paying 6.5%. (3) This implied that AT&T had a risk premium of 4% In 1973. (4) "By 1973, the year Comsat obtained maturity and the year we have selected for determination of Comsat's allowable rate base, we find that Comsat's risks had declined considerably, and the record will no longer support a finding that Comsat was significantly riskier than AT&T. Based on our judgment and analysis of Comsat's 1973 risks from the record, independently and by way of comparison to 1964, we estimate a risk premium of 4%." (5) United States Treasury Bond yields rose to an average of 7.3% In 1975. (6) Thus, "Comsat's current cost of equity is 11.3%." (J.A. 72-73; 56 FCC2d 1172-1173).

Petitioner's most strenuous objection [**48] can be focused upon the one statement in sentence number 4, above, that "the record will no longer support a finding that Comsat was significantly riskier than AT&T." There is a separate section of the FCC's opinion just dealing with the comparative risks of COMSAT and AT& T,

which also concludes, "Comsat can no longer be regarded as more risky than AT&T with regard to technical and operational problems leading to service outages and revenue loss." (J.A. 62; *56 FCC2d 1162*, footnote omitted). We will shortly deal with this most basic challenge.

First, however, it is necessary to consider the findings of the Commission on the elements of COMSAT's risk. COMSAT has impugned the validity of several of these component findings. As for those risk elements not explicitly addressed, (E. g., launch failures, COMSAT's cash) our conclusion, after reviewing the record evidence, is that none conclusively demonstrates that COMSAT is less risky than AT&T, but that each adequately resists the conclusion that COMSAT is More risky. Thus, the question turns upon the factors about to be addressed.

(1) Technical risk.

COMSAT emphasizes the novelty of its technology, and the Commission responds [**49] with a catalogue of scientific precedent in the communications satellite field. Prior to the formation of COMSAT, practically all the risk in developing the early technology was absorbed by the government. COMSAT was thus the beneficiary at no cost to it of substantial research and development that was done at the expense of billions of dollars by the United States. Although COMSAT renews its objections in the brief as to the degree of departure from prior technology that the synchronous satellite concept represented, we find that the Commission's treatment of the question amply satisfies the substantial evidence standard, particularly in this area of complicated scientific mechanics. (See J.A. 48-49; 56 FCC2d 1148-49).

(2) Business risk.

COMSAT alleged that there was cause for concern that overall demand for international telecommunications would not remain high, or that COMSAT's market share [*900] among other modes of commercial telecommunication would fall even if general demand did not. We find more than adequate the record evidence before the Commission regarding estimated overall demand. As for market share, the Commission relied on its own authority to [**50] "allocate circuits and facilities between cable and satellite" to guarantee COMSAT's place, a fair proportion of the available traffic. (J.A. 53; *56 FCC2d at 1153*). COMSAT is correct in suggesting, however, that the Commission overstated its case in relying on the "facility mix allocation decision," [25] which stated, "(W)e will authorize implementation of needed circuit facilities in line with the proposals of the European Administrations looking toward maintenance of reasonable parity between cable and satellite circuits on transatlantic routes." [26] That decision does not speak to the critical question of revenues, and, as COMSAT's brief points out, a later "facility mix allocation decision" [27] reintroduced all the uncertainty that the prior statement might have alleviated: "Our primary policy objective has been and remains the achievement and efficient utilization of the lowest cost combination of facilities which can satisfy valid traffic needs and service standards, irrespective of technology or supplier." [28] Of course, AT&T as an international carrier is subject to precisely the same kinds of overall demand and market share concerns; but AT&T is not solely in [**51] the international telecommunications market, as COMSAT's INTELSAT operations are. Hence, we do find that COMSAT raises a non-trivial objection to this aspect of the Commission's decision, and that COMSAT has more business risk, in this sense, than AT&T.

25 *The Inquiry Into Policy To Be Followed in Future Licensing of Facilities for Overseas Communications, 30 FCC2d 571 (1971).*

26 *Id. at 574.*

27 The Inquiry Into Policy To Be Followed in Future Licensing of Facilities for Overseas Communications, FCC Order No. 76-161 (Feb. 27, 1976).

28 *Id. at P 8.*

(3) International risk.

In August of 1964, the United States and twenty other nations entered into a consortium that assured COMSAT's INTELSAT facilities would receive a sustained amount of utilization. The Commission is correct in citing this development as an early risk-reducing factor. However, the 1971 updating of that agreement severely restricted the authority of COMSAT in the international consortium, and also [**52] restricted the potential for diversification by INTELSAT. Professor A. Chayes has noted, "In the Definitive Agreements, concluded after more than two years of negotiations, the United States suffered major rebuffs on almost every element of its opening position. The Intelsat

consortium was replaced with a formal International Communications Satellite Organization. Comsat was placed under a voting limit of 40% Instead of the 50% It proposed and was (thereby) stripped of its veto. . . . " [29]

29 Chayes, "Comsat," 28 Harv.L.Sch.Bull., No. 2, 26, 31 (Winter, 1977).

The Commission's opinion on this point dwells excessively on COMSAT's status under the old, Interim Agreement, and takes note of the Definitive Agreements only to recognize, in passing, that "Comsat's voting strength . . . has declined. . . . " (J.A. 57, *56 FCC2d 1157*). However, this was not a trivial change.

As compared with AT&T, it must be admitted that COMSAT is subject to a greater degree of risk due to its need to reach agreement [**53] with foreign governments. The Commission found that the "moderate institutional risks in 1964 arising from the necessity of foreign cooperation in the establishment and operation of the global satellite system" "declined" with the signing of the Interim Agreement. (J.A. 57, *56 FCC2d at 1157*). By the same analysis, it must be admitted that those institutional risks increased, with the substitution of the subsequent Definitive Agreements for the Interim Agreement. We agree with COMSAT that on this point the Commission underestimated [*901] the risk that COMSAT bore relative to AT&T.

(4) Regulatory risk.

COMSAT seeks a higher return because its regulated status subjects its major decisions to administrative review. But COMSAT is unable to distinguish effectively its status from that of any other regulated carrier on risk of this character. Indeed, as the Commission points out, a regulatory mandate that COMSAT prosper may be found in "the Satellite Act, the Communications Act of 1934, as amended, and, generally by the record which details the government's involvement with Comsat's welfare." (J.A. 56, *56 FCC2d at 1156*). The Congressional declaration of [**54] policy and purpose that serves as preamble to the Satellite Act amply demonstrates that it is a weak argument indeed to characterize COMSAT as the forgotten child of the regulated industry family. [30]

30 *47 U.S.C. § 701 (1970)*:

(a) The Congress declares that it is the policy of the United States to establish, in conjunction and in cooperation with other countries, as expeditiously as practicable a commercial communications satellite system, as part of an improved global communications network, which will be responsive to public needs and national objectives, which will serve the communication needs of the United States and other countries, and which will contribute to world peace and understanding.

(b) The new and expanded telecommunication services are to be made available as promptly as possible and are to be extended to provide global coverage at the earliest practicable date. In effectuating this program, care and attention will be directed toward providing such services to economically less developed countries and areas as well as those more highly developed, toward efficient and economical use of the electromagnetic frequency spectrum, and toward the reflection of the benefits of this new technology in both quality of services and charges for such services.

(c) In order to facilitate this development and to provide for the widest possible participation by private enterprise, United States participation in the global system shall be in the form of a private corporation, subject to appropriate governmental regulation. It is the intent of Congress that all authorized users shall have nondiscriminatory access to the system; that maximum competition be maintained in the provision of equipment and services utilized by the system; that the corporation created under this chapter be so organized and operated as to maintain and strengthen competition in the provision of communications services to the public; and that the activities of the corporation created under this chapter and of the persons or companies participating in the ownership of the corporation shall be consistent with the Federal antitrust laws.

(d) It is not the intent of Congress by this chapter to preclude the use of the communications satellite system for domestic communication services where consistent with the provisions of this chapter nor to preclude the creation of additional communications satellite systems, if required to meet unique governmental needs or if

otherwise required in the national interest. Pub.L. 87-624, Title I, § 102, Aug. 31, 1962, 76 Stat. 419.

[**55] This brings us to the basis for the Commission's conclusion that, on net, COMSAT's risk is no higher than that of AT&T. The factors discussed above indicate that, despite the Commission's conclusion of no difference, COMSAT does represent a greater risk in those factors. The principal countervailing factor is that COMSAT is 100% Equity-financed. There is no debt in its capital structure. AT&T, on the other hand, had a debt-to-equity ratio of 90.86% In 1973. [31] It is difficult to overstate the importance of this distinction. The shareholders of AT&T are not the first in line to receive earnings that are not retained; debt service has the first priority. And in case of insolvency, it is the shareholders who again line up last; the debt obligations will be paid first out of whatever assets can be garnered. This difference is not rendered academic by the very great probability that AT&T will remain solvent, or by AT&T's unbroken record of paying dividends, for the size of those dividends will be less, and [*902] the freedom of the company to enter into promising new areas will be restricted by the obligation of debt service. Perhaps the clearest statement of the risk-increasing [**56] effect of debt came from AT&T itself which, in its 1972 rate hearing, made a plea summarized as follows by the Commission:

> It is claimed that changes in the capital structure since the Commission decision in Docket No. 16258 (in 1967) alone would call for a substantial increase in Bell's rate of return on equity. The debt ratio has risen from 31-33 percent to above 45 percent, but its equity earnings in the 9 percent range are still no higher than at the time of the Docket No. 16258 decision.
>
> *American Telephone & Telegraph, 38 FCC2d 213, 259 (1972).* [**57]

Furthermore, this is not a case of comparing a company with some debt to one with a little more or less; it is a difference In kind between the two capital structures. A company with absolutely no debt is a rare thing, and for a public utility to be without debt is rarer still.

(8) The comparison, therefore, is between an established utility with almost half of its capital structure in debt securities and operating in part in an international milieu, and a newer utility, subject fully to the risks of an international business environment, but with strong assurances of government interest, and in the unique position of owing no debt at all. While disagreeing with a few of the Commission's detailed conclusions, we hold that there was substantial overall evidence to sustain the Commission's decision that, as of 1973, COMSAT did not deserve a risk premium in excess of that afforded AT&T for the purpose of calculating a just and reasonable rate of return. [32]

> 31 American Tel. & Tel. Co., 1974 Annual Report 35. Outstanding debt totaled 28.37 billion dollars; equity totaled 31.22 billion dollars. We take judicial notice of this publicly filed document and other similar documents of *AT&T and COMSAT. Tampa Electric Co. v. Nashville Coal Co., 365 U.S. 320, 332, 81 S. Ct. 623, 5 L. Ed. 2d 580 (1961)*; *Texas & P.R. Co. v. Pottorff 291 U.S. 245, 54 S. Ct. 416, 78 L. Ed. 777 (1934).*

> 32 COMSAT's argument that a majority of the Commissioners did not concur in the finding that COMSAT was no more risky than AT&T is not supported by the record. Commissioner Reid does state her disagreement with the AT&T comparison, but concludes "Nevertheless, I feel this decision is reasonable and justified by the record before us." (J.A. 88; *56 FCC2d at 1188*). Likewise, Commissioner Hooks noted his concurrence with the result, but not with "all aspects of the formula used to reach our conclusion." Commissioner Robinson, while voicing an apt comparison between the complexity of the record in this case and the unfathomable writings of Kant, concludes "I believe our decision is fair to Comsat shareholders and fully sufficient to enable future attraction of capital." (J.A. 92, *56 FCC2d at 1192*). In each instance, the important fact is that the Commissioner concurred in the decision reached. If there was disagreement concerning the AT&T comparison, the concurring Commissioners still felt the rate of return was within the "zone of reasonableness" so that

affording no higher risk premium did Not meet with their disapproval.

[**58] B. The Hypothetical Capital Structure

Even though COMSAT had not issued any debt securities, the Commission postulated that having passed its birth-pain years, COMSAT would by 1973 be able to sustain debt in its capital structure. (J.A. 60, *56 FCC2d at 1160*). The Commission was not undertaking to restructure the capital of COMSAT on its own; that was for the COMSAT management to accomplish when it considered such a readjustment appropriate. The Commission's imputing of debt was an admittedly hypothetical construct, for the purpose of determining the allowable rate of return. COMSAT's maintenance of an all equity structure resulted in an inordinately high cost of capital, since the cost of equity is generally higher than the cost of debt, and almost all public utilities carry some debt. Indeed, some public utility commissions have held that it is the obligation of a public utility to offer as much debt as is consistent with the sound finance of the company. See, e. g., *Re New York Telephone Company, 7 PUR4th 496, 506 (N.Y. Pub. Util. Comm'n 1974)*. Cf. *AT&T, 9 FCC2d 30, 52 (1967)*. Rate-payers are subjected to an excessive burden when the revenues [**59] to be derived from the rates they pay have to be high enough to compensate the cost of a capital structure consisting entirely of equity financing; levering [33] [*903] a capital structure with lower-costing debt relieves some of that burden. [34]

33 Leverage is the term used in investment circles to describe the comparative ratio of corporate debt to equity and conveys the extent of the advantage, if any, that the equity interest in the corporation possesses in its ability to achieve a profit by receiving a higher rate of return on borrowed capital that the rate of interest it pays on such fares. *Securities & Exchange Commission v. Central-Illinois Securities Corp., 338 U.S. 96, 150, n. 49, 69 S. Ct. 1377, 93 L. Ed. 1836 (1949)* (" "Leverage' is the term used to describe the advantage gained by junior interests through the rental of capital at a rate lower than the rate of return which they receive in the use of that borrowed capital"); *Gerdes v. Reynolds, 28 N.Y.S.2d 622, 655 (Sup.Ct.1941)*.

34 Ratepayers and equity owners overlap substantially in COMSAT's case because the formative Act required one half of COMSAT's stock to be held by the common carriers. This does not render the distinction inadequate for evaluating competing rate-making concerns, however.

