



**U.S. Department of
Transportation**
Office of the Secretary
of Transportation

General Counsel

**400 Seventh St., S.W.
Washington, D.C. 20590**

October 29, 2007

Vernon A. Williams, Secretary
Surface Transportation Board
395 E Street, S.W.
Washington, D.C. 20423

Re: Methodology to be Employed in Determining
The Railroad Industry's Cost of Capital
Ex Parte No. 664

Dear Secretary Williams:

Submitted herewith pursuant to the Notice of Proposed Rulemaking served August 14, 2007,
are the Reply Comments of the United States Department of Transportation in the above-
referenced proceeding.

Respectfully,

A handwritten signature in cursive script, reading "Paul Samuel Smith".

PAUL SAMUEL SMITH
Senior Trial Attorney

(202) 366-9280

Enclosure

**Before the
Surface Transportation Board
Washington, D.C.**

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Methodology to be Employed in	)	
Determining the Railroad Industry's	)	Ex Parte No. 664
Cost of Capital	)	
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**Comments of the
United States Department of Transportation**

INTRODUCTION

The Surface Transportation Board (“STB” or “Board”) in this proceeding faces an issue of central importance: the appropriate methodology to use in determining the railroad industry’s cost of capital. Notice of Proposed Rulemaking, served August 20, 2007 (“NPRM”). The cost of capital is calculated every year to determine whether a railroad has met the statutory goal of “revenue adequacy.” Carriers that have earned the cost of capital are deemed revenue adequate, and are presumed able to attract or retain the funds necessary for investment in their operations and infrastructure. Railroads not earning the cost of capital are found to be revenue inadequate, and are subject to the contrary presumption. The cost of capital as calculated by the STB has direct implications for a number of regulatory purposes, notably the traffic subject to the agency’s jurisdiction and rail rates. Ultimately, rail carriers that are revenue adequate over an as-yet unspecified number of years may be restricted in their ability to engage in differential pricing.

The record reflects serious disagreement among the parties as to the appropriate methodology for determining the cost of capital. More telling, however, is a shared belief that, properly implemented with reasonable and consistent assumptions, the different models used to calculate the cost of capital should tend to produce results within a relatively narrow range. The importance of ensuring that the methodology adopted will reliably produce a realistic cost of capital, and the sometimes dramatic disparity between the results produced by both models the Board has considered, strongly suggest the need to scrutinize anew the basic inputs and assumptions employed in the methodology or methodologies selected.

The United States Department of Transportation (“DOT” or “Department”) favors the Capital Asset Pricing Model (“CAPM”), subject to such a reconsideration. DOT also recommends a transition period during which the STB would use a multi-stage version of the discounted cash flow (“DCF”) model as a check on the results obtained from CAPM. Indeed, the Board may wish to use the average of both models or a combination of estimates from independent sources in order to ensure the estimate produced is reasonably consistent with those used by financial analysts in the real world. In the interests of avoiding untoward consequences for investment decisions in an industry in need of substantial capital investment, we also caution the STB to implement its chosen methodology in a gradual manner if that model results in a significant difference from the cost of capital as calculated in recent years.

BACKGROUND

A. The Importance and Uses of the Cost of Capital

More than twenty-five years ago the Board's predecessor recognized that railroads, like other sectors in the economy, are required by investors to pay a price for the use of capital. "[T]he current cost of capital ... [is] the minimum necessary to attract and maintain capital in the railroad, or any other, industry. ... If a firm is unable to earn the cost of capital, investors will be unwilling to supply capital to it." Standards for Revenue Adequacy, 364 I.C.C. 803, 804 (1981).¹ The same is true of internally generated funds. "Railroad management has little incentive to reinvest funds generated by ratepayers in continued rail uses if greater returns are available elsewhere. Railroads are private companies whose stockholders would not permit such reinvestment." Id. at 810.

