

SURFACE TRANSPORTATION BOARD

DECISION

Docket No. EP 558 (Sub-No. 23)

RAILROAD COST OF CAPITAL—2019

Digest:¹ The Board finds that the cost of capital for the railroad industry, which is calculated each year, was 9.34% for 2019. This figure represents the Board's Office of Economics' estimate of the average rate of return needed to persuade investors to provide capital to the freight rail industry.

Decided: August 4, 2020

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 by decision served on February 27, 2020, to update the railroad industry's cost of capital for 2019. In that decision, the Board solicited comments from interested parties on the following issues: (1) the railroads' 2019 current cost of debt capital; (2) the railroads' 2019 current cost of preferred equity capital (if any); (3) the railroads' 2019 cost of common equity capital; and (4) the 2019 capital structure mix of the railroad industry on a market value basis. The Board received comments from the Association of American Railroads (AAR) providing the information used to calculate the annual cost-of-capital determination,³ as established in Use of a Multi-Stage Discounted Cash Flow Model in

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. See 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.

³ In Railroad Revenue Adequacy—2017 Determination, EP 552 (Sub-No. 22) et al. (STB served Dec. 6, 2018), the Board adopted a one-time adjustment to the 2017 annual cost-of-capital determination to remove the accounting impacts of the Tax Cuts and Jobs Act, Pub. L.

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, stating that although AAR's calculation "does not reveal any mathematical or associated data errors," the Board's cost-of-capital methodology is "flawed." (WCTL Reply 1, 5.) Specifically, WCTL asserts that: (1) the 9.34% cost of capital reported by AAR is overstated and unstable, as evidenced by, among other things, alternative cost-of-capital valuations used by the financial and investment community; (2) the accurate cost of capital is reflected by use of a different methodology; and (3) operating leases should be treated as debt for purposes of the capital structure. (*Id.* at 2-8.) WCTL also responds to AAR's statements regarding market-risk premium and beta, arguing that AAR misrepresents that railroad investors rely on a market-risk premium with a base year of 1926 and wrongly suggests that railroad stocks will consistently have betas of greater than 1.0. (*Id.* at 8-10.)

AAR submitted rebuttal comments in response to WCTL's reply arguments, asserting that it used the cost-of-capital methodology directed by the Board without error, that WCTL's challenges to the Board's cost-of-capital methodology are not appropriate for the annual cost-of-capital proceeding, and that it properly accounted for operating leases. (AAR Rebuttal 1-4.)

DISCUSSION AND CONCLUSIONS

2019 Cost-of-Capital Determination

AAR calculated the cost of capital for a "composite railroad" based on criteria developed in Railroad Cost of Capital—1984, 1 I.C.C.2d 989 (1985), and modified in Revisions to the Cost-of-Capital Composite Railroad Criteria, EP 664 (Sub-No. 3) (STB served Oct. 25, 2017).⁴ According to AAR, the following four railroad holding companies meet these criteria: CSX Corporation (CSX); Kansas City Southern (KCS); Norfolk Southern Corporation (NSC); and Union Pacific Corporation (UPC).

As discussed below, the Board's Office of Economics (OE) has examined the procedures used by AAR to calculate the following components for the railroad industry's 2019 cost of capital: (1) cost-of-debt capital; (2) cost of common equity capital; (3) cost of preferred equity capital; (4) capital structure; and (5) composite after-tax cost of capital. Based on that review, the Board estimates that the 2019 railroad cost of capital was 9.34%.

No. 115-97, 131 Stat. 2054 (2017), on rail carriers' deferred tax liability. AAR submitted comments and data in this proceeding that account for the adjustments made to the 2017 cost-of-capital determination. (AAR Opening, V.S. Gray 2, 40.)

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

DEBT CAPITAL

AAR developed its 2019 current cost of debt using bond price data from Bloomberg Professional (Bloomberg), a subscription service used since Railroad Cost of Capital—2011, EP 558 (Sub-No. 15) (STB served Sept. 13, 2012). 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 (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 from Bloomberg for the current cost of bonds, based on monthly prices and yields during 2019, for all issues (a total of 129) that were publicly traded during the year. (AAR Opening, V.S. Gray 9-10.) To develop the current (in 2019) market value of bonds, AAR used these traded bonds and additional bonds that were outstanding but not publicly traded during 2019. Following 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 \$53.58 billion (\$53.26 billion traded and \$0.32 billion non-traded). (*Id.*, V.S. Gray 9.) Based on the yields for the traded bonds, AAR calculated the weighted average 2019 yield for all bonds to be 3.42%. (*Id.*, V.S. Gray 10-11.) OE has examined AAR's bond price and yield data and has determined that AAR's computations are correct. The 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 2019 yields for these government securities, AAR added basis points⁵ to these yields to compensate for the additional risks associated with the ETCs.