[**60] (9) The authority of a public utility commission, like the FCC, to assume hypothetical debt for a company derives from its jurisdiction over rates charged by the company, that they be "just and reasonable." The appropriate part of the COMSAT Act providing such power to the FCC is *47 U.S.C. § 721(c)(2)*:

> (T)he Federal Communications Commission, in its administration of the provisions of the Communications Act of 1934, as amended, and as supplemented by this chapter, shall . . . insure that all present and future authorized carriers shall have nondiscriminatory use of, and equitable access to, the communications satellite system and satellite terminal stations under just and reasonable charges . . . .

We reject the Commission's allegation, made in its brief to this court, that the proper jurisdictional statutory provision in this rate-making proceeding is *47 U.S.C. § 721(c)(8)*, which provides:

> "721. In order to achieve the objectives and to carry out the purposes of this act . . . (c) the Federal Communications Commission in its administration of the provisions of the Communications Act of 1934, as amended, and as supplemented [**61] by this act, shall (8) authorize the corporation (Comsat) . . . to borrow any moneys . . . upon a finding that such . . . borrowing . . . is compatible with the public interest, convenience, and necessity and is necessary or appropriate for or consistent with carrying out the purposes and objectives of this act by the corporation."

This statute merely directs the Commission to Authorize the borrowing of moneys when a certain showing is made and the managerial decision as to whether the corporation should borrow money remains with COMSAT. However,

it is well settled in public utility law that it is no interference with this management prerogative for a regulatory commission to impute a hypothetical capital structure, whether or not the regulated company increases its debt; for that is done merely in pursuance of the Commission's legitimate rate-making authority.

One of the clearest statements of this principle is afforded by the *Supreme Court of New Hampshire, in New England Telephone & Telegraph Co. v. State, 98 N.H. 211, 220, 97 A.2d 213, 220 (1953)*:

> Although the determination of whether bonds or stocks should be issued is for management, the matter of debt [**62] ratio is not exclusively within its province. Debt ratio substantially affects the manner and cost of obtaining new capital. It is therefore an important factor in the rate of return and must necessarily be considered by and come within the authority of the body charged by law with the duty of fixing a just and reasonable rate of return.

The same sentiment has been echoed by the Federal Communications Commission itself in a rate determination opinion:

> We do not propose to require RCAC or any other carrier to incur any particular percentage of debt in meeting its capital requirements. However, it appears to us that in fixing a rate of return we must keep in mind the capital structure which a regulated carrier chooses to maintain in order to balance properly the requirements of safety of investment, stability [*904] of dividends, and availability of capital, and an obligation to maintain that rate structure which will, consistent with the foregoing, result in minimum requirements from the rate-paying public.

Re Western Union Telegraph Co., 25 F.C.C. 535, 600-01, 25 PUR3d 385, 464-65 (1958). Many state public utility commissions have also followed this [**63] method of imputing a hypothetical amount of debt. For example, the Idaho Public Utilities Commission has stated:

> The function of this commission is regulatory and not managerial. The determination of debt-equity ratios of capital is for management, but when a policy adopted by management results in the payment by subscribers of rates higher than might be required under another policy available to management, then this commission must take note.

Re Mountain States Telephone & Telegraph Co., 6 PUR3d 428, 438 (Idaho Pub. Util. Comm'n 1954). The Public Service Commissions of Louisiana and Wyoming are on record to the same effect. See Louisiana Public Service Commission v. Southern Bell Telephone & Telegraph Co., 14 PUR3d 146, 165 (La.Pub.Serv.Comm'n 1956); Re Mountain States Telephone & Telegraph Co., 14 PUR3d 231, 237 (Wyo. Pub. Serv. Comm'n 1956).

Perhaps the ultimate authority for imputing debt when necessary to protect rate-payers from excessive capital charges is the Supreme Court's statement in Hope Natural Gas, that "The rate-making process under the Act, i. e., the fixing of "just and reasonable' rates, involves a balancing [**64] of the investor and the consumer interests." *320 U.S. at 603, 64 S. Ct. at 288*. The equity investor's stake is made less secure as the company's debt rises, but the consumer rate-payer's burden is alleviated. It is these conflicting interests that the Commission is to reconcile.

(10) The FCC cannot be faulted for considering consumer interests in the COMSAT proceeding, and deciding that COMSAT could reasonably have levered its capital structure with debt. In so doing, it not only was true to its statutory obligation, but was also following a practice quite commonplace among public commissions charged with reviewing and setting reasonable rates for service. The practice of imputing a hypothetical amount of debt has been explicitly approved by the public utility commissions or courts of at least twenty-two states and the District of Columbia. Over the course of the last two decades, the following jurisdictions have hypothetically altered the actual capital structure of a regulated corporation for purposes of setting rates that were more equitable to consumers: Alabama, [35] Connecticut, [36] Delaware, [37] District of Columbia, [38] Idaho, [39] Illinois, [40] Louisiana, [41] [**65] Maryland, [42] Massachusetts, [43] Michigan, [44] Mississippi, [45] Montana, [46] [*905]

Nebraska, [47] New Hampshire, [48] New Mexico, [49] Pennsylvania, [50] South Dakota, [51] Tennessee, [52] Texas, [53] Utah, [54] Vermont, [55] Washington, [56] and Wyoming. [57] Minnesota [58] and California [59] have expressed some reservation to imputing a hypothetical amount of debt when the regulated company's outstanding debt was "not improper." [60] But the term "improper" could have referred to the perspective of a rate-payer, in which case those courts would not be in disagreement with the others cited. The Supreme Judicial Court of Massachusetts has most directly addressed the problem of when debt may be imputed, and has on some occasions refused to do so. See, e. g., *Boston Gas Co. v. Department of Public Utilities, 359 Mass. 292, 269 N.E.2d 248 (1971)*; *Mystic Valley Gas Co. v. Department of Public Utilities, 359 Mass. 420, 269 N.E.2d 233 (1971)*. [61] A reconciliation of that state's case law on this point is offered in *New England Telephone & Telegraph Co. v. Department of Public Utilities, 360 Mass. 443, 275 N.E.2d 493 (1971)*. The distinction drawn by the [**66] Supreme Judicial Court between cases where hypothetical debt would be imputed, and where it would not be, was one of degree; where the company's debt structure was already close to what the regulatory commission was proposing for [*906] rate-making purposes, or soon would be, the court held the Commission ought not interfere. The court stated: "It is now clear that in certain circumstances the Department may disregard the actual capital structure of a regulated utility company and attribute to it a hypothetical capital structure for the purpose of rate making. . . ." *275 N.E.2d at 507*. In the case before it, however, where the utility had demonstrated it would imminently have a debt structure of 45%, the court ruled that the regulatory commission erred in imputing a debt percentage of 50%. That rationale clearly has no application here, where the regulated company, COMSAT, has a debt ratio of 0%, and the FCC proposes to impute a 45% Debt.

35 Re Southern Bell Tel. & Tel. Co., 4 PUR3d 195 (Ala. Pub. Serv. Comm'n 1954).

36 Re Southern New Eng. Tel. Co., 20 PUR3d 34 (Conn. Pub. Util. Comm'n 1957).

[**67]

37 Re Diamond State Tel. Co., 21 PUR3d 417, 435-6 (Del. Pub. Serv. Comm'n 1958).

38 See *Powell v. Washington Met. Area Transit Comm'n, 158 U.S.App.D.C. 301, 306 n. 33, 485 F.2d 1080, 1085 n. 33 (1973)*. See also Chesapeake & Potomac Tel. Co., 6 PUR3d 222 (D.C. Pub. Util. Comm'n 1954).

39 *Petition of Mountain States Tel. & Tel. Co., 76 Idaho 474, 284 P.2d 681 (1955)*. See also Re Mountain States Tel. & Tel. Co., 6 PUR3d 428 (Idaho Pub. Util. Comm'n 1954).

40 Re Illinois Bell Tel. Co., 7 PUR3d 493 (Ill. Comm. Comm'n 1955).

41 *Southern Bell Tel. & Tel. Co. v. Public Serv. Comm'n, 239 La. 175, 118 So.2d 372 (1960)*. See also Pub. Serv. Comm'n v. Southern Bell Tel. & Tel. Co., 14 PUR3d 146, 164 (La. Pub. Serv. Comm'n 1956) (45% Debt imputed).

42 *Chesapeake & Potomac Tel. Co. v. Pub. Serv. Comm'n, 201 Md. 170, 183, 93 A.2d 249, 257 (1952)*. See also Re Baltimore Gas & Elec. Co., 24 PUR3d 247, 260 (Md. Pub. Serv. Comm'n 1958).

43 *New Eng. Tel. & Tel. Co. v. Department of Pub. Util., 360 Mass. 443, 462, 275 N.E.2d 493, 507 (1971)*; *New Eng. Tel. & Tel. Co. v. Department of Pub. Util., 331 Mass. 604, 121 N.E.2d 896 (1954)*. See also Re New Eng. Tel. & Tel. Co., 22 PUR3d 470, 474 (Mass. Dept. of Pub. Util. 1958):

> (W)e have consistently found that since the debt ratio has a profound effect on the appropriate rate of return and therefore on the rates payable by the subscribers, we would be derelict if we did not exercise our own judgment on the question. In the past we have held that the 45 per cent debt ratio was appropriate. In this holding we have been upheld by the Supreme Judicial Court . . . . No evidence has been presented in this case which persuades us that the 45 per cent debt rate is not still appropriate.

[**68]

44 *Michigan Bell Tel. Co. v. Pub. Serv. Comm'n, 332 Mich. 7, 30, 50 N.W.2d 826, 840 (1952)*. See also Re Michigan Bell Tel. Co., 20 PUR3d 397 (Mich. Pub. Serv. Comm'n 1957).

45 *Southern Bell Tel. & Tel. Co. v. Public Serv. Comm'n, 237 Miss. 157, 113 So.2d 622 (1959)*. See also *Re Southern Cen. Bell Tel. Co. 5 PUR4th 113, 117 (Miss. Pub. Serv. Comm'n 1974)* (45% Imputed).

46 Re Mountain States Tel. & Tel. Co., 23 PUR3d 233, 250 (Montana Pub. Serv. Comm'n 1958).

47 Re Northwestern Bell Tel. Co., 97 PUR

(NS) 394 (Neb. State Ry. Comm'n 1952).

48 *New Eng. Tel. & Tel. Co. v. State, 98 N.H. 211, 97 A.2d 213 (1953)*. See also New Eng. Tel. & Tel. Co., 21 PUR3d 195, 200 (N.H. Pub. Util. Comm'n 1957).

49 *State Corp. Comm'n v. Mountain States Tel. & Tel. Co., 58 N.M. 260, 270 P.2d 685 (1954)*.

50 *Lower Paxton Twnsh'p v. Commonwealth, 13 Pa.Cmwlth. 135, 144-45, 317 A.2d 917, 921-22 (1974)*. See also Public Util. Comm'n v. Consolidated Water Co., 98 PUR3d 507, 514 (Penn. Pub. Util. Comm'n 1973).

51 Re Northwestern Bell Tel. Co., 20 PUR3d 385 (S.D. Pub. Util. Comm'n 1957).

[**69]

52 Re Southern Bell Tel. & Tel. Co., 12 PUR3d 170, 190 (Tenn. Pub. Serv. Comm'n 1956) (45% Debt imputed).

53 Re Southwestern Bell Tel. Co., 2 PUR3d 265 (Houston, Tex., City Council 1953).

54 Re Mountain States Tel. & Tel. Co., 2 PUR3d 75 (Utah Pub. Serv. Comm'n 1953).

55 *Re New Eng. Tel. & Tel. Co., 116 Vt. 480, 80 A.2d 671 (1951)*.

56 Pacific Northwest Bell Tel. Co. v. Util. & Transp. Comm'n, 8 PUR3d 16 (Wash. Superior Ct. 1972).

57 Re Mountain States Tel. & Tel. Co., 14 PUR3d 230, 237 (Wyo. Pub. Serv. Comm'n 1956).

58 *Northwestern Bell Tel. Co. v. State, 299 Minn. 1, 12, 216 N.W.2d 841, 850 (1974)* (per Otis, J.):

> We have difficulty accepting the concept that in a rate case of this kind the state may collaterally attack the judgment of the company in maintaining its embedded debt at a low figure. We agree with the position of the company that this is a discretionary matter of management which, in the light of soaring interest rates, seems to vindicate the company's decision to keep its debt obligations to a minimum.

59 Re Pacific Tel. & Tel. Co., 23 PUR3d 209 (Cal. Pub. Util. Comm'n 1958).

[**70]

60 Id. at 223-224.

61 See also Re Boston Edison Co., 99 PUR3d 417, 419 (Mass. Dept. Pub. Util. 1973): "Unless the company's actual capital structure is demonstrably unreasonable, determinations of fair rate of return must be based on the applicable, as opposed to a hypothetical, capital structure."

Hence, we hold that the Commission acted consistently with settled regulatory law and acted well within its own jurisdiction as the reviewer of rates proposed by COMSAT, when it hypothesized some debt in COMSAT's capital structure. The question next arises whether there was substantial evidence for the Commission's choice of 45% As the level of debt to be assumed.

The Commission based its determination of a 45% Level of imputed debt on comparative evidence from other communication companies and AT&T in particular. The Commission's decision states:

> Comsat's peculiar 100% Equity capital structure was noted by Dr. Carleton and, of course by Dr. Brigham who acknowledged that the absence of debt resulted in less risk for Comsat's stockholders. Dr. Brigham also [**71] indicated that the average debt ratio for utilities was 61%. Currently AT&T's debt ratio is approximately 50%. We also take notice from our 1974 compilation of Statistics of Communications Common Carriers that the weighted average (arithmetic mean) ratios of long-term debt to total capital for 87 telephone and 7 telegraph carriers was 49.1% And 40.4% Respectively. On the basis of the foregoing we believe it conservative to impute debt at a 45% Level in our determination of Comsat's 1975 rate of return allowance.

(J.A. 58; *56 FCC2d at 1158*) (footnotes omitted). The 1973 Annual Report of AT& T (the "10K" Report on file with the Securities and Exchange Commission) shows that AT&T had a 47.6% Debt ratio. [62] Hence, the Commission's reference to an approximate debt ratio of 50% Was more generous than accurate; and a proper reference indicates that the Commission's imputation of 45% Debt was even closer to that of AT&T than the Commission claimed.