The cost of capital is significant as a regulatory matter because Federal law requires the STB to regulate railroads so as to encourage the industry to generate returns equal to the cost of capital over the long term (i.e., to become revenue adequate).⁴⁹ U.S.C. § 10704(a)(2),(3). At the same time the Board must also protect shippers against unreasonably high rates, even from revenue inadequate carriers. 49 U.S.C. §§ 10701(d), 10702.² Once a railroad achieves long-term revenue adequacy, the Board may move to restrict such a carrier's pricing flexibility. "[C]aptive shippers should not be required to

^{1/} See also 3 I.C.C.2d 261, 267-68 (1986).

^{2/} A rail rate "may be unreasonable even if the carrier is far short of revenue adequacy." Coal Rate Guidelines, Nationwide, 1 I.C.C.2d 520, 536 (1985). If that were not the case, since no railroad has yet been deemed revenue adequate for a sufficiently long term, no rate complaint by shippers could ever have been successfully brought.

continue to pay differentially higher rates than other shippers when some or all of that differential is no longer necessary to ensure a financially sound carrier capable of meeting its current and future service needs.” 1 I.C.C.2d at 535-36. ³

B. Cost of Capital Methodologies

In calculating the cost of capital the STB in effect puts itself in the shoes of potential investors and attempts to compute a cost of capital that would justify investing in the stock of firms in the regulated industry. The Board has properly acknowledged that there is no single “correct” or absolutely accurate means of determining the cost of capital. That is so because the cost of capital comprises both the cost of equity and the cost of debt, and only the latter may be known with something approaching certainty; the cost of equity can only be approximated. NPRM at 2. In other words, the cost of capital determination is only an estimate of how the markets will value a stream of income from a firm subject to a specific regulatory cost of capital.

The STB currently calculates the cost of capital using a DCF model to estimate the cost of equity. Under this approach, the railroad industry’s cost of capital is a weighted average of the cost of debt and the cost of equity, with the weight determined by the capital structure of the industry. ⁴ The DCF methodology, adopted more than

^{3/} As we discuss later, neither the Interstate Commerce Commission nor the STB have ever discussed in any detail either the appropriate time period for which a railroad must be revenue adequate before constraints on its pricing freedom apply, or the nature and extent of such constraints. The Board should promptly address these basic questions in order to provide clarity and predictably in this very uncertain and important area.

^{4/} NPRM at 2. Railroads, in common with other businesses, will establish a capital structure -- the mix of corporate debt and stock equity -- that best allows them to maximize stockholder returns while balancing the risks from overreliance on corporate debt with the nature of their business.

twenty years ago, uses a forecast of dividends (“D”) and stock growth (“g”) to estimate the cost of equity (“ r_e ”), using the formula below:

$$r_e = \left(\frac{D_0}{P_0} \right) \times \left(1 + \frac{g}{2} \right) + g^5$$

The problem with the current DCF model, acknowledged by the STB, is that it assumes a growth rate that never changes. NPRM at 4-5. Thus, when the (five year) growth rate employed is high, the result overstates the cost of equity and in turn the cost of capital. Similarly, when the growth rate is low, the result understates the cost of equity and of capital. Id.

Another problem with the current DCF model identified by the parties is that the estimate of the cost of capital can be affected by systematic biases in financial analysts’ growth forecasts.⁶ For these reasons, the Board has proposed to revise its method for calculating the railroad industry’s cost of capital, discontinuing use of the DCF model and adopting the CAPM.