There were four ETCs outstanding during 2019 for UPC. (AAR Opening, V.S. Gray 14.) Using the yield spreads, AAR calculated the weighted average cost of ETCs to be 2.783%⁶ and their market value to be \$0.95 billion for 2019. (*Id.*, V.S. Gray 15.)

OE has examined AAR's ETC calculations and, based on that review, the Board accepts the cost and market value of the ETCs using AAR's data. **Table 3** in the Appendix shows a summary of the ETC computations.

⁵ A basis point equals 1/100th of a percentage point.

⁶ This percentage is lower than the 2018 figure of 3.593%. See R.R. Cost of Cap.—2018, EP 558 (Sub-No. 22), slip op. at 5 (STB served Sept. 30, 2019).

Cost of Conditional Sales Agreements (CSAs)

CSAs normally represent a small fraction (less than 1%) of total railroad debt. However, no CSAs were used to calculate the 2019 cost of debt because no CSAs are outstanding.⁷ (AAR Opening, V.S. Gray 16.)

Capitalized Leases and Miscellaneous Debt

As in previous cost-of-capital determinations, AAR excluded the cost of capitalized leases and miscellaneous debt in its computation of the overall current cost of debt because these costs are not directly observable in the open market. (AAR Opening, V.S. Gray 16.) Also, in keeping with past practice, AAR included the book value of capitalized leases and miscellaneous debt in the overall market value of debt, which is used to determine the railroads' capital structure mix. AAR calculated the book value (assumed market value) for the capitalized leases and miscellaneous debt to be (\$52.3) million for 2019.⁸ (*Id.*, V.S. Gray 17.) OE has examined AAR's calculations for the market value for capitalized leases and miscellaneous debt, and, based on that review, the Board accepts the market value using AAR's data. **Table 5** in the Appendix shows the calculations for capitalized leases and miscellaneous debt to be (\$52.3) million.

Operating Leases

WCTL argues that AAR should have treated operating leases as debt for purposes of the capital structure. (WCTL Reply 5.) In its notice of intent to participate in this proceeding, WCTL asserts that "the railroads' opening statement should include, on the railroads' own initiative or at the Board's direction, a presentation that treats operating leases of more than a year as debt" due to a revision to Generally Accepted Accounting Principles (GAAP) announced by the Financial Accounting Standards Board (FASB) in Accounting Standards Update (ASU) No. 2016-02.⁹ (WCTL Notice of Intent 1.) According to WCTL, that revision "directs that operating leases longer than a year be treated as balance sheet debt." (*Id.*)

AAR acknowledges that GAAP principles now call for operating leases longer than one year to be recorded on the balance sheet as *liabilities*; however, AAR contends that this principle is not synonymous with *debt* in the context of this proceeding. (AAR Opening 9; see also AAR Rebuttal 4.) AAR asserts that "[t]he railroads that make up the composite railroad account for [operating] leases as other liabilities on the balance sheet—liabilities that are not appropriately included in the cost-of-debt calculation." (AAR Opening 9.) AAR argues that this is consistent

⁷ No CSAs have been modeled since 2010, and none have been outstanding since 2014. (AAR Opening, V.S. Gray 16.)

⁸ This figure consists of \$620.3 million of capitalized leases and (\$672.5) million of miscellaneous debt. (AAR Opening, App. D.) **Table 5** in the Appendix shows these figures.

⁹ ASU No. 2016-02 was issued in 2016 and became effective for fiscal years beginning after December 15, 2018. It is available on FASB's website at <http://www.fasb.org>, under "Standards" and "Accounting Standards Updates Issued."

with other items recorded on the balance sheet as liabilities but not treated as debt, such as deferred income taxes and deferred compensation. (*Id.*)

In its reply, WCTL states that GAAP now “requires companies to list operating leases of more than a year as liabilities on their balance sheets, whereas they were previously generally treated as off-balance sheet items.” (WCTL Reply 5.) WCTL argues that the Board “previously excluded operating leases from debt based on GAAP,” and since GAAP has changed and operating leases are recognized on the balance sheet, the Board’s approach should change as well. (*Id.* at 6-7.) WCTL also states that the Board “has previously departed from GAAP to reflect larger realities” and argues that the Board should treat operating leases as debt for capital structure purposes because operating leases look like debt liabilities on the balance sheet. (*Id.* at 8.) WCTL argues that an operating lease is similar to a debt liability because it represents a financial obligation to be paid to use an asset and is viewed as such by the financial and investment community. (*Id.*) Additionally, WCTL contends that an operating lease is calculated for purposes of the balance sheet by applying an implied interest rate. (*Id.*)