62 See AT&T 10K Report 1974 at 23.

A great assortment [**72] of hypothesized rates can be found among the decisions of the various courts and public utility commissions that have adjusted capital structures for rate of return purposes. In most cases, the hypothesized percentage of debt is defended merely on the ground that the regulated company has been shown to be able to sustain that amount of debt without jeopardizing the integrity of its equity. [63] When comparisons are made, the more common approaches are to refer to like utilities in the area, [64] similar companies in the industry, [65] or future trends predicted for the company itself. [66] Viewing the grand display of public utility commissions' statements on this question, the rationale proffered by the FCC in this case certainly ranks among the more complete: it refers to the general industry, to a particular competitor, and to the financial ability of the company in question.

63 See cases cited at note 68, Infra.

64 See, e. g., Pennsylvania Pub. Util. Comm'n v. Johnstown Water Co., 19 PUR3d 433, 443-4 (Pa. Pub. Util. Comm'n 1957).

65 See, e. g., Re Lawrence Gas Co., 12 PUR3d 64, 66 (Mass. Dept. of Pub. Util. 1955); Pennsylvania Pub. Util. Comm'n v. Peoples Nat'l Gas Co., 6 PUR3d 341, 357 (Pa. Pub. Util. Comm'n 1954).

[**73]

66 Cf., e. g., *New Eng. Tel. & Tel. Co. v. Department of Pub. Util., 360 Mass. 443, 275 N.E.2d 493 (1971)*.

In addition to the foregoing sufficient justifications for the choice of 45%, it [*907] should be noted that many public utility commissions and courts have chosen 45% In the absence of alternative evidence. The Supreme Court of Louisiana has stated:

> Since the decision of the United States Supreme Court in the case of *Federal Power Commission v. Hope Natural Gas Co., supra*, the hypothetical 45% Debt ratio rule has been almost universally adopted in those states where there is no formula prescribed by constitutional provisions or statutes for the determination of a rate base.

Southern Bell Telephone & Telegraph Co. v. Public Service Commission, 239 La. 175, 199, 118 So.2d 372, 381 (1960). [67] Cases which have applied the 45% Rule almost automatically have involved a wide assortment of actual debt ratios that ranged from zero to just under 45%. [68] Other target debt ratios have also been used in their own appropriate context: adjustments have [**74] been made from 27% To 38%, [69] from 39.4% To 47.5%, [70] from 7% To 35%, [71] and so on. Of most interest here are those cases that have imputed a high debt percentage for a company with no debt at all. In Pennsylvania Public Utilities Commission v. Johnstown Water Co., 19 PUR3d 433, 443-44 (Pa. Pub. Util. Comm'n 1957), the Commission imputed a debt of 59% To an all-equity company, although the subject company had recently begun to borrow small amounts on the short-term market. In Re Lawrence Gas Co., 12 PUR3d 64 (Mass. Dept. of Pub. Util. 1955), a 45% Level of debt was assumed, although once again the creation of debt was not completely an assumption because the subject company was a subsidiary of another which had a 57% Debt ratio. In *Lower Paxton Township v. Commonwealth, 13 Pa.Cmwlth. 135, 144-45, 317 A.2d 917, 921-22 (1974)*, a company with an all equity capital structure was hypothesized to have 55% Of its capital subsumed by debt, for purposes of rate-making.

67 See also Re Southern Bell Tel. & Tel. Co., 12 PUR3d 170, 191 (Tenn. Pub. Serv. Comm'n 1956), citing "other authorities which have upheld a 45 per cent debt ratio and reconstructed the company's capital structure."

[**75]

68 See, e. g., (in order of increase in imputed debt) Louisiana Pub. Serv. Comm'n v. Southern Bell Tel. & Tel. Co., 14 PUR3d 146, 164 (La.Pub.Serv. Comm'n 1956) (debt of 21.3% Imputed as 45%), *Aff'd, 232 La. 446, 94 So.2d 431 (1957)*; Re Southern Bell Tel. & Tel. Co., 12 PUR3d 170, 190 (Tenn. Pub. Serv. Comm'n 1956) (22.91% Imputed as 45%); Re Mountain States Tel. & Tel. Co., 23 PUR2d 233, 250 (Montana Pub. Serv. Comm'n 1958) (28.05% Imputed as 45%); Re Mountain States Tel. & Tel. Co., 6 PUR3d 428, 436, 438 (Idaho Pub. Util. Comm'n 1954) (30.8% Imputed as 45%); *New Eng. Tel. & Tel. Co. v. Department of Pub. Util., 327 Mass. 81, 89-91, 97 N.E.2d 509, 517-518 (1951)* (35% Imputed as 45%); Re New Eng. Tel. & Tel., 2 PUR3d 464, 485-7 (Mass. Dep't Pub. Util. 1953) (35% Imputed as 45%); Pennsylvania Pub. Util. Comm'n v. Peoples Nat'l Gas Co., 6 PUR3d 341,

357 (Pa.Pub. Util. Comm'n 1954) (36% Imputed as 45%).

The 45% Rule has even been applied in reverse, bringing Down a regulated company's debt ratio for purposes of estimating a rate of return. See, e. g., *New Eng. Tel. & Tel. v. Dep't of Pub. Util., 331 Mass. 604, 619, 121 N.E.2d 896, 904 (1954)* (62.1% Imputed as 45%); Public Util. Comm'n v. Consolidated Water Co., 98 PUR3d 507, 514 (Pa. Pub. Util. Comm'n 1973) (50% Imputed as 45%).

[**76]

69 Re Mountain States Tel. & Tel. Co., 14 PUR3d 230, 237 (Wyo. Pub. Serv. Comm'n 1956).

70 Re New Eng. Tel. & Tel. Co., 22 PUR3d 470, 474-75 (Mass. Dep't of Pub. Util. 1958).

71 Re Diamond State Tel. Co., 21 PUR3d 417, 432, 435-36 (Del. Pub. Serv. Comm'n 1958).

(11) Our conclusion must be that there is adequate authority, both in the factual administrative record here, and in prior decision law of courts and public utility commissions, to support the imputation by the FCC of 45% Debt to the all-equity structured COMSAT for rate-making purposes.

Nevertheless, we are not insensitive to the adjustment problems that are involved in the 45% Imputation, particularly in light of the fact that COMSAT was in no respect negligent in business sense for using an all-equity structure. There were many good, conservative reasons for that capital structure.

The Commission chose to impute a 45% Level of debt for 1975, and future years, in its decision that was issued in December of 1975. (J.A. 60, *56 FCC2d at 1160*). Admittedly, [*908] [**77] the FCC was not ordering a restructuring of COMSAT's capital structure, so the shock of actually going from zero to 45% Debt was not necessarily imposed. However, when the Commission imposed the 45% Assumption it was fully aware that unless COMSAT did adopt a level of debt at least that high, the stockholders would not receive an 11.3% Rate of return on equity which, as noted elsewhere in this appeal, is at the lower limit of what could be approved as compensatory. [72] (J.A. 73, *56 FCC2d at 1173*).

72 The comments of Commissioners Reid and Hooks in concurrence, and Commissioners Washburn and Lee in dissent (J.A. 88, 89, 90; *56 FCC2d 1188, 1189, 1190)*, indicate that any rate of return lower than 11.3% Would not be acceptable to a majority of the Commission.

(12) Under the assumptions most favorable to the position of the Commission, 1973 was the year in which COMSAT reached a level of maturity able to sustain debt in its capital structure. (J.A. 58, n. 92; *56 FCC2d at 1158, n. 92*). [**78] The Commission's warning did not come until December of 1975, however; and then it could not fault COMSAT for maintaining an all-equity structure as late as 1973. The result is that, no matter what COMSAT might have done to increase debt earlier, it is a stretch of the Commission's finding to rule that COMSAT should have begun to lever its capital structure in 1973. COMSAT was not made aware of the consequences for rate-making of not obtaining debt financing until late 1975. Accordingly, it was an abuse of discretion for the Commission to treat COMSAT as though it had 45% Debt all at once (indeed, retroactively, since the 45% Assumption applied to the entire 1975 year, while the Commission's opinion did not issue until December of 1975).

COMSAT, of course, is free not to alter its capital structure at all. [73] If it chooses not to do so in the face of the now-apparent FCC rate-making policy, then it is consciously accepting a lower rate of return for its stockholders, possibly in the interest of preserving for them a low level of risk. The fault of the Commission's action in this opinion is to deny COMSAT even the opportunity to make that choice and begin to phase in debt. As of the [**79] moment the opinion was issued, COMSAT shareholders were subjected to a less than adequate rate of return. If the level of hypothesized debt were only a small increase over the amount of debt already in COMSAT's capital structure, then, perhaps, no time period would necessarily have been required before the hypothetical debt structure could be applied. That was the case in the vast majority of hypothesized debt decisions cited previously. But the jump from zero to 45% Is not a small one, particularly for a company totally inexperienced theretofore in raising funds in the debt market. The Commission has elsewhere in this opinion expressed a sensitivity to the transitional problems as COMSAT matures; for example, it afforded a five-year amortization period phase-out for laboratory investment considered no longer appropriate as COMSAT developed

past the experimental stage. (J.A. 26; *56 FCC2d at 1126*). And that phase-out was scheduled to begin in 1976, the year Following the Commission's decision. We hold that similar consideration should have been afforded to COMSAT's infusion of debt. The 45% Debt ratio assumption should be phased in gradually, and be scheduled to commence [**80] in the future, not retroactively. The precise details of the formula are for the Commission to develop upon remand. [74]

73 The Commission's opinion observes, however, that COMSAT has already agreed that "it would be desirable for it to include some debt in its capital structure and is prepared to do so." (J.A. 59, n. 96; *56 FCC2d 1159, n. 96*).

74 The FCC staff had proposed a gradual imputation of debt, starting in 1972, and reaching 50% After five years. The Commission ignored the phase-in aspect of its staff's recommendation. (J.A. 57, n. 91; *56 FCC2d at 1157, n. 91*).

The general effect of what we order can be described, however. COMSAT will be allowed to charge rate sufficient to earn at least an 11.3% Return on its rate base during the first year after the Commission's order if COMSAT still has no debt. Thereafter, over a period of years to be set by the [*909] Commission, the allowed rates should be lowered, corresponding to that level which would return 11.3% On [**81] the COMSAT equity if COMSAT had a certain percentage of debt. That assumed percentage of debt will rise (and the allowable rates will fall) until the hypothetical level of debt reaches 45% Of the capital structure.

C. The Combined Effect

In part A of this section, we have upheld the Commission's determination that 11.3% Was a fair rate of return to the equity invested by COMSAT's shareholders. In part B, we have remanded the question of imputing debt into the capital structure so that the process may be made gradual. In joining together these two determinations, we must take account of a potential inconsistency. The Commission's conclusion that COMSAT was, as of 1973, no more risky an investment than AT&T was found to be defensible entirely because of COMSAT's all-equity capital structure which had the effect of reducing risk. Yet that all-equity capital structure created an inordinately high cost of capital, imposing an excessive burden on the rate-payers, and it was for that reason that we upheld the hypothetical imputation of debt. If COMSAT moves toward a 45% Level of debt, the Commission will be forced to reconsider its decision that COMSAT is no more risky than AT&T. The presence [**82] of any debt in the capital structure undercuts the Commission's 11.3% Rate of return estimate. In only one case will the Commission not be forced to reconsider that estimate: if COMSAT persists in an all-equity structure. [75] If COMSAT does not take steps to lever its capital structure over the time period specified by the Commission upon remand, then it has consciously accepted a lower rate of return for its stockholders (because of the imputed debt) while guaranteeing them minimum risk (because of no actual debt). That could be a proper decision for COMSAT to make.

75 We note that COMSAT has already stated its intention to adopt some debt, *56 FCC2d at 1159 n. 96*, and it seems to have embarked on that course. The Statement of Consolidated Financial Position for the year 1974, found in the 1975 ANNUAL REPORT OF COMSAT (on file with the Securities and Exchange Commission) at p. 17, shows an entry of one million dollars under "Long Term Debt."

IV. THE REASONABLENESS OF THE OVERALL RESULT

From Hope [**83] Natural Gas through Permian Basin Area, and up to the Supreme Court's latest statement, the scope of review of rate regulation by appellate courts, the reasonableness of a rate of return allowed to a regulated company has been judged from the perspective of its effect on the company and the public. Permian Basin specified other factors for review, of course, and these have been treated above. [76] The question we now address is the third issue emphasized in Permian Basin Area : "whether the order may reasonably be expected to maintain financial integrity, attract necessary capital, and fairly compensate investors for the risks they have assumed, and yet provide appropriate protection to the relevant public interests, both existing and foreseeable." *390 U.S. at 792, 88 S. Ct. at 1373.*

76 See *390 U.S. 747, 791-2, 88 S. Ct. 1344, 20 L. Ed. 2d 312 (1968)*. See note 16, Supra.

A. Comparison with AT&T

While suggesting that the Satellite Act entitled

COMSAT to rely more heavily, perhaps, [**84] then other regulated companies upon governmental support, COMSAT has conceded that nothing in the legislative history of the Satellite Act or any other statute entitled it to a certain level of profit, or even a profit at all. The objection eventually condenses to a comparison of the rates of return actually earned by COMSAT over the course of its history, and those earned by AT&T as a comparable regulated company. COMSAT claims that it is not comparable, that it is a more risky enterprise than AT&T. It correctly cites the Commission's finding that COMSAT was more risky until 1973, and asserts that nothing has changed since then to make it less risky. We are not concerned with the years before 1973 since [*910] we find nothing in COMSAT's particular situation to justify a departure from the usual rule that past losses are immaterial to present rate-setting proceedings.

As for the present, it is a truism that AT&T generally is not a risky investment, though the degree of risk varies with whether one is talking about its common stock, its preferred stock, or its bonds; and in each of these there may be substantial risk to one's investment objectives immediate or distant depending [**85] on the price and the state of the market generally. AT&T may be a less risky enterprise than COMSAT, but that does not make it a less risky Investment opportunity. The price of AT&T stock has not ranged as widely as COMSAT over the years both have existed, [77] and COMSAT's variance has been entirely on the upside since it was offered at $ 20. The Commission used AT&T to compare with COMSAT, and for that reason, COMSAT's rebuttal based on dividends and book value is not an inappropriate exercise. However, one must keep in mind that an investor who buys AT&T stock at a relatively high point and watches it fall will be little convinced that his investment was not risky because AT&T never missed a dividend.