C. Economic and Policy Implications of the Cost of Capital

Long ago the STB’s predecessor declared that the proper regulatory framework should ensure that capacity investments are not discouraged or skewed by governmental actions. “If railroads earn less than adequate rates of return because of inappropriate regulatory action, rather than because they are not providing a desired service, then the standards of the [Staggers] Rail Act and the clear thrust of congressional policy will be

⁵ r_e = cost of equity, D_0 = current dividend, P_0 = current price, g = expected growth in future earnings
See Railroad Cost of Capital – 1982, 367 I.C.C. 662, 670 (1983)

⁶/ See, e.g., Comments of Partha Mohanram (“Determining an Appropriate Cost of Capital for Railroads”) at 11.

thwarted.” 364 I.C.C. at 810. The Department, too, has consistently advocated such a regime.⁷

The Staggers Rail Act of 1980 created a regulatory structure that provided railroads with the market flexibility to attract private investment. The Act has been an overwhelming success; the railroad industry has moved from the verge of bankruptcy to profitability and growth, while shippers have enjoyed lower rates and more responsive service. Increased demand for transportation services, improved service levels, and more competitive rates helped railroads attract more traffic. Until a few years ago, the cushion of excess capacity, coupled with significant productivity gains, allowed the rail system to absorb this growing demand with relatively modest additional investment. *Id.*

However, the capacity provided by that cushion has been exhausted, and the relatively “easy” capacity expansion projects have already been implemented. Railroads are now faced with the need to invest heavily in order to expand their systems to meet continued strong demand.

The carriers have already made significant investments, and plan to invest more. See Comments of Union Pacific Railroad Co. at 6-7. Indeed, the fact that railroads have been able to maintain a steady stream of capital investment, despite being repeatedly deemed revenue inadequate, raises the question whether the STB’s estimates of the cost of capital have been too high. Nonetheless, where, as here, additional investments require the commitment of large sums of money, a significant amount of time to complete, and an even longer period before their benefits are realized, a relatively

^{7/} See, e.g., DOT submissions in the following Board proceedings: Ex Parte 671, Rail Capacity and Infrastructure Requirements; Ex Parte 658, Twenty-Fifth Anniversary of the Staggers Rail Act, and Ex Parte 657 (Sub-No. 1) Major Issues in Rail Rate Cases.

predictable long-term favorable revenue outlook is necessary. Otherwise, projects are simply less apt to be undertaken. As a result of both current capacity constraints and higher rail rates, there has been increasing tension between carriers and shippers on rate and service levels.

In the face of virtually universal agreement that the nation's rail infrastructure has been stretched to its limits by robust demand, the solution ordained by sound economic policy is evident: additional capital investment in order to expand system capacity. A recent study submitted by the Association of American Railroads ("AAR") concludes that the railroad network will require \$148 billion over the next thirty years to ensure that the required capacity is available just to maintain the industry's current market share. AAR Comments at 4, and Appendix. Even if this precise amount is self-serving, there is no dispute from any quarter that massive capital investment is required. Still more will be necessary if railroads are to grow their market share and provide some relief to highway congestion and pollution.

The STB's difficult task of balancing the Act's sometimes inharmonious goals is best met in this proceeding by adopting the methodology that produces the most realistic estimate of the cost of capital. A real-world cost of capital avoids finding railroads "revenue adequate" that are nonetheless unable to raise enough capital for needed capacity investments. It also avoids finding railroads "revenue inadequate" when they are in fact able to raise capital in the marketplace. Finally, it continues to help provide shippers with the appropriate level of protection against unreasonable rates, whatever the financial status of the carrier.

D. A Caution

Before turning to specific proposals or models, the Department wishes to emphasize the importance of predictability and transparency in the investment context. Sudden and dramatic changes in the cost of capital estimates engender uncertainty in investors and companies generally.⁸ This tendency is more pronounced when capital projects are substantial and particularly long-lived, as they are in the railroad industry. The aforementioned regulatory unknowns about the indicia of long-term revenue adequacy and its consequences for rail pricing flexibility can only exacerbate the risk inherent in investment decisions.

Periodic reconsideration of regulatory judgments and soundly-based modifications to those decisions are to be applauded, and DOT commends the Board for undertaking this effort. But in order to guard against both error and unintended consequences in a subject as important as the cost of capital in a time of strained capacity, the Department urges the STB to implement its decision in a gradual manner, should that decision result in a significant departure from the cost of capital as calculated in recent years.