The Board has reviewed ASU No. 2016-02, which states that operating leases longer than a year should be recognized as liabilities on the balance sheet, rather than debt, and finds that AAR complied with GAAP in its accounting of operating leases. WCTL’s argument that operating leases should be included in the capital structure along with capital leases (also known as finance leases) ignores the fact that GAAP distinguishes between operating leases and finance leases as economically different transactions. *See* FASB Accounting Standards Update: Leases (Topic 842) ¶ BC264, <http://www.fasb.org> (select “Standards,” “Accounting Standards Updates Issued,” and “Section C” of “Update 2016-02—Leases (Topic 842)”) (“While both types of lease liabilities are financial liabilities, finance lease liabilities are the equivalent of debt, and operating lease liabilities are not ‘debt like’ but, rather, operating in nature.”).¹⁰ Indeed, ASU No. 2016-02 explicitly “characterizes operating lease liabilities as operating liabilities, rather than debt.” *Id.* at ¶ BC14. ASU No. 2016-02 further states that these amounts “may not affect certain financial ratios that often are used in debt covenants,” which implies that operating leases should not be treated as debt. *Id.* Given the clarity of FASB’s position on operating leases and debt issues, and in light of the directive that the Board conform its accounting principles to GAAP to the maximum extent practicable, *see* 49 U.S.C. § 11161, the Board finds no compelling reason, on the basis of this record, to deviate from GAAP as WCTL suggests.

Total Market Value of Debt

AAR calculated the total market value for all debt during 2019 to be \$54.5 billion. (AAR Opening, V.S. Gray 17-18.) OE has examined AAR’s calculations and, based on that review, the Board accepts the total market value for all debt using AAR’s data. **Table 6** in the Appendix shows a breakdown of the market value of debt.

¹⁰ FASB explains that it “decided to adopt a lessee accounting model that distinguishes between two types of leases, classifying leases as operating leases or finance leases in a similar manner to the requirements for distinguishing between operating leases and capital leases in previous GAAP.” FASB Accounting Standards Update: Leases (Topic 842) ¶ BC26.

Flotation Costs of Debt

AAR calculated flotation costs for bonds, notes, and debentures by first calculating a yield on a new issue that included flotation costs, and then deducting a yield that did not include flotation costs. The difference between the two yields is the flotation costs expressed in percentage points. For 2019, 17 new issues were reported in seven filings, with some filings reporting multiple new issues. (AAR Opening, V.S. Gray 20.) A simple average of the 17 flotation cost figures is 0.075%. (*Id.*) AAR calculated the 2019 flotation costs for bonds using publicly available data from electronic filings with the Securities and Exchange Commission (SEC). For the calculation of ETC flotation costs, AAR used a historical SEC study composed of railroad ETC data for the years 1951, 1952, and 1955. (*Id.*, V.S. Gray 21 (citing SEC, Cost of Flotation of Corp. Sec. 1951-1955 (1957)).) AAR asserts that, in that study, the SEC determined that ETC flotation costs average 0.89% of gross proceeds. (AAR Opening, V.S. Gray 21.) Using 0.89% for ETCs, and assuming that coupons are paid twice per year and that the duration for new ETCs is 15 years, yields flotation costs of 0.073%. (*Id.*, V.S. Gray 22.)

To compute the overall effect of the flotation cost on debt, the market value weight of the outstanding debt 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,¹¹ for which a current cost of debt has not been determined.¹² AAR calculated that the flotation costs of debt increase the cost of debt by 0.075 percentage points. (*Id.*)

OE has reviewed AAR's calculations concerning flotation costs and has determined that AAR's computation is correct. Based on OE's analysis, the Board finds that the cost factors developed for the various components of debt are reasonable.¹³ **Table 7** in the Appendix shows these calculations.

Overall Current Cost of Debt

AAR concluded that the railroads' weighted cost of debt for 2019 was 3.48%.¹⁴ (AAR Opening, V.S. Gray 23-24.) OE has verified that the percentage put forth by AAR is correct. **Table 8** in the Appendix shows the overall current cost of debt.

¹¹ All other debt represents capitalized leases, miscellaneous debt, non-modeled ETCs, and non-modeled CSAs. There were no non-modeled ETCs or non-modeled CSAs in 2019. (AAR Opening, V.S. Gray 16-17.)

¹² Current costs can be determined for three of the four debt categories—bonds, ETCs, and CSAs. Usually, the weighted average cost of debt is based upon these three (of the four) debt categories, but in this instance only bonds and ETCs are present. (*Id.*, V.S. Gray 18.)

¹³ AAR calculated the 2019 flotation costs for bonds using publicly available data from electronic filings with the SEC. (*Id.*, V.S. Gray 20.)

¹⁴ This percentage is lower than the 2018 figure of 4.16%. See R.R. Cost of Cap.—2018, EP 558 (Sub-No. 22), slip op. at 7.