77 Standard & Poor's Corporation Stock Guide, May, 1977 at 18, 56 (data revised through April 29, 1977). See note 32, Supra.

COMSAT has placed great reliance upon a depiction of the returns of each company from 1964 to 1973. See Table in Brief of Petitioner at 35. The table shows the book value per share in [**86] 1964 and in 1973 for COMSAT and for AT&T, and the dividends per share compounded at 6% Per annum from the year declared through 1973. The sum of that figure and the increase in book value per share is listed as "Total Return," which is then expressed as a percent of the 1964 book value in each case. The result is a figure of 81.14% Total return for COMSAT and 136.00% For AT&T. COMSAT argues that its rate of return is therefore less than what the statute requires as "just and reasonable."

The comparison is fundamentally false. COMSAT has nothing but equity in its capital structure. [78] Every dollar represented in book value corresponds to some investor's equity holding. AT&T, by contrast, has maintained a considerable amount of debt in its capital structure throughout the 1964 to 1973 period. AT&T's earnings were made partly upon its equity capital, and partly upon the capital it borrowed generally at a lesser cost than the dividends it pays on its equity holdings. A fixed rate of interest had to be paid on the borrowed capital, but having met that obligation, the remaining portion of earnings on the borrowed capital was available to AT&T to pay out in dividends or retain as earnings. [**87]

78 See part III, section B, page -- - of 198 U.S.App.D.C., page 902 of 611 F.2d, Supra.

What makes COMSAT's comparison unsound is that the "Total Return" is expressed "as Percent of 1964 Book Value." In 1964, AT&T had $ 9.176 billion of debt outstanding and $ 18.860 billion of equity, for a debt-to-capital-ratio of 32.73%. [79] By 1973, AT&T had a capital structure consisting of $ 28.371 billion in debt and $ 31.224 billion in equity, resulting in a debt-to-capital ratio of 47.6%. [80] Hence, over the relevant years, AT&T increased its amount of outstanding debt by over $ 19.194 billion, which more than tripled its 1964 debt level; and its debt Ratio increased by almost half. During all this time, COMSAT floated no bonds at all.

79 1967 Annual Report of American Telephone & Telegraph Co., Inc., 31 (ten-year summary) (grouping preferred stock with equity). See note 31, Supra.

80 1974 Annual Report of American Telephone & Telegraph Co., Inc., 35 (grouping preferred stock with equity). See note 31, Supra.

[**88] Thus, not only do the figures for AT&T reflect a rate of return on borrowed capital, which COMSAT did not have; but also, most importantly, they reflect a return on an ever-increasing Amount of

611 F.2d 883, *910; 198 U.S. App. D.C. 60;
1977 U.S. App. LEXIS 11187, **88; 41 Rad. Reg. 2d (P & F) 1051

borrowed capital, resulting in an ever-increasing leverage of equity over debt. It would have been imprecise enough to compare a leveraged [*911] company with an all-equity company, but to compare COMSAT with AT&T whose ratio of debt was Increasing substantially over the period presents an even more distorted result.

If a comparison with AT&T is deemed informative, the figures should attempt to reflect the return earned by AT&T, and by COMSAT, on the Equity represented in the capital structure of each. Based on the figures set forth, the average level of equity for AT&T was $ 25.042 billion over the 1964-1973 period, and the average level of debt was $ 18.773 billion. The $ 37.78 per share total return does not include the earnings that went to debt service; adding back an approximation of 6.5% Debt service per year (compounded on the amount of debt), [81] the total of earnings and debt service for AT&T on these figures would come to $ 47.07 per share. [82] If the $ 47.07 per share total [**89] return for AT&T were then prorated according to its capital structure, $ 26.90 would be earned on that portion of the total capital contributed by equity, and $ 20.17 would be earned on the part contributed by debt.

> 81 The interest rate of 6.5% Was chosen as the average effective yield on debt issues by AT&T during the 1963-1973 period that are still outstanding. Each interest rate was weighted by the size of the offering to derive the average. The result reached was 6.42%. See Moody's Bond Record (1977) 4. See note 31, Supra.
>
> 82 The method of calculation used in this rough estimate was as follows. The interest rate of 6.5% Compounds to 76.26% In nine years. The average percentage of debt in the capital structure over the period was 43.85%. Hence, 43.85% Of 76.26%, or 33.44%, is the estimate of additional earnings accounted for by debt service over the period. That brings total return up to $ 47.07 per share.

For the limited purposes of analyzing the rate of return figures advanced by COMSAT (Brief for [**90] Petitioner at 35), the $ 26.90 figure may be taken as one measure of what AT&T did earn on the equity in its capital structure. [83] As a percent of its 1964 book value, that per share figure represents a 96.83% Rate of return, which is substantially below the 136.00% Rate of return claimed in the brief. The remaining difference between that rate of return and the 81.14% Earned by COMSAT, to the extent any direct comparison of this sort is useful, can be justified by the fact that COMSAT stock carries a high potential for capital appreciation.

> 83 Actually, it is a high estimate since AT&T was able to earn an overall higher return due to the debt in its capital structure, if there are increasing returns to scale.

B. The Expectations of Investors

The comparison with AT&T, therefore, does not demonstrate that COMSAT's rate of return has fallen short of what is just and reasonable. COMSAT's complaint was more general, however. It asserted that the original subscribers of COMSAT stock were being denied the right [**91] ever to make a fair rate of return on their investment. The Commission has prescribed rates only for the future; the revenues COMSAT received from 1964 to 1973 were left unadjusted and COMSAT's plea to capitalize the difference between those actual revenues and its conception of adequate revenues was turned down. Hence, no matter what AT&T was making, COMSAT equity investors who subscribed in 1964 are, in COMSAT's view, being compelled to accept 6.45% Per annum as the only rate of return they are to receive for their investment from 1964 to 1973.

Because COMSAT has been regulated from its inception, it is argued that it should be an exception to the accepted law that earnings shortfalls during the formative years are not to be capitalized. That argument is a familiar one; it is simply the same assertion that a regulated company is entitled to some minimum rate of return. The most compelling aspect of that argument in this setting is that Congress intended COMSAT to become a prosperous company, and that it expected investors to view it as a sufficiently profitable prospect so as to merit their capital.

All of this may well be true. The conclusion that COMSAT urges follows from it, [**92] however, is not. COMSAT looks at the 6.45% Rate of return and infers that no [*912] investor would have committed funds for that small reward. But the 6.45% Figure was calculated only from increase in book value and dividends paid. It did not consider the appreciation of an investor's capital from a rise in the price of COMSAT stock. It is hardly necessary to state the financial fact that stocks most often sell at multiples of the book value per share of the company. The difference represents investor confidence

in the likelihood of appreciation of the stock itself. And it is for this reason, in many cases even more than the hope of dividends (and certainly more than the simple expectation of increase in book value), that the public invests.

COMSAT makes much of the public relations strategy used to induce investment in COMSAT in 1964: buy it at the start, put it away, and let your grandchildren benefit. Undoubtedly the prospect of getting in at the ground-level on a government-sanctioned monopoly was attractive, but the logic underlying that attraction was that the price of the stock would appreciate as global telecommunications increasingly came to depend upon the use of satellites, [**93] and as the day of COMSAT's self-sufficiency approached. This is not to say that the entire appreciation in stock price was unrelated to the underlying appreciation in book value or the rates COMSAT was permitted to charge its customers, but it is important to recognize the speculative aspect of an investment in COMSAT.

This aspect of a decision to invest in COMSAT was clearly stated by Commissioner Robinson in his separate opinion:

> Thus, if the start-up period is expected to last five years and once out of that period Comsat is expected to earn $ 10 a year for eternity then investors will be willing to pay the value of stock earning an annuity of $ 10 a year with payments to begin in five years. Such a stock is worth less than a stock of a company earning $ 10 a year right now but it is not valueless. A rational investor would buy Comsat even if he never expected a cent of return deficiencies to be allowed. Nothing the Commission has ever done, and nothing in the history of rate regulation generally would lead reasonable investors to expect that Comsat would be permitted to make up any earnings shortfall particularly one defined as a return falling short of 12 percent by a special [**94] component in the rate base or in the rate of return.

(J.A. 93-94; *56 FCC2d at 1193-94*) (emphasis added).

Initial subscribers of COMSAT stock were not all looking to the allowed rates that COMSAT charged to provide dividends and increased book value as a return on their investment. The expectation of speculative gain must also be recognized. The actual fluctuation in COMSAT stock provides all the proof needed that there was much opportunity for the early investor to make his speculative profit. In June of 1964, ten million shares of COMSAT were first offered to the investing public and common carriers at $ 20 per share. It has never fallen below $ 20 since. [84] Over the course of the last thirteen years, the stock price has varied widely, reaching a high of 84 1/2 . [85] In the last two years, it has stayed within the range of 23 7/8 and 37 3/8 . [86]

> 84 Standard & Poor's Corporation Stock Guide, supra note 77 at 56. See note 31, Supra.
> 85 Id.
> 86 Wall Street Journal, July 11, 1977, at 26, col. 2 (Eastern ed.); Standard & Poor's supra. See note 31, Supra.

[**95] (13) The hope for appreciation of stock price is an aspect of investor behavior that COMSAT's argument to this court entirely ignores. And it is in light of that aspect that we may conclude both that the rate of return to be afforded COMSAT will not scare off investment, and that the historical return enjoyed by COMSAT stockholders was adequate to "attract necessary capital, and fairly compensate investors for the risks they have assumed" [87] in investing in [*913] an enterprise having the capital appreciation potential of COMSAT.

> 87 *Permian Basin Area Rate Cases, 390 U.S. 747, 792, 88 S. Ct. 1344, 1373, 20 L. Ed. 2d 312 (1968).*

We have given careful consideration to all the many contentions raised by the petitioner, and any of those matters not specifically addressed in this opinion have been deemed insubstantial. The case is remanded to the Commission for further proceedings as directed by this opinion.

So ordered.

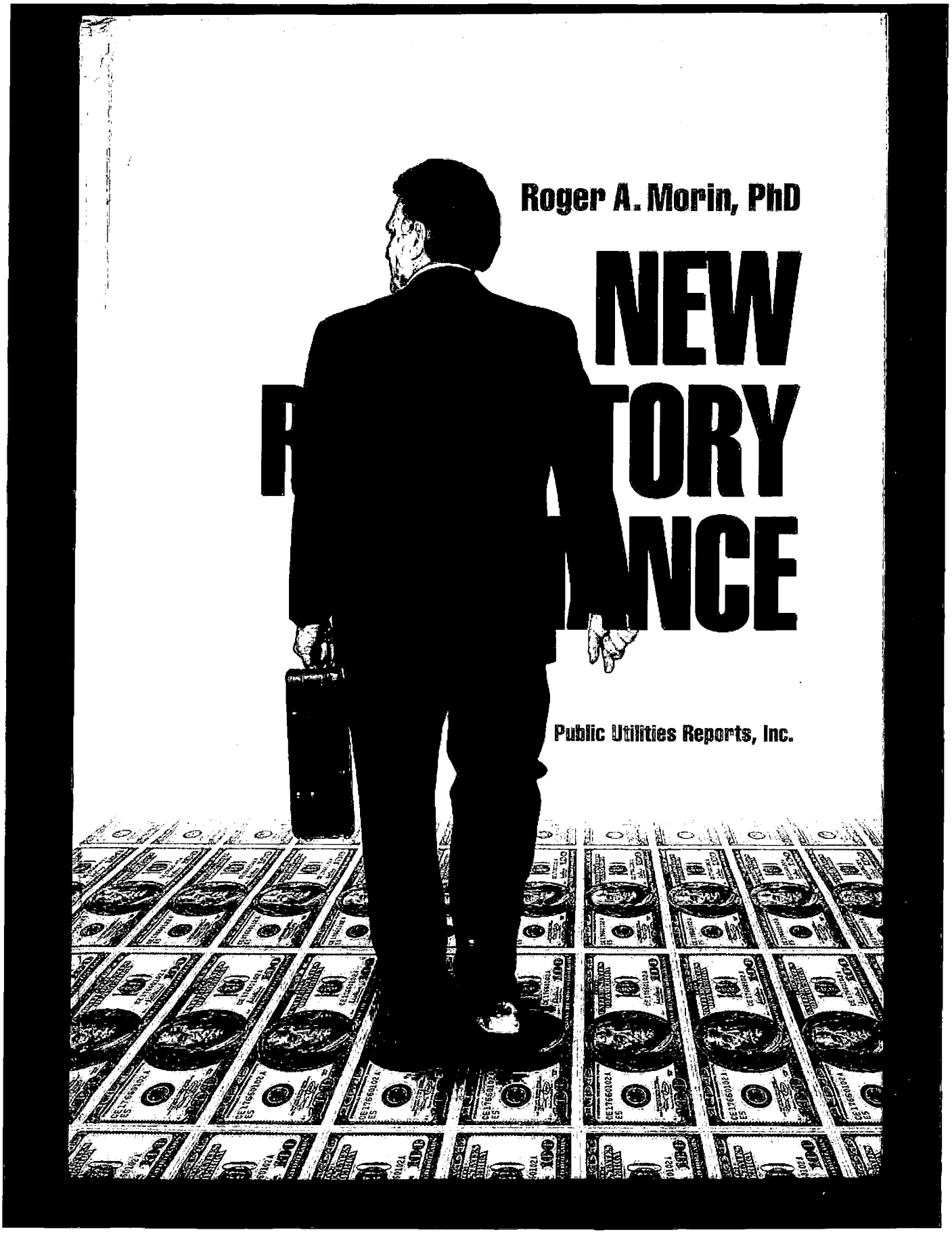
Roger A. Morin, PhD
NEW
TORY
NCE
Public Utilities Reports, Inc.

