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SURFACE TRANSPORTATION BOARD

DECISION

Docket No. EP 558 (Sub-No. 14)

RAILROAD COST OF CAPITAL—2010

Digest:[1] The agency finds that the cost of capital for the railroad industry in 2010 was 11.03%. This figure represents the Board's estimate of the average rate of return needed to persuade investors to provide capital to the freight rail industry. The cost-of-capital figure, which is calculated each year, is an essential component of many of the agency's core regulatory responsibilities.

Decided: September 30, 2011

BY THE BOARD:

One of the Board's regulatory responsibilities is to determine annually the railroad industry's cost of capital.[2] This determination is one component used in evaluating the adequacy of a railroad's revenue each year pursuant to 49 U.S.C. § 10704(a)(2) and (3). Standards for R.R. Revenue Adequacy, 364 I.C.C. 803 (1981), modified, 3 I.C.C. 2d 261 (1986), aff'd sub nom. Consol. Rail Corp. v. United States, 855 F.2d 78 (3d Cir. 1988). The cost-of-capital finding may also be used in other regulatory proceedings, including, but not limited to, those involving the prescription of maximum reasonable rate levels, the proposed abandonment of rail lines, and the setting of compensation for use of another carrier's lines.

This proceeding was instituted in Railroad Cost of Capital—2010, EP 558 (Sub-No. 14) (STB served Feb. 22, 2011) to update the railroad industry's cost of capital for 2010. In that decision, the Board solicited comments from interested persons on the following issues: (1) the railroads' 2010 current cost of debt capital; (2) the railroads' 2010 current cost of preferred

[1] The digest constitutes no part of the decision of the Board but has been prepared for the convenience of the reader. It may not be cited to or relied upon as precedent. Policy Statement on Plain Language Digests in Decisions, EP 696 (STB served Sept. 2, 2010).

[2] The railroad cost of capital determined here is an aggregate measure. It is not intended to measure the desirability of any individual capital investment project.

equity capital (if any); (3) the railroads' 2010 cost of common equity capital; and (4) the 2010 capital structure mix of the railroad industry on a market value basis.

We have received comments from the Association of American Railroads (AAR) that provides the information that is used in making the annual cost-of-capital determination, as established in Use of a Multi-Stage Discounted Cash Flow Model in Determining the Railroad Industry's Cost of Capital, EP 664 (Sub-No. 1) (STB served Jan. 28, 2009). Western Coal Traffic League (WCTL) replied to AAR's submission. WCTL asserts that the Board should make an appropriate adjustment for the exclusion of BNSF from the composite sample. Further, WCTL asserts that the Board should exclude certain analyst growth rate projections used by AAR in calculating the railroad industry's cost of equity (COE) under the Morningstar/Ibbotson Multi-Stage Discounted Cash Flow Model (MSDCF). These issues will be addressed below.

*2010 Cost-of-Capital Determination*

Consistent with previous cost-of-capital proceedings, AAR calculated the cost of capital for a "composite railroad" based on criteria developed in the Railroad Cost of Capital—1984, 1 I.C.C. 2d 989 (1985).[3] According to AAR, the following 3 railroad holding companies meet these criteria: CSX Corporation, Norfolk Southern Corporation, and Union Pacific Corporation.[4]

As discussed below, we have examined the procedures used by AAR to calculate the railroad industry's 2010: (1) cost-of-debt capital; (2) cost of common equity capital; (3) cost of preferred equity capital;[5] (4) capital structure; and (5) composite after-tax cost of capital. We estimate that the 2010 railroad cost of capital was 11.03%.

## DEBT CAPITAL

AAR developed its 2010 current cost of debt using bond price data from Standard & Poor's Corporation *Bond Guide* and a Standard & Poor's database for those bonds not publicly traded. AAR's cost-of-debt figure is based on the market-value yields of the major forms of long-term debt instruments for the railroad holding companies used in the composite. These debt instruments include: (1) bonds, notes, and debentures (bonds); (2) equipment trust certificates

[3] The composite railroad includes those Class I carriers that: (1) are listed on either the New York or American Stock Exchange; (2) paid dividends throughout the year; (3) had rail assets greater than 50% of its total assets; and (4) had a debt rating of at least BBB (Standard & Poor's) and BAA (Moody's).

[4] These companies, along with BNSF Railway Company (BNSF), were also used in Railroad Cost of Capital—2009, EP 558 (Sub-No. 13) (STB served Oct. 29, 2010). Due to the acquisition of BNSF by Berkshire Hathaway, Inc., in the beginning of 2010, the Board has not included BNSF in the 2010 sample base because BNSF no longer meets the criteria for inclusion in the composite group.

[5] There was no preferred stock outstanding in the year 2010.