COMMON EQUITY CAPITAL

The cost of common equity capital is estimated by calculating the simple average of estimates produced by a Capital Asset Pricing Model (CAPM) and the Morningstar/Ibbotson Multi-Stage Discounted Cash Flow Model (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 β (or beta) is the measure of systematic, non-diversifiable risk. In order to calculate the RF , the railroads were asked to provide the average yield to maturity in 2019 for a 20-year U.S. Treasury Bond. Similarly, the railroads were asked to provide an estimate for the RP based on returns experienced by the S&P 500 since 1926. Finally, the railroads were asked to calculate beta using a portfolio of weekly, merger-adjusted railroad stock returns for the prior five years in the following equation:

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

α	=	constant term;
R	=	merger-adjusted stock returns for the portfolio of railroads that meet the screening criteria set forth in <u>Railroad Cost of Capital—1984</u> , 1 I.C.C.2d at 1003-04;
$SRRF$	=	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
ε	=	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 2019 for a 20-year U.S. Treasury Bond, consistent with Railroad Cost of Capital—2006, EP 558 (Sub-No. 10), slip op. at 6 (STB served Apr. 15, 2008), AAR calculated the 2019 risk-free rate to be 2.40%. (AAR Opening, V.S. Gray 29.) OE has examined AAR's data and the data from the Federal Reserve's website and has determined that AAR's computation is correct.

RP – The Market-Risk Premium

Using the approach from Methodology to be Employed in Determining the Railroad Industry's Cost of Capital (Cost-of-Capital Methodology), EP 664, slip op. at 7-9 (STB served Jan. 17, 2008), AAR submitted data reflecting a market-risk premium of 7.15%. The Ibbotson SBBI Classic Yearbook, published by Morningstar, which was previously used as the source of the market-risk premium for 2013 and 2014, has been discontinued. AAR replaced the former source with the Duff & Phelps' Valuation Handbook—U.S. Guide to Cost of Capital, as the source of the market-risk premium for 2015 and 2016. However, in 2018, Duff & Phelps

discontinued the publication of that book in hardcover form and replaced it with an online tool called the Cost of Capital Navigator. According to AAR, the Cost of Capital Navigator uses the same method as that used by Ibbotson and provides the same data reflecting the market-risk premium. (AAR Opening, V.S. Gray 30-31.)

WCTL raises two issues with respect to the market-risk premium. First, WCTL argues that the Board should use a “current” market-risk premium that “reflects the premium perceived by today’s investors, rather than the historical [market-risk premium] dating back to 1926.” (WCTL Reply 3.) WCTL asserts that Duff & Phelps recommends a 5% market-risk premium. (*Id.* at 4.) Second, WCTL contends that by describing the Ibbotson Equity Risk Premium as “well-regarded and widely-accepted,” AAR misrepresents that railroad investors or railroads themselves “rely heavily on the 1926-based historical risk premium, when the available information indicates that they do not, as WCTL has demonstrated at length in its prior submissions.” (*Id.* at 8.)

In its rebuttal, AAR argues that the Board should reject WCTL’s arguments “not only because in WCTL’s own words AAR’s risk premium is ‘well-regarded and accepted,’” but also because challenges to the cost-of-capital methodology are improper in Docket No. EP 558. (AAR Rebuttal 3.)

As the Board has stated previously, there is no single correct method for determining market-risk premium, and a 1926 base year represents one of many reasonable methods. See Pet. of the W. Coal Traffic League to Inst. a Rulemaking Proc. to Abolish the Use of the Multi-Stage Discounted Cash Flow Model in Determining the R.R. Indus. Cost of Equity Cap., EP 664 (Sub-No. 2), slip op. at 17-18 (STB served Oct. 31, 2016). Previously, the Board has declined to change its market-risk premium estimation “absent any evidence that the methodology is either flawed or that the industry relies upon a different methodology.” *Id.* at 18. WCTL argues summarily that the railroad industry does not use a 1926 base year; however, it presents no new evidence that would cause the Board to reconsider its prior findings in this regard. Furthermore, WCTL’s assertion that the Board should apply the market-risk premium recommended by Duff & Phelps is unconvincing since WCTL does not apply Duff & Phelps’ corresponding recommendation for the normalized risk-free rate.¹⁵

OE has verified that use of the 1926 base year, as used by the Cost of Capital Navigator, is a reasonable method of calculating the market-risk premium, (see AAR Opening, App. H), and has also determined that AAR’s computation of the market-risk premium is correct.

Calculating Beta

Cost-of-Capital Methodology, EP 664, slip op. at 11, requires parties to calculate CAPM’s beta using a portfolio of weekly, merger-adjusted stock returns for the prior five years in the following equation: $R - SRRF = \alpha + \beta(RM - SRRF) + \varepsilon$. Applying the modified

¹⁵ Duff & Phelps Recommended U.S. Equity Risk Premium (ERP) & Corresponding Risk-free Rates (R_f); Jan. 2008-Present (Dec. 31, 2019), <https://www.duffandphelps.com/-/media/assets/pdfs/publications/valuation/coc/us-erp-corresponding-risk-free-rate-2008.pdf>.

approach for assigning the new shares outstanding,¹⁶ as described in Railroad Cost of Capital—2010, EP 558 (Sub-No. 14), slip op. at 6 (STB served Oct. 3, 2011), AAR’s calculations estimate that the value of beta is 1.0941.¹⁷ (AAR Opening, V.S. Gray 35.)