TABLE 1-1
POTOMAC ELECTRIC POWER COMPANY
District of Columbia Cost of Capital
December 2003

Type of Capital	Amount ($000)	% of Total	Cost Rate	Weighted Cost Rate
Long-term Debt	$1,090,477	48.70%	6.66%	3.24%
Preferred Stock	$70,732	3.16%	6.75%	0.21%
Common Equity	$1,078,000	48.14%	11.10%	5.34%
TOTAL CAPITAL	$2,239,209	100.00%		8.80%

Source: Morin (2004)

debt and equity in the capital structure to arrive at the weighted average cost of capital ("WACC"), which is finally translated into an overall allowed rate of return.

As an example, Table 1-1 illustrates the computation of the overall rate of return requested from the Public Service Commission of the District of Columbia by Potomac Electric Power Company in a 2004 filing for rate relief for electricity distribution services.[12] The overall return of 8.8% is obtained by multiplying the embedded cost of debt, both long-term and short-term, by its respective proportion in the capital structure, and adding to this the product of the cost of common equity and the proportion of equity in the capital structure.

Two feedback effects on the cost of capital are shown in Figure 1-6. The mix of debt and equity employed in computing the weighted average cost of capital influences the return required by debt and equity capital suppliers. For example, increasing the proportion of low-cost debt financing lowers the overall cost of capital but increases the financial risk of the company to the detriment of the shareholders who require a higher return in compensation for the increased risk. As the utility employs relatively more debt capital, the low-cost advantage of debt may be more than offset by the increased cost of equity. Capital structure effects are discussed more extensively in Chapters 16 to 19.

The second feedback loop in Figure 1-6 stems from the impact of the return allowed by the regulator on the cost of debt and equity. If the regulator systematically awards inadequate returns or if the utility is not provided with a fair opportunity to earn its allowed rate of return, investors will demand higher returns in compensation for the increased "regulatory" risk. Regulatory

[12] See Morin (2004) for a full discussion of this case.

SOAH DOCKET NO. 473-21-2606
PUC DOCKET NO. 52195

APPLICATION OF EL PASO ELECTRIC COMPANY TO CHANGE RATES	§ § §	BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS

EL PASO ELECTRIC COMPANY'S RESPONSE TO
TEXAS INDUSTRIAL ENERGY CONSUMERS'S FIRST REQUEST FOR INFORMATION
QUESTION NOS. TIEC 1-1 THROUGH TIEC 1-17

TIEC 1-3:

Referring to Appendix A included in Ms. Nelson's direct testimony, in electronic format with all formulas intact, please provide Ms. Nelson's proposed and commission-approved returns on equity in each one of the regulatory proceedings included in her Appendix A. Please provide the order date and number, and the page number of the commission findings.

RESPONSE:

Please see TIEC 1-3, Attachment 1.

Preparer: Jennifer E. Nelson Title: Assistant Vice President – Concentric Energy Advisors

Sponsor: Jennifer E. Nelson Title: Assistant Vice President – Concentric Energy Advisors

Sponsor	Date	Case/Applicant	Docket	Subject	Final Recommended ROE (%)	Recommended ROE Range (%)	Ordered ROE (%)	Order Date and Page Number	Settled Vs. Fully Litigated
Arkansas Public Service Commission									
Entergy Arkansas, Inc.	11/20	Entergy Arkansas, Inc.	16-036-FR	Return on Equity	NA	NA	9.75%ROE for initial FRP term 2016-2020; Pursuant to Act 894, 9.65%for the FRP extension term beginning in 2021.	04/08/2021. Act 894 signed 4/26/2021	Settled
New Hampshire Public Utilties Commission									
Unitil Energy Systems, Inc.	04/21	Unitil Energy Systems, Inc.	DE 21-030	Return on Equity	10.20	9.90 - 10.50	Ongoing		Ongoing
New Mexico Public Regulation Commission									
El Paso Electric Company	07/20	El Paso Electric Company	20-00104-UT	Cost of Equity	10.30	9.75-10.75	9.00	Order Adopting Recommended Decision with Modifications, 6/23/2021, pages 2-3	Fully Litigated
North Carolina Utilities Commission									
Public Service Company of North Carolina d/b/a Dominion Energy North Carolina	04/21	Public Service Company of North Carolina d/b/a Dominion Energy North Carolina	G-5, Sub 632	Return on Equity	10.25	9.60 - 10.75	Ongoing		Ongoing
Public Utility Commission of Texas									
Sharyland Utilities, LLC	12/20	Sharyland Utilities, LLC	51611	Return on Equity, Capital Structure & Cost of Debt	10.35	10.00-11.00	9.38	Order issued 7/15/2021, page 7	Settled
Public Service Commission of West Virginia									
Hope Gas, Inc. d/b/a Dominion Energy West Virginia	11/20	Hope Gas, Inc. d/b/a Dominion Energy West Virginia	20-0746-G-42T	Cost of Equity and Capital Structure	10.25	9.75-11.00	9.54	Order issued 7/27/2021, page 27	Fully Litigated

SOAH Docket No. 473-21-2606
PUC Docket No. 52195
TIEC's 1st, Q. No. TIEC 1-3
Attachment 1
Page 1 of 1

SOAH DOCKET NO. 473-21-2606
PUC DOCKET NO. 52195

APPLICATION OF EL PASO ELECTRIC COMPANY TO CHANGE RATES	§ § §	BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS

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TEXAS INDUSTRIAL ENERGY CONSUMERS'S FIRST REQUEST FOR INFORMATION
QUESTION NOS. TIEC 1-1 THROUGH TIEC 1-17

TIEC 1-4:

Please provide copies of all credit reports published by Standard & Poor's ("S&P"), Moody's and Fitch Ratings for EPE, issued over the last two years. This is an ongoing request.

RESPONSE:

Please refer to El Paso Electric Company's response to STAFF 2-36 and TIEC 1-2 for the Standard & Poor's, Moody's and Fitch Ratings credit reports. The credit reports for Standard & Poor's, Moody's and Fitch Ratings not previously provided are listed below and attached hereto.

TIEC 1-4 Attachment 1 Confidential – Standard & Poor's, *Research Update*: *El Paso Electric Co. Outlook Revised To Negative From Stable On Acquisition By IIF; Ratings Affirmed.*

TIEC 1-4 Attachment 2 Confidential - Moody's Investors Service, *Credit Opinion: El Paso Electric Company Update following downgrade to Baa2.*

TIEC 1-4 Attachment 3 Confidential – Fitch Ratings, *Rating Action: Fitch Affirms El Paso Electric's IDR at 'BBB'; Outlook Stable.*

Preparer: Richard Gonzalez — Title: Manager – Cash Management & Investor Relations

Sponsor: Lisa Budtke — Title: Director – Treasury Services & Investor Relations

PUBLIC

TIEC 1-4 Attachment 1 is a CONFIDENTIAL and/or HIGHLY SENSITIVE PROTECTED MATERIALS attachment.

PUBLIC

TIEC 1-4 Attachment 2 is a CONFIDENTIAL and/or HIGHLY SENSITIVE PROTECTED MATERIALS attachment.

PUBLIC

TIEC 1-4 Attachment 3 is a CONFIDENTIAL and/or HIGHLY SENSITIVE PROTECTED MATERIALS attachment.

SOAH DOCKET NO. 473-21-2606
PUC DOCKET NO. 52195

APPLICATION OF EL PASO ELECTRIC COMPANY TO CHANGE RATES	§ § §	BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS

EL PASO ELECTRIC COMPANY'S RESPONSE TO
TEXAS INDUSTRIAL ENERGY CONSUMERS'S FIRST REQUEST FOR INFORMATION
QUESTION NOS. TIEC 1-1 THROUGH TIEC 1-17

TIEC 1-5:

Please provide complete copies of all credit reports issued by S&P, Moody's and Fitch Ratings over the last two years that discuss the current electric utility industry as reviewed by any EPE witness. If EPE witnesses have not reviewed the material, please so state. This is an ongoing request.

RESPONSE:

The following reports on the electric utility industry published by S&P, and Moody's have been provided as requested. No electric industry reports were provided by Fitch Ratings to El Paso Electric ("EPE") over the last two years. EPE cannot attest to this list of articles being a complete and exhaustive list of articles relating to the utility industry. EPE did not rely upon the following reports to file the current case. These reports were reviewed for informational purposes to gain a better understanding of the credit rating process and the emerging issues within the utility industry. EPE witnesses Lisa Budtke and Jennifer E. Nelson reviewed the reports listed below.

Highly Sensitive Moody's Reports
TIEC 1-5, Attachment 1 – Utilities Strengthen Liquidity Amid Capital Markets Volatility – 4/06/2020
TIEC 1-5, Attachment 2 – Storm Costs in South-Central Are Credit Negative for Region's Regulated Utilities – 3/05/2021
TIEC 1-5, Attachment 3 – ESG Considerations Have an Overall Credit-Negative Impact on Utilities with Generation – 6/01/2021

Highly Sensitive S&P Reports
TIEC 1-5, Attachment 4 – U.S. Regulated Utilities' Credit Metrics Could Strengthen Under Proposed Biden Tax Plan – 10/29/2020
TIEC 1-5, Attachment 5- North American Regulated Utilities' Credit Quality Begins the Year on a Downward Path – 4/07/2021

Please see TIEC 1-5, Attachments 6 through 17, for copies of reports reviewed by EPE witness Jennifer E. Nelson.

Preparer:	Richard Gonzalez	Title:	Manager – Cash Management & Investor Relations
Sponsor:	Lisa Budtke	Title:	Director – Treasury Services & Investor Relations
	Jennifer E. Nelson		Assistant Vice President – Concentric Energy Advisors

PUBLIC

TIEC 1-5 Attachment 1 is a CONFIDENTIAL and/or HIGHLY SENSITIVE PROTECTED MATERIALS attachment.

PUBLIC

TIEC 1-5 Attachment 2 is a CONFIDENTIAL and/or HIGHLY SENSITIVE PROTECTED MATERIALS attachment.

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TIEC 1-5 Attachment 3 is a CONFIDENTIAL and/or HIGHLY SENSITIVE PROTECTED MATERIALS attachment.

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TIEC 1-5 Attachment 4 is a CONFIDENTIAL and/or HIGHLY SENSITIVE PROTECTED MATERIALS attachment.

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TIEC 1-5 Attachment 5 is a CONFIDENTIAL and/or HIGHLY SENSITIVE PROTECTED MATERIALS attachment.

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TIEC 1-5 Attachment 6 is a CONFIDENTIAL and/or HIGHLY SENSITIVE PROTECTED MATERIALS attachment.

COMMENTS — 8 Jun, 2020 | 20:34 —

Canada, APAC, United States of America, APAC, EMEA, Latin America

U.S. And Canadian Utility Regulatory Updates And Insights: June 2020

Primary Credit Analysts:	**Gerrit W Jepsen, Dimitri Henry**
Secondary Contacts:	**Matthew L O'Neill, Obioma Ugboaja, William Hernandez, Andrew Ng, Sloan Millman, Beverly R Gantt, Fei She, Kevin M Sheridan**
Sector	**Infrastructure & Utilities, Utilities & Power, Midstream**
Tags	**Americas**

View Analyst Contact Information

Table of Contents

Key Takeaways

- S&P Global Ratings periodically assesses each regulatory jurisdiction in the U.S. and Canada with a rated utility or where a rated entity operates.
- These assessments--with categories from "credit supportive" to "most credit supportive"--provide information for reference in determining the regulatory risk of a regulated utility or holding company with more than one utility. We made no changes since our last report, but examine developments in several jurisdictions.
- We base our analysis on quantitative and qualitative factors, focusing on regulatory stability, tariff-setting procedures and design, financial stability, and regulatory independence and insulation.
- The presence of utility regulation, no matter where in the spectrum of our assessments, strengthens the business risk profile and generally supports utility ratings.

S&P Global Ratings conducts periodic assessments of each regulatory jurisdiction in the U.S. and Canada where a rated utility operates as a reference when determining a utility's regulatory advantage or regulatory risk. Regulatory advantage is a heavily weighted factor in our analysis of a regulated utility's business risk profile.

Our analysis covers quantitative and qualitative factors, focusing on regulatory stability, tariff-setting procedures and design, financial stability, and regulatory independence and insulation. (See "Key Credit Factors For The Regulated Utilities Industry," published Nov. 19, 2013, for more details on each category.)

Sorting Through Regulatory Jurisdictions In The U.S. And Canada

We updated our assessments of regulatory jurisdictions since our commentary "U.S. And Canadian Regulatory Jurisdiction Updates And Insights: November 2019," published Nov. 4, 2019. Our assessments of U.S. jurisdictions' and Canadian provinces' approaches to regulation over the past several months are unchanged. Here, we provide our current snapshot of each regulatory jurisdiction (Table 1, Charts 1 and 2). We group the jurisdictions by the quantitative and qualitative factors and collective opinions expressed in the regulatory advantage determinations made in rating committees for the approximately 225 U.S. and 30 Canadian utilities we rate.

The categories indicate an important point regarding utility regulation and its effect on ratings: They are denoted credit supportive to one degree or another, as all utility regulation sustains credit quality when compared with corporate and infrastructure ratings. The presence of regulators, no matter where in the spectrum of our assessments, reduces business risk and generally supports utility ratings. We describe all these jurisdictions in a range from credit supportive to most credit supportive, and these vary only in degree rather than in kind.