Finally, as already noted, neither the Board nor its predecessor have addressed in any detail the length of time a railroad must be deemed revenue adequate before restraints on its ability to price differentiate apply; nor has there been any guidance on the nature and extent of such restrictions. These matters may remain of academic interest when rail carriers are largely and for long periods less-than-robust financially. However, such uncertainty is less appropriate at present, when a combination of factors (scarce network

^{8/} See NPRM at Tables 1 and 2, comparing the results from different models.

capacity, the need to secure large amounts of capital to redress this, the time required to complete and benefit from major projects) tends to suggest a future in which rail carrier revenues may be at historically high levels. In these circumstances DOT encourages the Board to begin to clarify these important matters promptly.

THE DEPARTMENT'S RECOMMENDATIONS

The shipper and railroad parties disagree about a great many things in their comments. That is perhaps to be expected, given the different implications for rail rates that flow depending on whether a particular methodology produces a higher or lower cost of capital. What is most striking from DOT's perspective, however, is a shared consensus among major shipper and carrier representatives: that, properly implemented, different models should yield cost of capital results within a narrow range. Comments of AAR at 7, 13-15, 28; CSX Transportation Co. at 8; Western Coal Traffic League ("WCTL") (comments dated December 8, 2006) at 2, 6-7, 10 and Verified Statement of Dr. James E. Hodder ("Hodder VS") (filed September 27, 2007) at 2.⁹ That is perhaps also to be expected, since cost of capital calculations are largely methods of valuing stocks, and significant differences in their assessment would not ordinarily be anticipated. When similar results are not obtained, it is the critical inputs and assumptions of each method that are most likely responsible. Comments of Norfolk Southern Railway Co. at 2; AAR at 5-6; WCTL at 7; see also Monraham at 35.

The sometimes dramatic disparities between the cost of equity and the cost of capital produced by the multi-stage DCF and CAPM approaches considered by the Board

⁹/ Unless otherwise specifically indicated, references to WCTL comments are to those submitted following the Advance Notice of Proposed Rulemaking in this proceeding, and dated December 8, 2006.

are thus troublesome. These results strongly suggest that the inputs and assumptions employed require serious reconsideration. The parties have focused -- and differ -- on several of these: beta, risk premium, and the appropriate time period from which to draw historical data. See, e.g., Comments of U.S. Department of Agriculture at 3-4; Burlington Northern Santa Fe Railway Co. at 4-5; WCTL at 6-8 (comments filed September 27, 2007); AAR at 6, 17, 21.¹⁰ The Department addresses these and other relatively technical matters in the attached Appendix.

The record offers another reason for concern as well: the prospect that the STB's approach yields a result so different from others as to be an outlier, and a low one at that. The agency's result for the most recent year is below any estimate calculated by a wide variety of parties in this proceeding, including those from the carrier or shipper representatives most directly interested in the outcome.

The Department in the Table below has collected the 2005 cost of equity estimates compiled in the record of this proceeding.¹¹ They range from 7.2 percent to at least 12.13 percent (or up to 16.1% if individual carriers are to be considered). Despite different methods and different assumptions, most of the parties' estimates tend to fall between 10 and 12 percent. Each year's results are of course important; if such a range were to exist over a span of years, the prospect of harm from misapplied regulatory

¹⁰/ Additional factors are also raised, but many (such as the appropriate valuation of the railroads' asset base or treatment of their capital structure) are beyond the scope of this proceeding. NPRM at 6, 9.

¹¹/ Sources: NPRM, Table 1; Comments of WCTL (Crowley VS at 18 and Hodder VS at 158); AAR (Hubbard VS at 4); Snively, King, Majors, O'Connor & Lee at 13; Mohanram at 42-43. AAR and Mohanram (using a different model) both calculated figures for individual railroads; the range is included in parentheses in the Table, and the stand-alone figure is the median of each party's range.

were to exist over a span of years, the prospect of harm from misapplied regulatory consequences would be multiplied. The assumptions and inputs used by the Board require a full examination.