(ETCs); and (3) conditional sales agreements (CSAs). The yields of these debt instruments are weighted based on their market values.

*Cost of Bonds, Notes, and Debentures (Bonds)*

AAR used data contained in Standard & Poor's *Bond Guide* for the current cost of bonds, based on monthly prices and yields during 2010, for all issues (a total of 33) that were publicly traded during the year. To develop the current (in 2010) market value of bonds, AAR used these traded bonds and 50 additional bonds that were outstanding but not publicly traded during 2010. Continuing the procedure in effect since 1988, AAR based the market value on monthly prices for all traded bonds and the face or par value ($1,000) for all bonds not traded during the year. AAR computed the total market value of all outstanding bonds to be $21.8 billion ($11.4 billion traded, and $10.4 billion non-traded). Based on the yields for the traded bonds, AAR calculated the weighted average 2010 yield for all bonds to be 4.565%. We have examined AAR's bond price and yield data and have determined that AAR's computations are correct. Our calculations and data for all bonds are shown in **Tables 1** and **2** of the Appendix.

*Cost of Equipment Trust Certificates (ETCs)*

ETCs are not actively traded on secondary markets. Therefore, their costs must be estimated by comparing them to the yields of other debt securities that are actively traded. Following the practice in previous cost-of-capital proceedings, AAR used government securities with maturities similar to these ETCs as surrogates for developing yields. After calculating the 2010 yields for these government securities, AAR added basis points[6] to these yields to compensate for the additional risks associated with the ETCs.

There were no new ETCs issued during 2010. However, there were 11 ETCs issued prior to 2010 that were outstanding during the year. AAR calculated that the yield spread for ETCs was 80 basis points higher than the yield for government bonds.[7] Using the yield spreads, AAR calculated the weighted average cost of ETCs to be 3.227%[8] and their market value to be $374.6 million for 2010.[9]

We have examined the cost and market value of the ETCs using AAR's data, and we agree with AAR's calculation. **Table 3** in the Appendix shows a summary of the ETC computations.

[6] A basis point equals 1/100th of a percentage point.

[7] This is the same spread used in 2009.

[8] This percentage is lower than the 2009 figure of 3.551%.

[9] AAR approximated the market values of ETCs using the same procedures used in previous cost-of-capital determinations.

*Cost of Conditional Sales Agreements (CSAs)*

CSAs represent a small fraction (less than 1%) of total railroad debt, and only 2 CSAs (issued by CSX) were outstanding in 2010. The cost of CSAs can be estimated by adding an additional factor to the yield spread between government bonds and ETCs. AAR used the yield spread between CSAs and ETCs for 1997 (the last year when a new CSA was issued) of 32 basis points to develop the year 2010 yield spread between CSAs and government bonds. These 32 basis points are added to the 80 basis point spread between government bonds and ETCs. As a result, AAR estimates that 112 basis points must be added to the yield of government bonds with comparable maturities to develop the cost of CSAs. Using this yield spread, AAR calculated the weighted average cost of CSAs for 2010 to be 2.099%. AAR calculated the market value for all modeled CSAs to be $30.8 million. We have examined the cost and market value of the CSAs using AAR's data, and agree with AAR's calculations. **Table 4** in the Appendix shows the market value of all modeled CSAs to be $30.8 million.

*Capitalized Leases and Miscellaneous Debt*

As in previous cost-of-capital determinations, AAR excluded the cost of capitalized leases and of miscellaneous debt in its computation of the overall current cost of debt because these costs are not directly observable in the open market. Also, in keeping with past practice, AAR included the book value of leases and commercial paper in the overall market value of debt, which is used to determine the railroads' capital structure mix. AAR calculated that the market value for the capitalized leases and miscellaneous debt was $2.146 billion for 2010.[10] We have examined the market value for capitalized leases and miscellaneous debt using AAR's data, and we agree with AAR's calculations. **Table 5** in the Appendix shows the calculations for capitalized leases and miscellaneous debt to be $2.146 billion.

*Total Market Value of Debt*

AAR calculated that the total market value for all debt during 2010 was $24.371 billion. We have examined AAR's data and have determined that AAR's calculation is correct. **Table 6** in the Appendix shows a breakdown of the market value of debt.