AAR states that the 2019 beta “is the lowest since 2009” and that 2019 “is the eleventh consecutive year that the railroad beta has been above 1.0, further demonstrating that railroad stocks are consistently more volatile and are regarded as having more risk than does the market generally.” (Id.)

WCTL responds that AAR’s observation does not prove its conclusion because (1) 2009 was an unusual year for financial markets and therefore may not be representative; and (2) the Board uses a rolling five-year period to measure beta, meaning that only one of the five years changes annually and sudden changes are unlikely. (WCTL Reply 9.) WCTL argues that a “consecutive streak is not as remarkable as it might first appear” and, furthermore, that railroad stocks may not continue to have betas of greater than 1.0. (Id. at 9-10.)

AAR does not respond to this argument specifically, apart from its general assertion that Docket No. EP 558 is not the proper forum for challenges to the Board’s methodology. (AAR Rebuttal 3.)

The Board does not disagree with WCTL’s assertion that the value of beta may decrease in the future. However, for purposes of this proceeding, AAR was instructed to calculate beta pursuant to the Board’s methodology, and WCTL does not argue that AAR erred in this regard.¹⁸ Moreover, the Board agrees with AAR’s general proposition that the annual Docket No. EP 558 proceeding is not the proper forum to challenge aspects of the Board’s established cost-of-capital methodology. As the Board has previously stated, those challenges are best addressed in Docket No. EP 664. See R.R. Cost of Cap.—2016, EP 558 (Sub-No. 20), slip op. at 9 & n.15 (STB

¹⁶ For the purposes of determining the number of shares outstanding, new shares outstanding are assigned to the first Friday on or after the effective date listed in the carriers’ 10-Q and 10-K reports.

¹⁷ Bloomberg equity prices adjusted for dividends and splits were used in place of Yahoo Finance’s adjusted prices in the calculation of the carrier-specific returns, which are needed to calculate an industry beta. AAR states that due to “Yahoo data quality concerns in the prior year, [it] used Bloomberg stock price data for 2019.” (AAR Opening, V.S. Gray 32.) AAR uses the SAS General Linear Model procedure to compute regression data. The Board uses a standard Excel regression method.

¹⁸ In its reply, WCTL also states that “the levered beta for [UPC], responsible for about half of the market cap of the composite sample, has been 0.98, 0.99, and 0.95, measured based on the most recent three years, two years, and one year, respectively” and Canadian National (CN) “has a five-year beta, measured on a monthly basis, of 0.65” according to Yahoo Finance. (WCTL Reply 9-10.) The values cited by WCTL for UPC and CN are not comparable to the Board’s estimates since the Board measures a five-year industry beta using weekly returns, which are adjusted by the three-month risk-free rate. Furthermore, the Board notes that CN is not one of the four carriers that comprise the composite railroad.

served Aug. 7, 2017). Based on OE's verification and calculation of the value of beta, the Board accepts AAR's calculated estimate that the value of beta is 1.0941.

Cost of Common Equity Capital using CAPM

Using the modified approach for assigning the new shares outstanding, the Board calculates the cost of equity as $RF + (\beta \times RP)$, or $2.40\% + (1.0941 \times 7.15\%)$, which equals 10.22%. **Tables 9 and 10** in the Appendix show the calculations of the cost of common equity using CAPM. (See also AAR Opening, V.S. Gray 36.)

To calculate the 2019 market value of common equity for each railroad, AAR calculated each railroad's weekly market value using data on shares outstanding from railroad 10-Q and 10-K reports filed with the SEC, multiplied by stock prices at the close of each week in 2019. (*Id.*, V.S. Gray 25.) AAR calculated the combined 53-week¹⁹ average market value of the railroads to be \$239.3 billion. (*Id.*) OE has examined the data and determined that AAR's calculation is correct.

Alternative Valuations

In its reply, WCTL provides alternative cost-of-capital valuations, ranging from approximately 6% to 7.2%, advanced separately by various sources, including Morgan Stanley, Institutional Shareholder Services, Inc. (ISS), and BNSF's then-Executive Chairman and Chief Executive Officer in a March 5, 2019 speech. (WCTL Reply 2-5.) WCTL also advances its own proposed valuation of 7.06%, which it calculates using only CAPM (without Morningstar/Ibbotson MSDCF) with a "current" market-risk premium offered by Duff & Phelps. (*Id.* at 3-4.) WCTL argues that its alternative figures are consistent, stable, and easily reproduced, as compared to the Board's present methodology that is "substantially flawed, yields overstated values, and should not be utilized as presently configured." (*Id.* at 4-5.)

In its rebuttal, AAR argues that WCTL's claims "rehash arguments already rejected by the Board" that "should be rejected here as well" because Docket No. EP 664, rather than Docket No. EP 558, is the proper proceeding for challenges to the cost-of-capital methodology and the Board has repeatedly rejected the notion that its hybrid methodology is improper (AAR Rebuttal 2-3.)