PARTY	AFFILIATION	2005 Cost of Equity Estimate
AAR	Railroad	11.1% (8.8% to 13.1%)
WCTL	Shipper	10.41% and 9.51%
Snavelly, King	Uncertain	12.13%
Mohanram	Independent	11.95% (11.6% to 16.1%)
STB - CAPM	Agency	8.4%
STB – Two-stage DCF	Agency	7.2%

Of the three models discussed in the NPRM, DOT would discard only the current DCF approach. As the Board has acknowledged, its assumption of a constant, perpetual growth rate skews the cost of equity unrealistically. NPRM at 2, 4. The multi-stage DCF and CAPM methodologies do not suffer from such an inherent flaw, and with the appropriate inputs and assumptions the Department would have the STB employ them both for a transition period as a check one upon the other. See also Hodder VS at 2.¹² Assuming that both would produce roughly similar results over such a time, we would then support use of CAPM alone.

The Board has explained the conceptual virtues of CAPM and its widespread use among government regulatory agencies and private sector financial analysts. NPRM at 6-7. DOT is persuaded of the potential primacy of this approach using the proper inputs and assumptions. We also see real value in the use of a multi-stage DCF methodology in tandem with CAPM for at least some initial period. Although the STB correctly notes

^{12/} Moreover, the combination of an *ex post* model (multi-stage DCF), which uses historical data, and *ex ante* approach (CAPM), which uses financial forecasts, could impart more stability to the calculation.

that the selection of the “stages” or time periods to use in the multi-stage DCF is subject to a variety of considerations (Id. at 5-6), the Board has also properly acknowledged that it “must make judgment calls” with CAPM as well, and that disputes remain over the superior method. Id. at 6. This will likely always be the case in an esoteric area such as this.

There is precedent among regulatory agencies for the Department’s recommendations. Not only has the Federal Energy Regulatory Commission adopted a multi-stage DCF model, but the Federal Reserve Board has also used multiple methodologies (including DCF and CAPM) for a transition period before settling upon CAPM. NPRM at 5; Testimony of the Board of Governors of the Federal Reserve Board (presented February 15, 2007) at 6-8. The STB’s Canadian counterpart (the Canadian Transportation Agency) calculates the cost of equity for Canadian carriers only after considering both DCF and CAPM. NPRM at 6. Finally, the record appears to show broad support among the major representatives of railroads and shippers for such a cross-check. See Comments of AAR at 28; WCTL at 7; Hodder VS at 3.

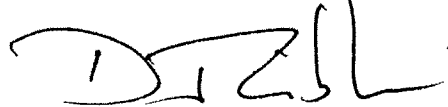
CONCLUSION

The cost of capital is a profoundly important figure for railroads and shippers that cannot be measured directly. The ramifications for capital investment, rate levels, and future service, however, demand that the Board adopt a methodology that produces realistic estimates of this figure. They also suggest the need to clarify the details of regulatory responses to railroads that are truly revenue adequate over time. More than one methodology can reliably produce accurate estimates, but only if carefully considered

assumptions and financial inputs are also employed. Any estimates should generally agree with the results produced by competent independent financial analysts.

The disparity between the multi-stage DCF and CAPM approaches as calculated by the Board, as well as the comparatively low level of the agency's most recent costs of equity calculation, prompt the Department to qualify its endorsement of the STB's proposal. DOT recommends that the Board undertake a serious review of the inputs and assumptions used in both models. We also urge the use of both models for a transition period in order that each might serve as a check upon the other's results. Only after the CAPM method demonstrates its merit should it be adopted without reservations.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'D.J. Gribbin', with a stylized flourish at the end.