*Flotation Costs of Debt*

AAR calculated flotation costs for bonds, notes, and debentures by calculating a yield based on the price to investors and a yield that also included flotation costs. The difference between the two yields is the flotation costs expressed in percentage points. For 2010, 4 new issues were reported in 3 filings. A simple average of the 4 flotation costs is 0.072%. AAR calculated the 2010 flotation costs for bonds using publicly available data from electronic filings with the SEC. For the calculation of ETC flotation costs, AAR used a historical SEC study

[10] This figure consists of $1.945 billion of capitalized leases and $161 million of miscellaneous debt. Non-modeled ETCs and non-modeled CSAs, as defined by AAR, are included in the miscellaneous debt category.

composed of railroad ETC data for the years 1951, 1952, and 1955. SEC, Cost of Flotation of Corporate Securities 1951-1955 (1957). In that study, AAR asserts that the SEC determined ETC flotation costs to average 0.89% of gross proceeds. Id. Neither recent nor historical data is publicly available for CSAs. Consequently, the ETC figure was applied. Using 0.89% for both ETCs and CSAs results in flotation costs of 0.075% and 0.069%, respectively.

To compute the overall effect of the flotation cost on debt, the market value weight of the debt outstanding is multiplied by the respective flotation cost. The weight for each type of debt is based on market values for debt, excluding all other debt. All other debt is excluded from the weight calculation, because a current cost of debt for that debt has not been determined. AAR calculated that flotation costs for debt equal 0.072%. We have reviewed AAR's calculations concerning flotation costs and find that the cost factors developed for the various components of debt are reasonable.[11] **Table 7** in the Appendix shows these calculations.

*Overall Current Cost of Debt*

AAR concluded that the railroads' cost of debt for 2010 was 4.61%.[12] We have verified that the percentage put forth by AAR is correct. **Table 8** in the Appendix shows the overall current cost of debt.

## COMMON EQUITY CAPITAL

We estimate the cost of common equity capital by calculating the simple average of estimates produced by a Capital Asset Pricing Model (CAPM) and the Morningstar/Ibbotson MSDCF.

*CAPM*

Under CAPM, the cost of equity is equal to $RF + \beta \times RP$, where RF is the risk-free rate, RP is the market-risk premium, and $\beta$ (or beta) is the measure of systematic, non-diversifiable risk. In order to calculate RF, we asked the railroads to provide the average yield to maturity in 2010 for a 20-year U.S. Treasury Bond. Similarly, the railroads were asked to provide an estimate for RP based on returns experienced by the S&P 500 since 1926. Finally, we instructed the railroads to calculate beta using a portfolio of weekly, merger-adjusted railroad stock returns for the prior 5 years in the following equation:

$$R - SRRF = \alpha + \beta(RM - SRRF) + \varepsilon, \text{ where}$$

[11] AAR calculated the 2010 flotation costs for bonds using publicly available data from electronic filings with the SEC.

[12] This percentage is lower than the 2009 cost of debt (5.72%). As explained above, our measurement of the railroads' cost of debt entails the calculation of a weighted average of the current yields of the various debt instruments issued by the 3 railroads in our sample.

| | | |
|---|---|---|
| $\alpha$ | = | constant term; |
| R | = | merger-adjusted stock returns for the portfolio of railroads that meet the screening criteria set forth in Railroad Cost of Capital – 1984, 1 I.C.C. 2d 989 (1985); |
| SRRF | = | the short-run risk-free rate, which we will proxy using the 3-month U.S. Treasury bond rate; |
| RM | = | return on the S&P 500; and |
| $\varepsilon$ | = | random error term. |

*RF – The Risk Free Rate*

To establish the risk-free rate, AAR relies on the Federal Reserve website to retrieve the average yield to maturity for a 20-year U.S. Treasury Bond. Using the average yield to maturity in 2010 for a 20-year U.S. Treasury Bond, consistent with Cost of Capital Methodology—2006, EP 558 (Sub-No. 10) (STB served Apr. 15, 2008), AAR calculated the 2010 risk free rate to be 4.03%. We have examined AAR's data and the data from the Federal Reserve's website, and have determined that AAR's computation is correct.

*RP – The Market-Risk Premium*

Using the approach settled upon in the Cost of Capital Methodology, AAR submitted data reflecting a market risk premium of 6.72%. We have examined the underlying data here and agree that the market risk premium is 6.72%.

*Calculating Beta*

The Cost of Capital Methodology requires parties to calculate CAPM's beta using a portfolio of weekly, merger-adjusted stock returns for the prior 5 years in the following equation: $R - SRRF = \alpha + \beta(RM - SRRF) + \varepsilon$. AAR's calculations suggest that the value of beta is 1.1619.[13] AAR and WCTL agree that the Board's methodology for assigning shares outstanding produces a mismatch in the weekly closing prices and the number of shares outstanding. Because both parties agree that a modification to the Board's current methodology is necessary, and changing the process would avoid an inconsistency in the weekly closing prices and the number of shares outstanding, we will modify for this year and in subsequent cost-of-capital proceedings our method of assigning outstanding shares. We will now assign the new shares outstanding to the first Friday on, or after, the effective date. Application of this modified approach produces a beta of 1.1619.