Although WCTL offers alternative cost-of-capital valuations, the mere existence of alternative methodologies does not mean that the Board's methodology is flawed. As the Board has stated previously, "there is no single 'correct' methodology for determining cost of capital." R.R. Cost of Cap.—2016, EP 558 (Sub-No. 20), slip op. at 9 (STB served Aug. 7, 2017); see also Pet. of the W. Coal Traffic League, EP 664 (Sub-No. 2), slip op. at 2. WCTL urges the Board to consider its own valuation based exclusively on CAPM; however, the Board has

¹⁹ AAR explains that 2019 is a 53-week year for purposes of calculating the market value of common equity since the first week began on Monday, December 31, 2018 (the first week after the last week used in the 2018 calculation) and the final week began on Monday, December 30, 2019. (AAR Opening, V.S. Gray 25.)

repeatedly declined to abolish MSDCF, most recently in Revisions to the Board’s Methodology for Determining the Railroad Industry’s Cost of Capital, EP 664 (Sub-No. 4) (STB served June 23, 2020). Furthermore, as the Board has stated previously, “there is robust economic literature confirming that, in many cases, combining forecasts from different models is more accurate than relying on a single model.” Use of a Multi-Stage Discounted Cash Flow Model, EP 664 (Sub-No. 1), slip op. at 15 (citations omitted). Finally, as previously stated, challenges to the Board’s cost-of-capital methodology should not be raised as part of the annual Docket No. EP 558 proceeding. See R.R. Cost of Cap.—2016, EP 558 (Sub-No. 20), slip op. at 9.

MSDCF

The cost of equity in a discounted cash flow 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 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 and 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 two stages as income before extraordinary items (IBEI), minus capital expenditures (CAPEX), plus depreciation (DEP) and deferred taxes (DT), or

$$CF = IBEI - CAPEX + DEP + DT.$$

As noted above, the third-stage cash flow is based on two 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 2015-2019 periods by the total sales over the same periods. (AAR Opening, V.S. Gray 39-40.) To obtain the 2019 average cash flow, the cash-flow-to-sales ratio is multiplied by the sales revenue from 2019. (*Id.*, V.S. Gray 39.) The 2019 average cash flow figure is then used as the starting point of the Morningstar/Ibbotson MSDCF model. (*Id.*) The initial value of IBEI is determined through the same averaging process for the cash flows in stages one and two. (*Id.*, V.S. Gray 40.) According to AAR, the data inputs in the cash flow formula were retrieved from the railroads’ 2015-2019 10-K filings. (*Id.*, V.S. Gray 38.)

Growth Rates

Growth of earnings is also calculated in three stages. These three growth-rate stages are what make the Morningstar/Ibbotson model a “multi-stage” model. In the first stage (years one through five), the firm’s annual earnings growth rate is assumed to be the median value of the qualifying railroad’s three- to five-year growth estimates, as determined by railroad industry

analysts and published by the Institutional Brokers Estimate System (I/B/E/S). In the second stage (years six through 10), the growth rate is the average of all growth rates in stage one. 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 Gross Domestic Product (GDP) plus 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 Refinitiv (formerly Thomson ONE Investment Management). (AAR Opening, V.S. Gray 41-42). The third-stage growth rate of 5.07% was calculated by using the sum of the figures for long-run expected growth in real output, 3.21%,²⁰ and long-run expected inflation, 1.86%. (*Id.*, V.S. Gray 44-45.)²¹ OE has reviewed the evidence provided by AAR and determined that the growth rates are correct and consistent with the Board's approved methodology. Accordingly, they will be used in the Board's determination of the cost of equity for 2019.

Market Values for MSDCF

The final inputs to the Morningstar/Ibbotson MSDCF model are the stock market values for the equity of each railroad. To calculate these values, AAR used stock prices from Yahoo Finance for January 3, 2020, and shares outstanding from the 2019 Q3 10-Q reports filed with the SEC. (AAR Opening, V.S. Gray 46-47.)

²⁰ The real GDP growth rate is a compound growth rate calculated from the Bureau of Economic Analysis (BEA) data beginning in 1929. BEA rebased the real GDP from 2005 dollars to 2009 dollars. Beginning in 2019, BEA began using 2012 dollars. (AAR Opening, App. M.) AAR calculated the growth rate using GDP in 2012 dollars. (*Id.*, V.S. Gray 44.)