Assessing U.S. And Canadian Regulatory Jurisdictions

Table 1

Regulatory Jurisdictions For Utilities Among U.S. States And Canadian Provinces

Credit supportive	More credit supportive	Very credit supportive	Highly credit supportive	Most credit supportive
Hawaii	Alaska	Connecticut	Arkansas	Alabama
Mississippi	Arizona	Delaware	Georgia	Alberta

New Mexico	California	Idaho	Indiana	British Columbia
Prince Edward Island	District of Columbia	Illinois	Kansas	Colorado
	Maryland	Missouri	Louisiana	FERC (electric)
	Montana	Nebraska	Maine	Florida
	New Jersey	Nevada	Massachusetts	Iowa
	Oklahoma	New Orleans	Minnesota	Kentucky
	South Carolina	New York	New Hampshire	Michigan
	Washington	Ohio	Newfoundland & Labrador	North Carolina
		Rhode Island	North Dakota	Nova Scotia
		South Dakota	Oregon	Ontario
		Texas	Pennsylvania	Quebec
		Vermont	Tennessee	Wisconsin
		West Virginia	Texas RRC	
		Wyoming	Utah	
			Virginia	

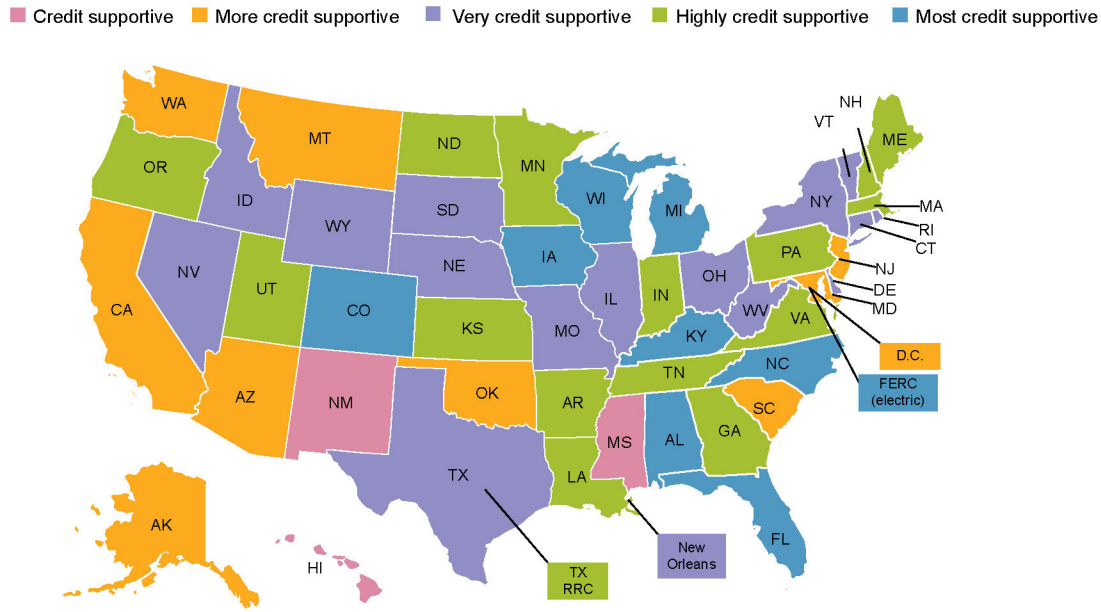
FERC--U.S. Federal Energy Regulatory Commission. RRC--Railroad Commission of Texas.

Mapping Regulatory Jurisdictions

For jurisdictions assessed in these maps (Charts 1 and 2), colors delineate our assessments of credit supportiveness. (We do not have assessments on some Canadian provinces where we don't rate any utilities.) The assessments offer some scale and detail in our thinking regarding the rules and implementation of regulation. Often they simply designate a stable jurisdiction slightly better or worse than its closest peers in credit quality.

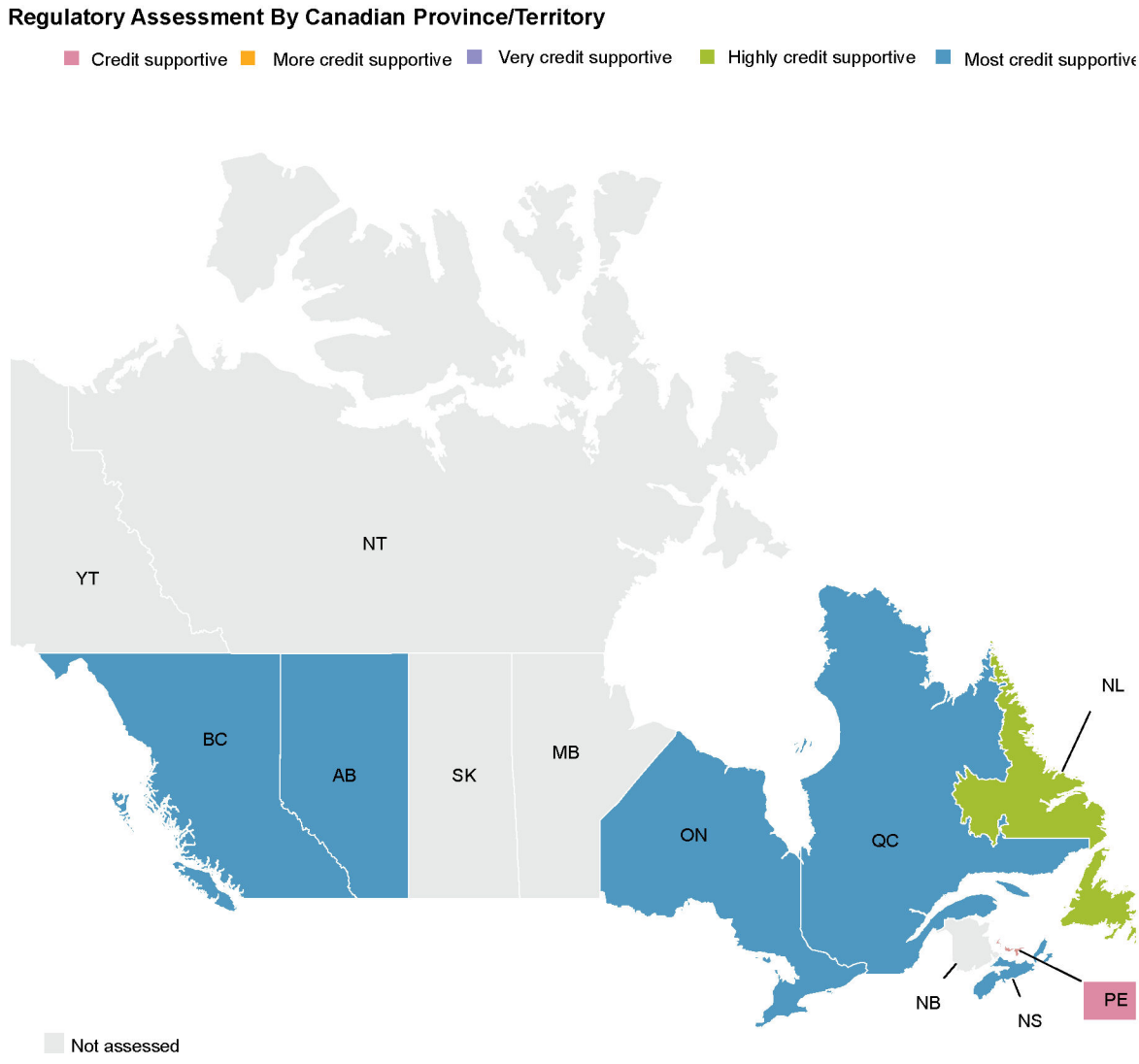
Chart 1

Regulatory Assessment By State



FERC—Federal Energy Regulatory Commission. RRC—Railroad Commission of Texas. Data as of June 2020.

Chart 2



Notable Topics Throughout North America

Although our biannual review found no material events that would change a jurisdictional assessment amid the COVID-19 pandemic, there have been an unprecedented number of regulatory actions with respect to cost recovery and bad debt collection moratoriums ("Regulatory Responses To COVID-19 Are Key To Utilities' Credit Prospects", published May 20, 2020). In addition, other notable developments have occurred in several jurisdictions.

Alberta

Compared to our assessment in November, the Alberta regulatory construct is weakening as regulatory lag has not improved. In addition, utilities are continually exposed to the risk of absorbing the undepreciated capital cost of stranded assets due to extraordinary retirement. Furthermore, the recent regulatory decision by the Alberta Utilities Commission regarding the Alberta Electric System Operator's customer contribution policy, under which requiring distribution operators to transfer transmission related investments to transmission operators at net book value, somewhat calls into question the regulatory framework's consistency.

FERC Electric

Recent U.S. Federal Energy Regulatory Commission (FERC) rulings on Midcontinent Independent System Operator (MISO) transmission owners' authorized return on equity (ROE) indicate inconsistency in how ROE decisions could be applied toward New England transmission owners' ROEs. Specifically, in late 2018, FERC proposed using a new ROE calculation method that focused on four factors. However, in late 2019, FERC did not use that methodology to establish the new ROE for MISO transmission owners, instead using a method that relied on two factors. Furthermore, FERC further revised the methodology in May 2020 by adding a third approach to calculate transmission owner ROEs. It was marginally favorable for MISO transmission owners compared to the two-factor approach, but resulted in a slight base ROE reduction.

Although there are inconsistencies regarding ROEs for electric transmission owners, we continue to consider FERC regulation toward electric transmission as one of the most credit supportive.

Hawaii

The state is undergoing regulatory reform, and the Hawaii Public Utilities Commission (HPUC) is proceeding with a performance-based regulation (PBR) framework. HPUC plans to finalize the implementation details by the end of 2020. The proposal includes a five-year rate plan with an indexed annual revenue adjustment mechanism, coupled with existing capital recovery mechanisms in between rate cases. We expect this will improve the timeliness of both capital and operating cost recovery for utilities that could lead to improved profitability.

In addition, an earnings-sharing mechanism (ESM) and various performance incentive mechanisms (PIMs) are included. The proposed ESM shares excess earnings with customers and protects the utilities from extreme financial shortfalls. PIMs may provide potential earnings to a utility should it meet certain performance targets. Overall, we expect the new PBR framework will lead to more regulatory predictability and cash flow stability for utilities in Hawaii, including Hawaiian Electric Industries Inc.

Massachusetts

Due to the state regulatory commission's recent rate decision for utility Massachusetts Electric Co. in late 2019, we believe the regulatory environment is gradually improving. The Mass Electric rate case decision was the second major case that included a PBR mechanism, the first being NSTAR Electric Co. Such mechanisms provide for a more predictable formulaic rate setting construct that accounts for utilities' capital and operational spending, inflation over a five-year period, and a decoupling mechanism that provides downside protection irrespective of sales volume declines.

NSTAR Gas Co. recently filed for a similar PBR mechanism in their gas distribution rate case, and we are monitoring this development. Overall, even with our view of gradual improvement, we believe there could be

regulatory lag since the state uses historical test years when setting rates.

Mississippi

We continue to monitor the pending regulatory commission decision on Mississippi Power Co.'s (MPC) reserve margin plan (RMP), a request by the regulator to develop alternatives to lower its reserve margin. This plan could accelerate retirements for some of MPC's coal-fired power plants by 2022. We continue to monitor this proceeding to determine how the rate recovery of remaining book value of retired assets will be addressed.

Nevada

Following a legislative initiative in 2019, the Public Utilities Commission of Nevada (PUCN) initiated a proceeding and has conducted workshops regarding the options around alternative ratemaking plans that could include formula rates, decoupling, earnings sharing, and multiyear rate plans. In April 2020, PUCN released the first report that outlines efforts regarding potential alternative ratemaking mechanisms for Nevada's electric utilities. Ultimately a draft proposal may be issued in 2021 with regulations adopted after reviewing feedback from workshop participants. PUCN is evaluating whether alternative ratemaking would provide better incentives than traditional cost-of-service ratemaking for NV Energy Inc.'s regulated utilities, Nevada Power Co. and Sierra Pacific Power Co. This is to achieve state policy goals for lower carbon emissions, renewable energy, energy efficiency, and electric vehicle adoption while keeping costs down.

Also, the commission is examining whether alternative rates such as flexible pricing options for customer classes will capture utilities' cost of doing business and support financial stability while assuring the delivery

of safe and reliable electricity at a reasonable cost. The final determination is expected in 2021, and we will continue to monitor developments.

New York

Political attention toward utilities in the state was somewhat heightened during the past year following a blackout in summer 2019 in Consolidated Edison Inc.'s (Con Ed) service territory. In addition, Con Ed's and National Grid North America's (NGNA) implementation of gas distribution moratoriums to manage gas supply issues in the region added to the regulatory uncertainty. The moratoriums led to a letter in late 2019 from Gov. Andrew Cuomo indicating the state would move to revoke NGNA's certificate to operate its downstate gas franchise in response to NGNA's management of the gas supply issues in its service territory.

NGNA subsequently agreed to pay $36 million to compensate customers affected by its moratorium and support other energy conservation measures and projects, all of which reduced regulatory uncertainty. However, regulatory risk is still likely to persist because gas supply constraints remain a key issue for gas utilities in the state.

Con Ed has faced political pushback for some of its actions, including on the gas supply moratorium and summer 2019 blackout, but has avoided formal reprimands. This somewhat limits its regulatory and political risks. Despite the negative political attention, Con Ed achieved a somewhat constructive rate case decision from the New York State Public Service Commission (NYSPSC), including on a multiyear rate plan for its electric and gas operations at Consolidated Edison Co. of New York Inc. for rate increases totaling nearly $1.2 billion over three years beginning in 2020. While the multiyear rate plan provides some cash flow predictability, under this plan the authorized return on equity is 8.8%, lower than what is typical for peers.

New Mexico

In 2019, the state passed the Energy Transition Act (ETA) to eliminate carbon emissions by 2045 from electric utilities with interim targets. We believe this provides credit support to the retirement of fossil-fuel generation in the state. PNM Resources Inc. subsequently sought approval to close units at the San Juan coal-fired plant and securitize the plant abandonment costs. In early 2020, a New Mexico Supreme Court ruling confirmed the applicability of the ETA to PNM's plan and replacement power project. The commission is reviewing different options of the proposed replacement project.

An initiative is expected to be included on the state's 2020 general election ballot that, if approved, would require Public Regulation Commission members to be appointed. The constitutional amendment would change the PRC from a five-person elected body to a three-person agency, with members chosen by the governor from a list of candidates compiled by a nominating committee, beginning in 2023.