[13] AAR uses the SAS General Linear Model procedure to compute regression data. The Board uses a standard Excel regression method.

WCTL asserts that BNSF's exclusion from the cost-of-capital determination would likely lead to higher costs of equity and capital for most years, than if BNSF remained in the composite railroad group. As a result, WCTL suggests that the Board make an adjustment to account for BNSF's exclusion from the composite sample. Specifically, WCTL states that the Board should explore various methodologies that would allow for BNSF's inclusion in the industry cost-of-capital determination. In its reply statement, WCTL offers an approach to compute a surrogate COE for BNSF. This approach (a) develops the beta on the "pure play"[14] railroads in the industry (UP, CSX, and NS); (b) removes the implicit leverage associated with each of the "pure play" railroads; (c) averages the unlevered betas to develop a railroad industry average unlevered beta; (d) applies the averaged unlevered beta to Berkshire Hathaway's 2010 debt-to-equity ratio to develop a BNSF levered beta; (e) calculates a weighted-average beta for the railroad industry; and (f) applies the Blume Adjustment to the weighted average beta for the railroad industry.[15]

AAR disagrees with WCTL's argument that an adjustment is necessary to account for BNSF's exclusion from the composite group. Further, AAR states that BNSF's inclusion in the sample base would conflict with both the Board's established criteria in Railroad Cost of Capital—1984, and the Board's CAPM methodology adopted in Methodology to Be Employed in Determining the Railroad Industry's Cost of Capital, EP 664 (STB served Jan. 17, 2008). AAR asserts that WCTL's proposals to modify the Board's established criteria and methodology for use in the annual cost-of-capital proceeding should be rejected as improper.

AAR also contests WCTL's application of the Blume Adjustment. AAR asserts that the Blume Adjustment is an inappropriate methodology for rail industry purposes and is not part of the Board's CAPM procedure. Moreover, AAR asserts that WCTL erroneously applied the Blume Adjustment to the industry beta rather than BNSF's estimated beta. AAR also argues, among other things, that while WCTL manipulated the CAPM process, citing the inclusion of BNSF in its reasons for doing so, WCTL failed to adjust the cost of debt and the capital structure.

We will not include BNSF in the composite group at this time. Doing so would conflict with both the Board's criteria in Railroad Cost of Capital—1984 and the Board's cost-of-capital methodology adopted in Methodology to Be Employed in Determining the Railroad Industry's Cost of Capital. As the Board has previously stated, we will not entertain arguments raised in EP 558 proceedings that propose a methodological change to the cost-of-capital determination.

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[14] According to Morningstar, Inc., "for a company to be considered a pure play company in an industry, the revenue that the company generates from that industry should constitute a vast majority of the company's total revenue." See Ibbotson SBBI 2011 Valuation Yearbook: Market Results for Stocks, Bonds, Bills and Inflation 1926-2010, at 79 (2011).

[15] The Blume Adjustment is an approach that adjusts betas based upon the belief that betas tend to revert toward their mean value, or the market beta of one. In essence, high historical betas (those in excess of one) tend to overestimate betas in future time periods, and low historical betas (those under one) tend to underestimate betas in future time periods. See Marshall E. Blume, On the Assessment Risk, 26 J. of Fin. 1, 1-10 (1971).

In Methodology to Be Employed in Determining the Railroad Industry's Cost of Capital, slip op. at 18, the Board held that, "while in the past we have entertained challenges to the agency's model in the 558 proceedings, we will no longer do so. As such, future requests to change the assumptions that form the elements of our CAPM model must be brought (in the form of a petition for rulemaking) in a 664 proceeding, not in the annual 558 proceeding, in which we calculate the cost of capital for a particular year." Thus, parties in EP 558 proceedings should adhere to our established precedent, and not raise arguments that advocate a change to the cost-of-capital model.

In any event, WCTL has not convinced us that its suggested methodology, which would allow for BNSF's inclusion in the industry cost of capital, is a more precise technique than our current process. Specifically, the record does not demonstrate that the approach of using levered and unlevered beta estimates is a more accurate approach than our current method of pooling the performance data of carriers in the composite railroad group and estimating a single beta for the railroad industry. WCTL provides only summary arguments for departing from the Board's established methodology and why using a "surrogate" COE for a railroad leads to a better result. Additionally, WCTL's approach requires the application of the Blume Adjustment to the industry beta.[16] Although WCTL argues that the Blume Adjustment is "well recognized" and used by financial reporting services, WCTL did not provide academic research or empirical evidence to show that its own preferred application would be appropriate here.[17]

*Cost of Common Equity Capital using CAPM*

Using the modified approach for assigning the new shares outstanding, we calculate the cost of equity as RF + β × RP, or 4.03% + ( 1.1619× 6.72%), which equals 11.84%. **Tables 9** and **10** in the Appendix show the calculations of the cost of common equity using CAPM.