²¹ According to AAR, until the 2013 cost-of-capital determination, the long-run nominal growth rate used was that provided by Morningstar/Ibbotson in its Ibbotson SBBI Valuation Yearbook. (AAR Opening, V.S. Gray 43.) AAR states that this publication has been discontinued. However, for several years, another valuation reference book, the Ibbotson SBBI Classic Yearbook, was expanded to contain many of the statistics found in the Valuation Yearbook. (*Id.*, V.S. Gray 43-44.) Using data from the Ibbotson SBBI Classic Yearbook, the Federal Reserve, and the BEA, AAR states that it replicated the Ibbotson calculations for real growth rates and long-term inflation for the 2013 and 2014 cost-of-capital determinations. (*Id.*, V.S. Gray 44-45.) Beginning with the 2015 cost-of-capital determination, AAR states the SBBI long-term government yields, an input into the long-run nominal growth rate, were no longer available because Morningstar discontinued publication of the Ibbotson SBBI Classic Yearbook. (*Id.*, V.S. Gray 45.) To replace the SBBI long-term government yields, AAR uses the 20-year U.S. Treasury Bond yields, which it contends are very close to the SBBI long-term government yields used by Ibbotson. (*Id.*) This methodology was accepted in the 2015, 2016, 2017, and 2018 cost-of-capital determinations and has been used again for 2019. (*Id.*) Appendix M in AAR's opening statement contains the calculations for the stage three growth rate. (*Id.*, App. M.) OE has reviewed AAR's approach and finds it to be reasonable.

OE has reviewed AAR's evidence. Based on that review, the Board finds that the market values used in the 2019 estimate of the cost of equity using the Morningstar/Ibbotson MSDCF are correct.

Cost of Common Equity Capital Using MSDCF

AAR estimates an MSDCF cost of equity of 11.12%. (AAR Opening, V.S. Gray 48.) Based on the verified inputs discussed above the Board adopts 11.12% as the MSDCF cost of equity. This estimate will be averaged 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 and the recalculated MSDCF, the Board concludes that the railroad cost of equity in 2019 was 10.67%. This figure is based on an estimate of the cost of equity using a CAPM of 10.22% and an MSDCF estimate of 11.12%. (AAR Opening, V.S. Gray 50 & *id.*, Table 17.) **Table 12** shows the costs of common equity for each model and the average of the two models.

PREFERRED EQUITY

Preferred equity has some of the characteristics of both debt and equity. Essentially, preferred stock 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).

To determine the cost of preferred equity here, AAR examined the preferred stock issues of KCS, using the dividend yield method (dividends divided by market price). AAR computed the market value of the preferred stock by multiplying the average quarterly price for each issue by the number of shares outstanding. This is the same procedure used in previous cost-of-capital determinations. *See, e.g., R.R. Cost of Cap.—2018*, EP 558 (Sub-No. 22), slip op. at 11. AAR computed the market value of preferred equity during 2019 to be \$6.108 million. (AAR Opening, V.S. Gray 52, Table 18.) AAR computed the cost of preferred equity to be 3.64%. (*Id.*, V.S. Gray 53.)

OE has reviewed AAR's evidence and discovered additional price data on five days: June 4, 2019, June 10, 2019, November 26, 2019, December 2, 2019, and December 31, 2019. OE added this data to AAR's time series, which results in a slight change to the fourth quarter low and average values. The updated 2019 average price is \$27.40,²² which decreases the market value of preferred equity from \$6.108 million to \$6.100 million and increases the cost of preferred stock from 3.64% to 3.65%. **Table 13** shows OE's revised calculations of the cost of preferred equity. This change has no effect on AAR's final cost-of-equity and cost-of-capital figures.

²² AAR calculated this figure as \$27.44. (*Id.*, App. P.)

CAPITAL STRUCTURE MIX

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

OE has determined that the average market values of debt, common equity, and preferred equity are \$54.484 billion, \$239.329 billion, and \$6.1 million respectively. The percentage share of debt increased from 16.92% in 2018 to 18.54% in 2019. The percentage share of common equity decreased from 83.08% in 2018 to 81.45% in 2019. The percentage of preferred equity for 2019 was de minimis.²³ Based on that review, **Table 14** in the Appendix shows the calculations of the average market value of common equity and relative weights for each railroad. **Table 15** in the Appendix shows the 2019 capital structure mix.

COMPOSITE COST OF CAPITAL

Based on the evidence furnished in the record and the MSDCF, the 2019 composite after-tax cost of capital for the railroad industry, as set forth in **Table 16** in the Appendix, was 9.34%. 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 2019 cost of capital was 2.88 percentage points lower than the 2018 cost of capital (12.22%). See R.R. Cost of Cap.—2018, EP 558 (Sub-No. 22), slip op. at 12.

CONCLUSIONS

The Board finds that for 2019:

1. The cost of railroad long-term debt was 3.48%.
2. The cost of common equity was 10.67%.
3. The cost of preferred equity was 3.65%.
4. The capital structure mix of the railroads was 18.54% long-term debt, 81.45% common equity, and 0.00% preferred equity.
5. The composite railroad industry cost of capital was 9.34%.

²³ The weight for preferred equity is 0.0021%, which is small enough that it rounds to 0.00%. (See AAR Opening, V.S. Gray 2, 55.)

It is ordered:

1. This decision is effective on September 4, 2020.
2. This proceeding is discontinued.

By the Board, Board Members Begeman, Fuchs, and Oberman.