North Carolina

While some developments suggest possible improvement to regulatory risks, other issues remain unresolved. Specifically, passage of Senate Bill 559, a storm securitization measure, permits recovery for certain storm recovery costs. Duke Energy Corp. utilities Duke Energy Carolinas LLC and Duke Energy Progress LLC can use a new financing measure to recover restoration costs incurred after several storms and hurricanes in 2018. We consider this favorable for credit quality. Separately, in 2019, Duke Energy settled with the North Carolina Department of Environmental Quality and certain community groups to excavate seven of the nine remaining coal ash basins in North Carolina and partly excavate the other

two. Although this reduces legal uncertainty associated with the company's ash pond closure strategy, cost recovery for coal ash costs is still pending, which indicates some regulatory uncertainty.

Texas

We have not revised our regulatory jurisdiction assessment on the Public Utilities Commission of Texas (PUCT), which we consider to be very credit supportive. But we believe recent orders related to COVID-19 in addition to noteworthy trends stemming from recent rate proceedings require a comment.

In March 2020, PUCT issued orders related to COVID-19, suspending utility service disconnections for nonpayment and creating the COVID-19 Electricity Relief Program. We find this program to be constructive from a credit standpoint, specifically as it relates to the recoverability of unexpected costs arising from customer nonpayment due to the pandemic. We believe PUCT's action to be more proactive and demonstrates a commitment to credit quality compared to responses from other jurisdictions that relied only on deferrals of these costs as regulatory assets.

In multiple recent rate case decisions, PUCT approved more-leveraged hypothetical capital structures that reflect an equity ratio of 42.5%. This differs from previous trends when PUCT approved equity ratios of 45%. We believe these actions could weaken credit quality as utilities manage equity ratios down to this lower level, possibly weakening financial measures without offsetting adjustments.

Virginia

The Virginia Clean Economy Act passed in March 2020, which requires electric utilities to supply 100% of electricity from renewable sources by 2050. Intermediate targets are also set for utilities, including Virginia Electric & Power Co. and Appalachian Power Co., that require 30% of power to be supplied from renewables by 2030 and to close all carbon-emitting power plants by 2045 and 2050, respectively. The Grid Transformation and Security Act passed in 2018 allows utilities to rate-base large renewable projects. However, certain key risks remain, including concerns on the leveled cost of energy provided by new offshore wind projects, even though lawmakers have been historically supportive to the utilities' effort to expand wind capacity. The Clean Economy Act also grants the Virginia State Corporation Commission more oversight over major projects, including the 2.6-gigawatt offshore wind project with construction slated to start in 2024. Some risks may arise due to potential cost overruns or project delays, which could create pressure on the timely cost recovery and ratepayer affordability. We are closely monitoring the 12-megawatt pilot project, which may complete construction this summer.

Renewable Portfolio Standard And Clean Energy Standards

State-level clean and renewable energy standards greatly influence the overall strategic direction and growth investments of North American regulated utilities. Regulatory support through timely cost recovery helps support credit quality and facilitate the energy transition. A number of states are passing or proposing legislation that would require utilities to further scale back carbon emissions from power plants and utilize a greater percentage of renewable energy generation. Today, 31 states have a mandatory renewable portfolio standard (RPS), and seven have a voluntary renewable energy standard target.

The most recent state to adopt a mandatory RPS target is Virginia, which as of 2020 requires investor-owned utilities to achieve 100% renewable generation by either 2045 or 2050, depending on the entity, and a certain amount from solar and wind sources. Other states are revising their targets or passing additional legislation. Washington passed a bill to achieve net-zero carbon emissions by 2050. Maine requires state greenhouse gas emissions to be below 1990 levels by at least 45% by 2030 and at least 80% by 2050. Iowa, New Mexico, and Maryland have either passed or proposed legislation that would curb emissions and require more clean energy sources.

We will continue to monitor these developments for any impact.

Related Research

- Regulatory Responses To COVID-19 Are Key To Utilities' Credit Prospects, May 20, 2020
- U.S. And Canadian Regulatory Jurisdiction Updates And Insights: November 2019, Nov. 4, 2019
- Key Credit Factors For The Regulated Utilities Industry, Nov. 19, 2013

This report does not constitute a rating action.

Primary Credit Analysts:	Gerrit W Jepsen, CFA, New York (1) 212-438-2529; **gerrit.jepsen@spglobal.com**
	Dimitri Henry, New York + 1 (212) 438 1032; **dimitri.henry@spglobal.com**
Secondary Contacts:	Matthew L O'Neill, New York (1) 212-438-4295; **matthew.oneill@spglobal.com**

Obioma Ugboaja, New York + 1 (212) 438 7406;
obioma.ugboaja@spglobal.com

William Hernandez, Farmers Branch + 1 (214) 765-5877;
william.hernandez@spglobal.com

Andrew Ng, Toronto + 1 (416) 507 2545;
andrew.ng@spglobal.com

Sloan Millman, CFA, New York + 1 (212) 438 2146;
sloan.millman@spglobal.com

Beverly R Gantt, New York + 1 (212) 438 1696;
beverly.gantt@spglobal.com

Fei She, CFA, New York + 2124380405;
fei.she@spglobal.com

Kevin M Sheridan, New York + 1 (212) 438 3022;
kevin.sheridan@spglobal.com

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S&P Global
Ratings

Industry Top Trends 2021

North America Regulated Utilities

An Industry With A Negative Outlook Despite Its Predictable Cash Flows

December 10, 2020

Authors

Kyle Loughlin
New York
+1 212 438 7804
kyle.loughlin
@spglobal.com

Gabe Grosberg
New York
+1 212 438 6043
gabe.grosberg
@spglobal.com

Gerrit Jepsen
New York
+1 212 438 2529
gerrit.jepsen
@spglobal.com

Obie Ugboaja
New York
+1 212 438 7406
obie.ugboaja
@spglobal.com

Matt O'Neill
New York
+1 212 438 4295
matthew.oneill
@spglobal.com

What's changed?

Governance risks. Uncharacteristically, in 2020 the industry experienced a number of high profile governance-related issues stemming from bribery allegations.

COVID. Despite the many potential COVID-19-related risks, the industry was able to offset many of the risks and generally performed well throughout the pandemic.

Key transitions are accelerating. Strategic M&A deals will drive further consolidation, while capital spending will be fueled by transitioning to a lower carbon footprint and asset hardening.

What are the key assumptions for 2021?

Negative discretionary cash flow. The industry's high capital spending and dividends account for about $180 billion, necessitating consistent access to the capital markets at a reasonable price.

No change to the corporate tax rate. While not in our base case, should Democrats take hold of a majority of the U.S. Senate, a higher corporate tax rate is likely, improving the industry's funds from operations to debt by about 100 basis points.

Greenhouse gas (GHG) emissions will further decline. Although the industry reduced its GHG emissions by about 25% over the past decade, given the renewable investments, we expect a subsequent 40% reduction over the next decade.

What are the key risks around the baseline?

Environmental risks. Despite its significant carbon emission reductions, the industry is still the number two GHG emitter and further progress is necessary. This necessitates managing regulatory risk while managing the customer bill.

Financial Cushion. Many companies in the industry continue to strategically operate with very minimal financial cushion, maintaining financial measures that are just above their downgrade threshold.

Regulatory risks. During 2019, regulatory lag increased highlighted by rate case filing postponements, delayed rate case orders, and lower than expected rate case outcomes because of COVID and the economic recession.

Ratings trends and outlook

North America Regulated Utilities

Chart 1

Ratings distribution

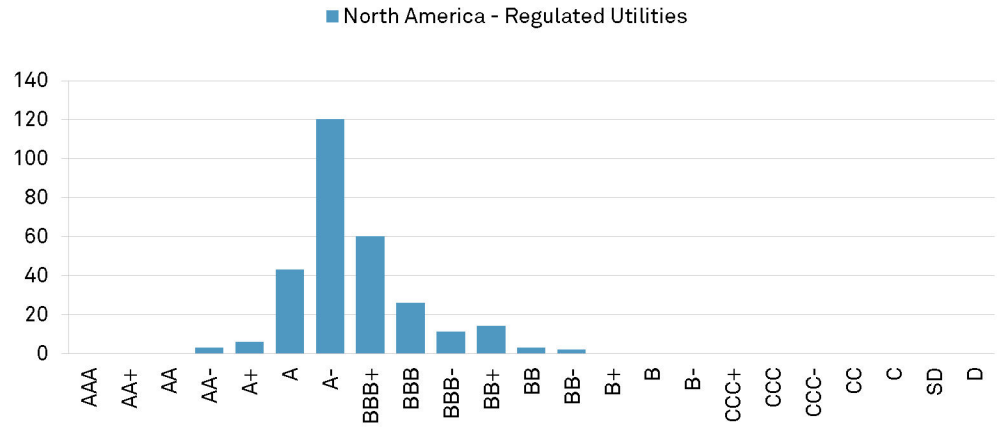


Chart 2

Ratings outlooks

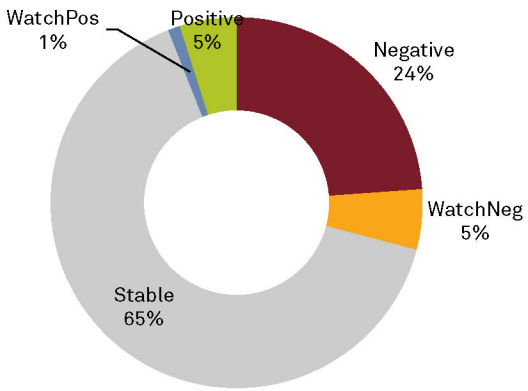
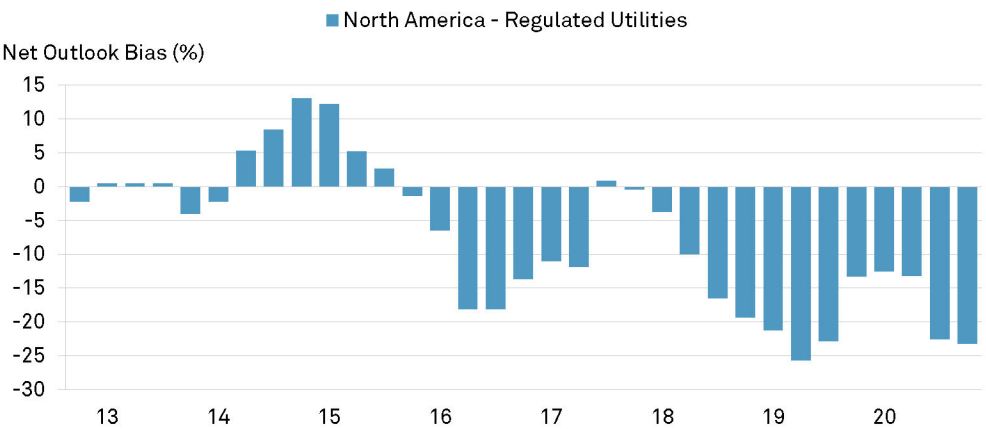


Chart 3

Ratings outlook net bias



Source: S&P Global Ratings. Ratings data measured at quarter end. Data for Q4 2020 is end October, 2020

Industry credit metrics

North America Regulated Utilities

Chart 4

Debt / EBITDA (median, adjusted)

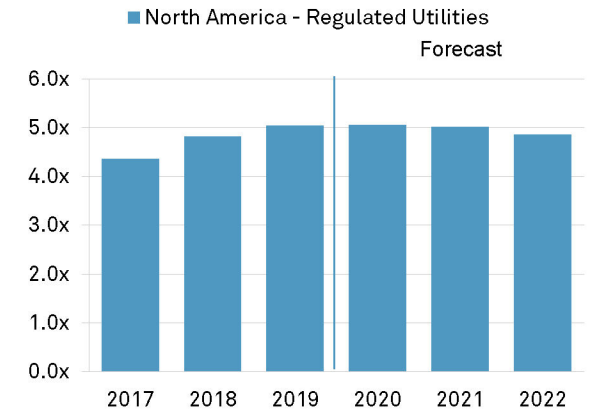


Chart 5

FFO / Debt (median, adjusted)

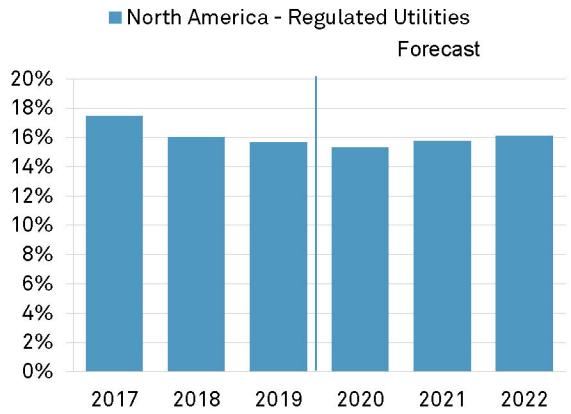


Chart 6

Cash flow and primary uses

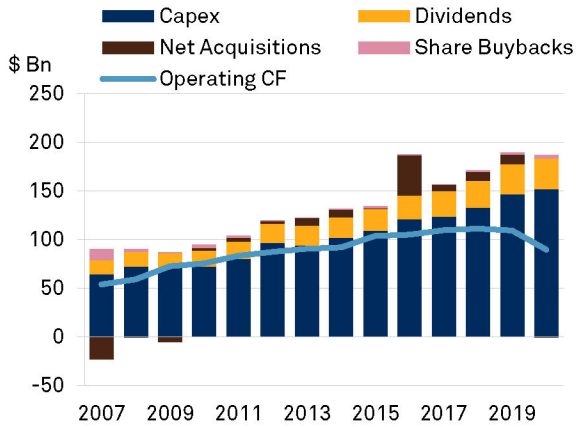
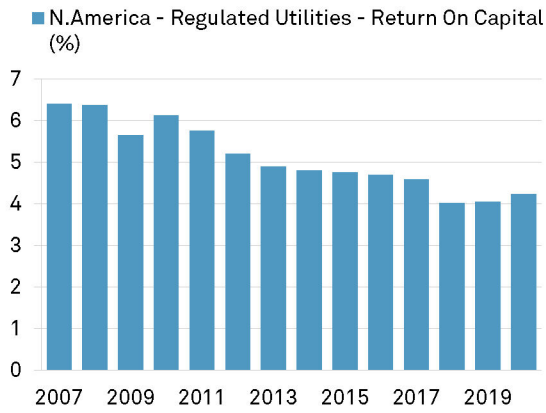


Chart 7

Return on capital employed



Source: S&P Global Ratings, S&P Global Market Intelligence. Most recent (2020) cash flow and ROCE figures are using last twelve months (LTM) data. All non-forecast figures are converted into U.S. Dollars using historic exchange rates. Forecasts are converted at the last financial year-end spot rate. FFO—Funds from operations.