D.J. GRIBBIN
General Counsel

October 29, 2007

APPENDIX

PROPOSED METHODOLOGIES AND INPUTS

Multi-stage DCF

The single-stage DCF historically employed to calculate the cost of capital has the benefit of simplicity and provides a closed form solution. Comments of Mohanram at 11. A multi-stage DCF model, on the other hand, avoids the constant growth rate flaw of the single-stage DCF and offers a more robust methodology. Hodder VS at 2. A multi-stage DCF allows the use of multiple growth rates to reflect industry trends more realistically, such as different growth rates in the near-, mid-, and long-term. Equation 1 below represents a multi-stage DCF, where g_a , g_b , and g_t are the different growth rates in the near, mid and long term respectively. Id. at 3.

Equation 1

$$P_0 = \frac{D(1)}{1+r_e} + \frac{D(1)(1+g_A)}{(1+r_e)^2} + \frac{D(1)(1+g_A)^2}{(1+r_e)^3} + \dots + \frac{D(T_A)}{(1+r_e)^{T_A}} + \frac{D(T_A)(1+g_B)}{(1+r_e)^{T_A+1}} + \frac{D(T_A)(1+g_B)^2}{(1+r_e)^{T_A+2}} + \dots + \frac{D(T_B)}{(1+r_e)^{T_B}} + \frac{D(T_B)(1+g_T)}{(1+r_e)^{T_B}}$$

P = Price of share

r_e = Cost of equity

D = returns

g_a = near term growth rate

g_b = mid-term growth rate

g_t = long-term growth rate

T_A = Near term years

T_B = Mid-term years

CAPM

CAPM estimates the cost of equity based on risk assessment. The CAPM methodology is represented in Equation 2 below, where the rate of return on equity is equal to the sum of the risk free interest rate (R_{rf}) plus the industry's or firm's risk premium (R_p). The risk-free rate is usually represented by a treasury rate.¹³ The equity risk premium is obtained from the risk coefficient (β) and the expected equity market-wide risk premium (R_p). The β coefficient contains the covariance of the asset with the general market while the R_p is the expected value of the difference between the risk free rate of return and the market-wide risk.

Equation 2

$$R_e = R_{rf} + \beta * R_p$$

R_e = rate of return on equity

R_{rf} = risk free rate

β = beta risk premium

R_p = Expected equity market wide risk premium

The STB has proposed using a simple ordinary least squares technique to estimate the value of β with 120 observations which would be updated every year in order to constantly retain a rolling ten year monthly time series. NPRM (Appendix) at 10-11.

Beta

The STB has asked for comments on whether to assume that Beta (β) equals 1 and on the appropriate time period from which to draw a sample of data. NPRM (Appendix)

¹³ Comment of AAR, (VS of Stewart C. Myers at. 5).

at 11. DOT opposes such an assumption because there is no basis for it. Without concrete evidence that rail industry stock price performance consistently and closely correlates with that of the broader market – and DOT is aware of none – it is unreasonable to accept that as fact in calculating the cost of capital. Indeed, there is testimony that Beta is not 1. Hubbard VS at 7-10; Mohanram at 18-19.

Although the Department does not have specific suggestions for the time period (sample size) to be used for estimation of β , we think the Board should consider a β estimate that avoids extreme values at the upper or lower ends in order to encourage railroads' financial stability. An alternative to designing its own estimation of β would be for the STB to use an independent third party financial firm to estimate the railroads' β every year for the annual revenue adequacy determination.

Risk-free rate of return

The risk-free rate of return is a basic input to determine the risk premium component of CAPM. As such, it is crucial to choose a truly representative proxy of what would be an alternative risk-free rate for investors in the railroad industry. The Board proposes to use a ten-year Treasury Bond rate. NPRM (Appendix) at 10. Several parties question this choice and provide a variety of alternative risk-free rate standards. WCTL, for example, used the 2005 average twenty-year U.S. Treasury yield to maturity and obtained a 4.65% risk free rate. Crowley VS at 14. Monhanram believes that a better risk free rate would be obtained by using the one month Treasury bill. Monhanram at 16. Both railroads and shippers note that the standard practice is to use a different risk-free rate. Comments of AAR, Hubbard VS at 10-11; WCTL, Crowley VS at 7-8.