AAR calculated the 2010 market value of common equity for each railroad by calculating weekly market values for each railroad using data on shares outstanding from railroad 10-Q and 10-K reports multiplied by stock prices at the close of each week in 2010. AAR calculated the 52-week average market value as $79.932 billion. Modifying our previously used approach of assigning shares outstanding changes the 52-week average market value to $79.891 billion.

*Multi-Stage Discounted Cash Flow*

The cost of equity in a Discounted Cash Flow (DCF) model is the discount rate that equates a firm's market value to the present value of the stream of cash flows that could affect

[16] See WCTL's Reply Workpapers, "2010 CAPM with adjusted Betas.xlsx/industry beta/cell H17."

[17] The Verified Statement of Crowley and Fapp, submitted in support of WCTL's filing, provided a more sophisticated approach, which included the use of a full information beta. However, the record is insufficient for the Board to consider this method, as WCTL has failed to provide an analysis of why this method is a more accurate approach than our current process.

investors. These cash flows are not presumed to be paid out to investors; instead, it is assumed that investors will ultimately benefit from these cash flows through higher regular dividends, special dividends, stock buybacks, or stock price appreciation. Incorporation of these cash flows, as well as the expected growth of earnings, are the essential elements of the Morningstar/Ibbotson MSDCF model.

*Cash Flow*

The Morningstar/Ibbotson MSDCF model defines cash flows (CF), for the first 2 stages, as income before extraordinary items (IBEI), minus capital expenditures (CAPEX), plus depreciation (DEP) and deferred taxes (DT), or

$$CF = IBEI – CAPEX + DEP + DT.$$

The third-stage cash flow is based on 2 assumptions: depreciation equals capital expenditures, and deferred taxes are zero. That is, cash flow in the third stage of the model is based only on IBEI.

To obtain an average cash flow to sales ratio, AAR divided the total cash flow in the 2006-2010 periods by the total sales over the same period. To obtain the 2010 average cash flow, the cash-flow-to-sales ratio is multiplied by the sales revenue from 2010. The 2010 average cash flow figure is then used as the starting point of the Morningstar/Ibbotson MSDCF model. The initial value of IBEI is determined through the same averaging process for the cash flows in stages 1 and 2. According to AAR, the data inputs in the cash flow formula were retrieved from the railroads' 2006-2010 10-K filings with the SEC.

*Growth Rates*

Growth of earnings is also calculated in 3 stages. These 3 growth-rate stages are what make the Morningstar/Ibbotson model a "multi-stage" model. In the first stage (years 1-5), the firm's annual earnings growth rate is assumed to be the median value of the qualifying railroad's 3- to 5-year growth estimates, as determined by railroad industry analysts, and published by Institutional Brokers Estimate System (I/B/E/S). In the second stage (years 6-10), the growth rate is the average of all growth rates in stage 1. In the third stage (years 11 and onwards), the growth rate is the long-run nominal growth rate of the U.S. economy. This long-run nominal growth rate is estimated by using the historical growth in real GDP and the long-run expected inflation rate.

AAR calculated the first- and second-stage growth rates according to the I/B/E/S data, which was retrieved from Thomson One Investment Management. The third-stage growth rate of 5.8% was calculated by using the sum of the long-run expected growth in real output (3.3%) and the long-run expected inflation (2.6%).

In its comments, WCTL asserts that the Board should exclude purportedly stale analyst growth rate projections in calculating the MSDCF COE for the railroad industry. WCTL contends that, of the 18 analyst growth rates used by AAR, only 9 are actually from 2010 and the

other half are from earlier years. As a result, WCTL adjusted the median long-term growth forecasts to reflect only those forecasts developed in the 2010 issue year, thus producing a MSDCF COE of 13.02%.

In its rebuttal comments, AAR states that all of the analysts' growth rate projections used in its MSDCF calculation were in effect at the end of 2010 and are taken from the I/B/E/S analyst growth rate estimates distributed by Thompson Financial through its Thompson One Investment Management Service. AAR clarified that all growth rates were reviewed by analysts during 2010, and that AAR correctly followed the methodology prescribed by the Board in calculating the cost of equity under the MSDCF model. AAR also asserts that the annual cost of capital proceeding is not the appropriate forum for challenging the Board's approved methodology for calculating the cost of equity under the MSDCF model.