Shape of recovery

Table 1

Sector Outlook Heatmap

	Sensitivities and Structural Factors			Shape Of Recovery			
	COVID-19 Sensitivity	Impact If No Vaccine in 2021	Long-Term Impact On Business Risk Profile	Revenue Decline – 2021 vs 2019	EBITDA Decline – 2021 vs 2019	Revenue Recovery To 2019 Levels	Credit Metric Recovery To 2019 Levels
Utilities							
Asia-Pacific	Low	Low	Neutral	>=2019	>=2019	2021	2021
Europe	Low	Low	Neutral	>=2019	>=2019	2021	2022
Latin America	Moderate	Moderate	Neutral	>=2019	>=2019	2021	2021
North America	Low	Low	Neutral	>=2019	>=2019	2021	2022

Source: S&P Global Ratings.

S&P Global Ratings believes there remains a high degree of uncertainty about the evolution of the coronavirus pandemic. Reports that at least one experimental vaccine is highly effective and might gain initial approval by the end of the year are promising, but this is merely the first step toward a return to social and economic normality; equally critical is the widespread availability of effective immunization, which could come by the middle of next year. We use this assumption in assessing the economic and credit implications associated with the pandemic (see our research here: www.spglobal.com/ratings). As the situation evolves, we will update our assumptions and estimates accordingly.

This report does not constitute a ratings action.

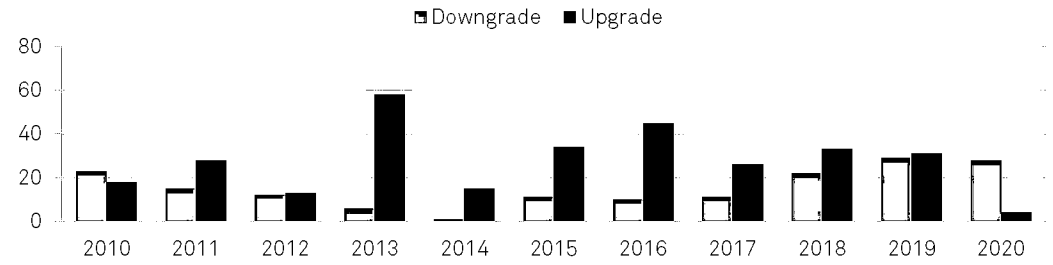
Industry outlook

Ratings trends and outlook

The industry's rating trends and outlook are negative. About 30% of North American regulated utilities either have a negative outlook or are on CreditWatch with negative implications. For the first time in a decade we expect downgrades will outpace upgrades by about 7 to 1 (see chart 8). The high percentage of negative outlooks reflect relatively weak financial measures driven by high capital spending and the effects of various Environmental, Social, and Governance (ESG) factors.

Chart 8

North America regulated utilities upgrades and downgrades



Source: S&P Global Ratings

Main assumptions about 2021 and beyond

1. Robust capital spending

The industry's capital spending has been steadily growing over the past decade. We expect 2021 capital spending at about $150 billion for critical infrastructure projects including system hardening and upgrades, technology, renewable energy, batteries, and other carbon-emission reductions. We expect that over the next decade renewables in the U.S. will triple, displacing much of the remaining coal-fired generation.

2. COVID-19 will subdue electric deliveries to commercial customers

Over the past decade, because of conservation, the industry has experienced flat to negative electric deliveries. Accordingly, the industry has worked with regulators to mitigate the potential negative financial effects of conservation. This includes implementing formula rates, forward-looking test years, and decoupling. Another risk regarding the lack of volumetric growth is the effect COVID-19 has had on commercial customers. During 2020, electricity sales to commercial customers decreased by about 8% and this decrease could continue through much of 2021. We expect the industry will work with regulators to offset at least some of the financial effects of these lower electric deliveries. Absent regulatory recovery, financial measures would modestly weaken.

3. Strategic focus on a simpler business model

The industry has recently seen companies either announce or complete a sale, separation, or evaluate strategic alternatives for their non-utility businesses. Because of our generally favorable assessment of the low-risk regulated utility industry, we tend to assess these decisions as improving business risk. However, in many instances credit quality does not improve because the new stand-alone utility is more leveraged, weakening financial measures, and thereby offsetting the improved business risk.

The industry has managed most of its coronavirus-related risks. It offset some of its lower commercial and industrial deliveries as a result of COIVID with higher residential deliveries. It worked with regulators to defer much of the COVID-related costs for future recovery. These actions, in conjunction with the industry's generally consistent access to the capital markets, offset much of the potential risks stemming from the pandemic.

One of the enduring effects of COVID-19 was regulatory lag. The industry experienced delayed rate case filings, delayed rate case orders, and weaker-than-expected rate case outcomes. As the pandemic ends (which could happen in mid-2021) and the economy improves, we expect the industry's management of regulatory risk will improve. This includes timely rate case filings and rate case orders, decreasing the regulatory lag.

For 2021, we expect volumetric growth will continue to be constrained, reflecting conservation and lower commercial electricity use related to COVID-19. Under our base case, the industry will continue to work with regulators to offset these potential risks.

We expect that over the next decade U.S. utility investments in renewable energy will triple to about 30% from approximately 10% today. In the U.S., one of the newer areas of renewable energy is offshore wind. We believe utility investments in U.S. offshore wind will significantly grow and may lead to the installation of as much as 14 gigawatts of offshore wind capacity by 2030. This would equate to more than three quarters of all the offshore capacity installed in Europe, which has been developing and installing offshore wind projects for the past three-decades. The potential growth is primarily driven by regulatory policies in states along the East Coast looking to meet renewable and clean energy targets.

Currently in the U.S. there is only one online offshore windfarm (Block Island Wind), but companies such as Avangrid, Eversource, Public Service Enterprise Group, and Dominion Energy could all have projects online by 2023. In general, we view offshore wind as having higher risk than traditional onshore wind projects due to generally higher costs, complexity to build, possible siting and permit delays, supply chain risks, and higher operational risks. However, the long-term contracted nature of these projects with other utilities could mitigate some of the aforementioned risks.

Credit metrics and financial policy

Over the last few years the industry's financial measures have weakened. This reflects a combination of tax reform, rising capital spending, regulatory lag, and lower authorized return on equity. The industry's return on capital was about 6% a decade ago and today is closer to 4%. More recently, we have seen instances where not only is the authorized return on equity (ROE) lowered but also the equity ratio is lowered. These results have weakened the industry's financial measures, pressuring credit quality.

Key risks or opportunities around the baseline

1. Operation and maintenance (O&M) cost reductions

The industry is pursuing multiple paths to reduce O&M costs, incorporating technology, productivity gains, and reducing its real estate footprint. While the reduction of these costs is ultimately passed back to ratepayers, lower O&M costs reduces the customer bill, supporting the industry's ability to maintain its robust capital spending programs while mitigating rate implications.

2. Effective management of regulatory risk

Managing regulatory risk is one of the most important elements for maintaining credit quality, which is often challenging because of regulators' concern regarding the impact to the customer bill. However, this may prove even more difficult should the economy remain weak and the pandemic persist for longer than expected. As the industry continues to invest in renewable energy, recovering these investments (while often simultaneously recovering an earlier-than-expected retirement of a coal generating facility) may be difficult. Rising interest rates, higher inflation, or a higher corporate tax rate all of which would increase the customer bill, could make it more challenging for the industry to effectively manage regulatory risk. Similarly, timely recovery of other large environmental costs, such as coal ash, further complicates the matter. All of these simultaneous challenges will pressure the industry's ability to effectively manage regulatory risk.

3. Environmental, Social, and Governance (ESG) risks

Part of the industry's 2020 weakening of credit quality is directly attributed to ESG risks. The industry continues to face environmental hazards, including West Coast wildfires, Southeastern hurricanes, and continued exposure to carbon-based emissions. Social risks in the wake of COVID-19, including delayed rate case filings, delayed rate case orders, and lower-than-expected rate case outcomes have, in certain instances, contributed to somewhat weaker financial measures. Lastly, the industry faced high-profile governance issues in 2020 based on bribery allegations. The subsequent investigations in Ohio and Illinois revealed a lack of sufficient internal controls, and violations of company policies and code of conduct. The industry regularly interacts with policymakers and lobbies on behalf of various laws and regulatory constructs to advance its interests. Should the governance issues become more widespread, confidence in the utility industry would likely weaken, pressuring credit quality.

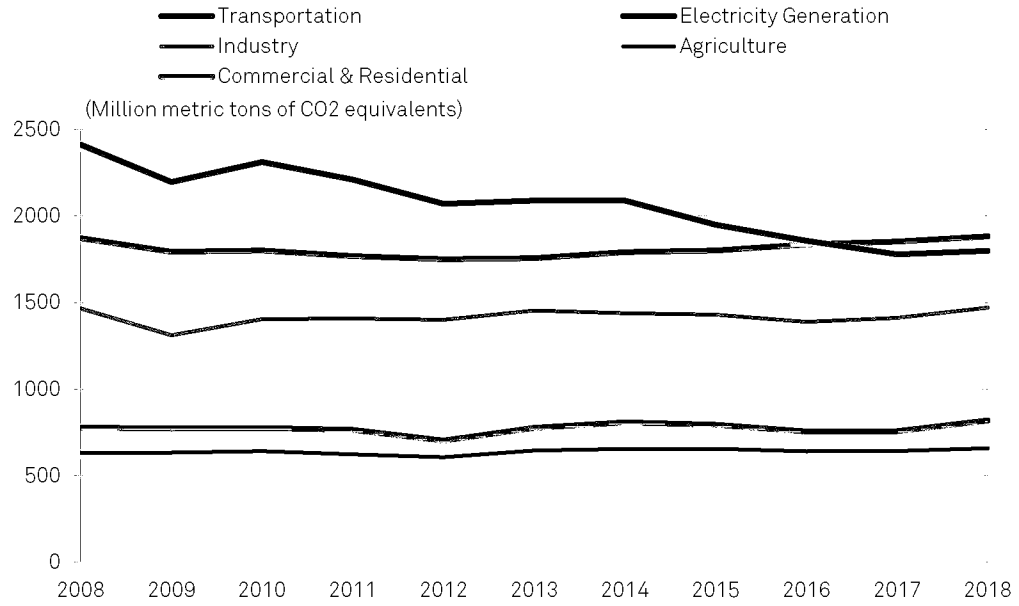
Managing the customer bill is always an important aspect of managing regulatory risk but today it is even more so given the pandemic and the effects it has had on the economy. The utility industry has benefited over the past decade from lower-cost shale gas and historically low interest rates. However, as capital spending continues to drive up the customer bill, the industry must find savings elsewhere—from fuel, technology, and process improvements—so as not to overburden the customer. Typically a utility that is increasing capital spending by $1 would have to identify costs savings of 10-20 cents to avoid increasing the customer bill once rate recovery is sought for the new investments.

Environmental risks are elevated for the industry. Over the past decade it has made strides in reducing its reliance on coal fired generation and its associated level of carbon-based emissions. The industry is no longer the number one North America emitter of carbon-based pollutants (see chart 9). Still, about 30% of electric utilities rely on coal-fired generation that comprises at least 50% of their electricity production. Additionally, about two-thirds of those utilities rely on coal-fired generation for more than 70% of their total generation. Investors are increasingly focused on environmental issues and we

expect the industry will continue to decrease carbon-based emissions by using more renewables and batteries.

Chart 9

GHG emissions by U.S. economic sector



Source: U.S. Environmental Protection Agency.

Western U.S. states faced unprecedented wildfire activity in 2020. In our view, this was indicative of an environment that is more susceptible to frequent and more severe wildfires. Still, California's investor-owned electric utilities have not caused a catastrophic wildfire in 2020. This, and the recent northern California rainfall, is supportive of credit quality. While wildfires remain operationally challenging for California's utilities, we believe the benefit of the wildfire fund created through SB 1054 adds sufficient financial credit enhancements to protect utilities' credit quality over the next several years, absent near-term catastrophic wildfires.

Higher coal ash costs may be a rising risk for a few electric utilities. Coal ash is a byproduct of burning coal. While the industry, in general, has managed this risk, in some cases this risk is escalating.

We believe natural gas will serve as a bridge fuel and do not expect it to expand at the rate experienced over the past decade. As such, as coal plants continue to close, we expect the electricity output will primarily be replaced with renewables and batteries. Despite the utility industry's already reducing its GHG emissions by about 25% over the past decade, we expect it will further reduce its GHG emissions by an incremental 40% over the next decade.

Related Research

- Updates And Insights On Regulatory Jurisdictions Shaping Policies For North American Utilities--November 2020, Nov. 9, 2020
- U.S. Regulated Utilities' Credit Metrics Could Strengthen Under Proposed Biden Tax Plan, Oct.29, 2020
- How Diverging Energy Policies In The U.S. Presidential Election May Affect Credit Quality, Oct. 23, 2020
- Recent Cases In Ohio And Illinois Underscore The Importance Of Effective Governance For North American Regulated Utilities, Oct. 23, 2020
- The Energy Transition: COVID-19 Undermines The Role Of Gas As A Bridge Fuel, Sept. 24, 2020
- North American Regulated Utilities Face Tough Financial Policy Tradeoffs To Avoid Ratings Pressure Amid The COVID-19 Pandemic, May 11, 2020
- COVID-19: While Most Of The U.S. Is Shut Down, Utilities Are Open For Business, May 4, 2020
- COVID-19: The Outlook For North American Regulated Utilities Turns Negative, April 2, 2020
- North American Regulated Utilities Face Additional Risks Amid Coronavirus Outbreak, March 19, 2020
- ESG Industry Report Card: Regulated Utilities Networks, Feb. 11, 2020
- Environmental, Social and Governance: ESG Industry Report Card: Power Generation, Feb. 11, 2020