After reviewing the evidence provided by AAR, it is apparent that all 18 growth rates have been reviewed in 2010. We have no reason to conclude that the growth rates do not use the most current and accurate information available. Therefore, we accept the growth rates provided by AAR as correct and consistent with the Board's approved methodology, and we will employ them in the determination of the cost of equity for 2010.

*Market Values for MSDCF*

The final inputs to the Morningstar/Ibbotson MSDCF model are the stock market values for the equity of each railroad. According to AAR, it used stock prices from Yahoo Finance for December 31, 2010, and shares outstanding from the 2010 Q3 10-Q reports filed with the SEC.

We have reviewed AAR's evidence and agree that the market values used in the 2010 estimate of the cost of equity using the Morningstar/Ibbotson MSDCF are correct.

*Cost of Common Equity Capital using MSDCF*

AAR estimates a MSDCF cost of equity of 14.13%. Accordingly, we calculate the MSDCF as 14.13%, and we will average this estimate with the cost of equity derived from the CAPM approach. **Table 11** shows the MSDCF inputs and the cost of equity calculation.

*Cost of common equity*

Based on the evidence provided, we conclude that the railroad cost of equity in 2010 is 12.99%. This figure is based on an estimate of the cost of equity using CAPM of 11.84% and a MSDCF estimate of 14.13%. [18] **Table 12** shows both costs of common equity for each model, and the average of the 2 models.

[18] The Verified Statement of Crowley and Fapp further adjusts the Board's approved cost-of-capital methodology by including the weighted cost of Berkshire Hathaway's CAPM and MSDCF costs of equity with the three railroad companies included in the composite group. These adjustments result in a CAPM cost of equity of 11.01% and an MSDCF cost of equity of

(continued . . . )

## PREFERRED EQUITY

Preferred equity has some of the characteristics of both debt and equity. Essentially, preferred issues are like common stocks in that they have no maturity dates and represent ownership in the company (usually with no voting rights attached). They are similar to debt in that they usually have fixed dividend payments (akin to interest payments).

There were no preferred stock issues outstanding at the end of 2010.

## CAPITAL STRUCTURE MIX

The Board will apply the same inputs used in the market value for the CAPM model to the capital structure.

We have determined that the average market values of debt and common equity are $24.371 billion and $79.891 billion, respectively. The percentage share of debt decreased, from 29.10% in 2009 to 23.38% in 2010. The percentage share of common equity increased, from 70.90% in 2009 to 76.62% in 2010. **Table 13** in the Appendix shows the calculations of the average market value of common equity and relative weights for each railroad. **Table 14** in the Appendix shows the 2010 capital structure mix.

## COMPOSITE COST OF CAPITAL

Based on the evidence furnished in the record, and our adjustments to the calculations discussed above, we conclude that the 2010 composite after-tax cost of capital for the railroad industry, as set forth in **Table 15** in the Appendix, was 11.03%. The procedure used to develop the composite cost of capital is consistent with the Statement of Principle established by the Railroad Accounting Principles Board: "Cost of capital shall be a weighted average computed using proportions of debt and equity as determined by their market values and current market rates." R.R. Accounting Principles Bd., Final Report, Vol. 1 (1987). The 2010 cost of capital was 0.6 percentage points higher than the 2009 cost of capital (10.43%).

## CONCLUSIONS

We find that for 2010:

1. The current cost of railroad long-term debt was 4.61%.

2. The cost of common equity was 12.99%.

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( . . . continued)
12.86%, for an average cost of equity of 11.94%. See WCTL Reply, V.S. Crowley/Fapp 39. The Board finds that this method is unrepresentative of the Class I railroad industry, as it relies heavily on Berkshire Hathaway's Capital Structure.

3. The capital structure mix of the railroads was 23.38% long-term debt and 76.62% common equity.

4. The composite railroad industry cost of capital was 11.03%.

*Environmental and Energy Considerations*

We conclude that this action will not significantly affect either the quality of the human environment or the conservation of energy resources.

It is ordered:

1. This decision is effective on November 2, 2011.

2. This proceeding is discontinued.

By the Board, Chairman Elliott, Vice Chairman Begeman, and Commissioner Mulvey.

# APPENDIX

**Table 1**
**2010 Traded & Non-traded Bonds**

| Railroad | Traded vs. Untraded | Number | Market Value ($ in 000) | % Market Value to All Bonds |
|---|---|---|---|---|
| CSX | Traded | 9 | $2,880,819 | 37.90% |
| | Non-traded [1] | 23 | 4,720,533 | 62.10% |
| | Total | 32 | 7,601,352 | |
| NSC | Traded | 10 | 4,729,539 | 66.44% |
| | Non-traded [2] | 10 | 2,389,014 | 33.56% |
| | Total | 20 | 7,118,553 | |
| UPC | Traded | 14 | 3,806,376 | 53.61% |
| | Non-traded [3] | 17 | 3,293,542 | 46.39% |
| | Total | 31 | 7,099,918 | |
| **Composite** | Traded | 33 | $11,416,734 | 52.32% |
| | Non-traded | 50 | 10,403,089 | 47.68% |
| | Total | 83 | 21,819,823 | |

[1] Includes 2 bonds issued during 2010, prorated based on date of issue.
[2] Includes 1 bond issued during 2010, prorated based on date of issue.
[3] Includes 1 bond issued during 2010, prorated based on date of issue.

**Table 2**
**2010 Bonds, Notes, & Debentures**

| Railroad | Number of Traded Issues | Market Value Traded Issues ($000) | Current Cost | Weighted Cost |
|---|---|---|---|---|
| CSX | 9 | $2,880,819 | 4.506% | 1.137% |
| NSC | 10 | 4,729,539 | 5.259% | 2.179% |
| UPC | 14 | 3,806,376 | 3.747% | 1.249% |
| **Composite** | 33 | **$11,416,734** | | **4.565%** |

**Table 3**
**2010 Equipment Trust Certificates**

| Railroad | No. of Issues | Market Value ($000) | Yield % | Weighted $ Yield ($000) |
|---|---|---|---|---|
| CSX | 5 | $122,978 | 2.594% | 3,190 |
| NSC | 3 | 79,249 | 2.381% | 1,887 |
| UPC | 3 | 172,401 | 4.067% | 7,011 |
| **Composite** | **11** | **$374,628** | **3.227%** | **$12,087[1]** |

[1] Composite is off due to individual calculations.

**Table 4**
**2010 Conditional Sales Agreements**

| Railroad | Number of Issues | Market Value ($000) | Current Cost | Weighted Cost |
|---|---|---|---|---|
| CSX | 2 | $30,836 | 2.099% | 2.099% |
| **Composite** | | **$30,836** | | **2.099%** |

**Table 5**
**2010 Capitalized Leases & Miscellaneous Debt**

| Railroad | Capitalized Leases ($000) | Miscellaneous Debt[1] ($000) | Total Other Debt ($000) |
|---|---|---|---|
| CSX | $13,764 | $44,038 | $57,802 |
| NSC | 23,782 | (1,623) | 22,159 |
| UPC | 1,908,184 | 118,920 | 2,027,104 |
| **Composite** | **$1,945,730** | **$161,335** | **$2,146,031[2]** |

[1] Miscellaneous debt includes unamortized debt discount.
[2] This figure includes $38,966 of non modeled ETCs and CSAs.

**Table 6**
**2010 Market Value of Debt**

| Type of Debt | Market Value of Debt ($000) | Percentage of Total Market Value (Excluding Other Debt) |
|---|---|---|
| Bonds, Notes, & Debentures | $21,819,823 | 98.18% |
| ETCs | 374,628 | 1.69% |
| CSAs | 30,836 | 0.14% |
| Subtotal | $22,225,287 | 100% |
| Capitalized Leases/Miscellaneous Debt | 2,146,031 | NA |
| **Total Market Value of Debt** | **$24,371,318** | **NA** |

**Table 7**
**2010 Flotation Cost for Debt**

| Type of Debt | Market Weight (Excludes Other Debt) | Flotation Cost | Weighted Average Flotation Cost |
|---|---|---|---|
| Bonds, Notes, & Debentures | 98.18% | 0.072% | 0.0707% |
| ETCs | 1.69% | 0.075% | 0.0013% |
| CSAs | 0.14% | 0.069% | 0.0001% |
| **Total** | **100%** | | **0.072%** |

**Table 8**
**2010 Cost of debt**

| Type of Debt | Percentage of Total Market Value (Excludes Other Debt) | Debt Cost | Weighted Debt Cost (Excluding Other Debt) |
|---|---|---|---|
| Bonds, Notes, & Debentures | 98.18 % | 4.565% | 4.4819% |
| ETCs | 1.69% | 3.227% | 0.0545% |
| CSAs | 0.14% | 2.099% | 0.0029% |
| Subtotal | 100% | | 4.539% |
| Flotation Cost | | | 0.072% |
| **Weighted Cost of Debt** | | | **4.61%** |

**Table 9**
**2010 Summary Output**

| **Regression Statistics** | | | | | |
|---|---|---|---|---|---|
| Multiple R | .746223 | | | | |
| R-Square | .556848 | | | | |
| Adjusted-R Square | .555137 | | | | |
| | | | | | |
| Standard Error | .031535 | | | | |
| Observations | 261 | | | | |
| | | | | | |
| ANOVA | | | | | |
| | df | SS | MS | F | Significance F |
| Regression | 1 | 0.323646 | 0.323646 | 325.449971 | 1.12002E-47 |
| Residual | 259 | 0.257564 | 0.000994 | | |
| Total | 260 | 0.581210 | | | |
| | | | | | |
| | Coefficients | Standard Error | T Stat | P-Value | |
| Intercept | .003687 | 0.001952 | 1.889091 | 0.05999678 | |
| X-Variable | 1.1619 | 0.064407 | 18.04023 | 1.12002E-47 | |

**Table 10**
**2010 CAPM Cost of Common Equity**

| | | |
|---|---|---|
| Risk-Free Rate (RF) | 4.03% | |
| RF+(Beta x Market Risk Premium) | 4.03% + (1.1619 x 6.72%) | 11.84% |
| **Cost of Equity** | | **11.84%** |

**Table 11**
**2010 MS-DCF Railroad Cost of Equity**
**($ in millions)**

| Railroad | CSX | | NSC | | UNP | |
|---|---|---|---|---|---|---|
| Initial CF | $949 | | $1,099 | | $1,567 | |
| Input for terminal CF | $1,415 | | $1,456 | | $2,194 | |
| Stage 1 Growth Rate | 11.50% | | 12.00% | | 15.00% | |
| Stage 2 Growth Rate | 12.83% | | 12.83% | | 12.83% | |
| Stage 3 Growth Rate | 5.80% | | 5.80% | | 5.80% | |
| Year | Value on 12/31 of each year | Present Value | Value on 12/31 of each year | Present Value | Value on 12/31 of each year | Present Value |
| 1 | $1,058 | $928 | $1,231 | $1,070 | $1,802 | $1,584 |
| 2 | 1,180 | 908 | 1,379 | 1,042 | 2,072 | 1,601 |
| 3 | 1,315 | 889 | 1,544 | 1,014 | 2,383 | 1,619 |
| 4 | 1,467 | 869 | 1,729 | 987 | 2,741 | 1,636 |
| 5 | 1,635 | 850 | 1,937 | 961 | 3,152 | 1,654 |
| 6 | 1,845 | 842 | 2,185 | 943 | 3,556 | 1,641 |
| 7 | 2,082 | 833 | 2,466 | 924 | 4,012 | 1,627 |
| 8 | 2,349 | 825 | 2,782 | 907 | 4,527 | 1,614 |
| 9 | 2,651 | 817 | 3,139 | 889 | 5,108 | 1,601 |
| 10 | 2,991 | 809 | 3,542 | 872 | 5,763 | 1,587 |
| Terminal | $57,720 | $15,606 | $53,692 | $13,219 | $107,221 | $29,531 |
| | | | | | | |
| | | | | | | |
| ΣPV | $24,176 | | $22,827 | | $45,695 | |
| Market Value | $24,176 | | $22,827 | | $45,695 | |
| COE | 13.97% | | 15.05% | | 13.76% | |
| Weighted COE | 3.64% | | 3.71% | | 6.78% | |
| **COE** | **14.13%** | | | | | |

**Table 12**
**2010 Cost of Common Equity Capital**

| **Model** | |
|---|---|
| Capital Asset pricing model | 11.84% |
| Multi-Stage Discounted Cash Flow | 14.13% |
| **Cost of Common Equity** | **12.99%** |

**Table 13**
**2010 Average market Value**

| Railroad | Average Market Value ($000) | Average Market Weight |
|---|---|---|
| CSX | $20,635,114 | 25.83% |
| NSC | 20,886,682 | 26.14% |
| UPC | 38,368,796 | 48.03% |
| **COMPOSITE** | **$79,890,592** | **100.00%** |

**Table 14**
**2010 Capital Structure Mix**

| Railroad | Type of Capital | Market Value ($000) | Weight |
|---|---|---|---|
| CSX | Debt | $7,851,934 | 27.56% |
| | Equity | 20,635,114 | 72.44% |
| NSC | Debt | 7,219,961 | 25.69% |
| | Equity | 20,886,682 | 74.31% |
| UPC | Debt | 9,299,423 | 19.51% |
| | Equity | 38,368,796 | 80.49% |
| Composite Weight | Debt | 24,371,318 | 23.38% |
| | Equity | 79,890,592 | 76.62% |
| | Total | $104,261,910 | 100.00% |

**Table 15**
**2010 Cost-of-Capital Computation**

| Type of Capital | Cost | Weight | Weighted Average |
|---|---|---|---|
| Long-Term Debt | 4.61% | 23.38% | 1.08% |
| Common Equity | 12.99% | 76.62% | 9.95% |
| **Composite Cost of Capital** | | **100.00%** | **11.03%** |