APPENDIX

Table 1
2019 Traded & Non-traded Bonds

Railroad	Traded vs. Non-traded	Number	Market Value (\$000)	% Market Value to All Bonds
CSX	Traded ¹	35	\$16,538,802	98.49%
	Non-traded	3	254,338	1.51%
	Total	38	16,793,140	100.00%
KCS	Traded ²	13	2,604,342	97.38%
	Non-traded	2	70,181	2.62%
	Total	15	2,674,523	100.00%
NSC	Traded ³	33	12,987,860	100.00%
	Non-traded	0	0	0.00%
	Total	33	12,987,860	100.00%
UPC	Traded ⁴	48	21,129,350	100.00%
	Non-traded	0	0	0.00%
	Total	48	21,129,350	100.00%
Composite	Traded	129	\$53,260,353	99.39%
	Non-traded	5	\$324,520	0.61%
	Total	134	\$53,584,873	100.00%
<p>¹ Includes 4 bonds issued during 2019, prorated based on date of issue.</p> <p>² Includes 2 bonds issued during 2019, prorated based on date of issue.</p> <p>³ Includes 5 bonds issued during 2019, prorated based on date of issue.</p> <p>⁴ Includes 7 bonds issued during 2019, prorated based on date of issue.</p>				

Table 2
2019 Bonds, Notes, & Debentures

Railroad	Number of Traded Issues	Market Value Traded Issues (\$000)	Current Cost	Weighted Cost
CSX	35	\$16,538,802	3.56%	1.11%
KCS	13	2,604,342	3.64%	0.18%
NSC	33	12,987,860	3.50%	0.85%
UPC	48	21,129,350	3.24%	1.28%
Composite	129	\$53,260,353		3.42%

Table 3
2019 Equipment Trust Certificates

Railroad	Number of Issues	Market Value (\$000)	Yield %	Weighted Yield (\$000)
CSX	0	\$0	0.00%	\$0
KCS	0	0	0.00%	0
NSC	0	0	0.00%	0
UPC	4	951,588	2.78%	26,483
Composite	4	\$951,588	2.78%	\$26,483

Table 4
2019 Conditional Sales Agreements

Railroad	Number of Issues	Market Value (\$000)	Current Cost	Weighted Cost
Composite	0	\$0		0.00%

Table 5
2019 Capitalized Leases & Miscellaneous Debt

Railroad	Capitalized Leases (\$000)	Miscellaneous Debt¹ (\$000)	Total Other Debt (\$000)
CSX	\$3,390	(\$222,726)	(\$219,336)
KCS	8,659	(39,549)	(30,890)
NSC	6,161	(809,384)	(803,223)
UPC	602,078	399,110	1,001,188
Composite	\$620,288	(\$672,549)	(\$52,261)

¹ Miscellaneous debt includes unamortized debt discount.

Table 6
2019 Market Value of Debt

Type of Debt	Market Value of Debt (\$000)	Percentage of Total Market Value (Excluding Other Debt)
Bonds, Notes, & Debentures	\$53,584,873	98.26%
ETCs	951,588	1.74%
CSAs	0	0.00%
Subtotal	54,536,460	100.00%
Capitalized Leases/Miscellaneous Debt	(52,261)	NA
Total Market Value of Debt	\$54,484,199	NA

Table 7
2019 Flotation Cost for Debt

Type of Debt	Market Weight (Excludes Other Debt)	Flotation Cost	Weighted Average Flotation Cost
Bonds, Notes, & Debentures	98.255%	0.075%	0.073%
ETCs	1.745%	0.073%	0.001%
CSAs	0.000%	0.000%	0.000%
Total	100.000%		0.075%

Table 8
2019 Current Cost of Debt

Type of Debt	Percentage of Total Market Value (Excludes Other Debt)	Debt Cost	Weighted Debt Cost (Excludes Other Debt)
Bonds, Notes, & Debentures	98.255%	3.420%	3.360%
ETCs	1.745%	2.783%	0.049%
CSAs	0.000%	0.000%	0.000%
Subtotal	100.000%		3.409%
Flotation Cost			0.075%
Weighted Cost of Debt			3.484%

Table 9
2019 Summary Output

Regression Statistics					
Multiple R	0.665198				
R Square	0.442488				
Adjusted R Square	0.440336				
Standard Error	0.021860				
Observations	261				
ANOVA					
	df	SS	MS	F	Significance F
Regression	1	0.098230	0.098230	205.564102	1.0227E-34
Residual	259	0.123765	0.000478		
Total	260	0.221995			
	Coefficients	Standard Error	t Stat	P-value	
Intercept	0.000710	0.001359	0.522318	0.601895	
X-Variable	1.094059	0.076308	14.337507	1.0227E-34	

Table 10
2019 CAPM Cost of Common Equity

Risk-Free Rate (RF)	2.40%	
RF+ (Beta x Market Risk Premium)	2.40% + (1.0941 x 7.15%)	10.22%
Cost of Equity		10.22%

Table 11
2019 Cost of Equity Using STB's MSDCF
(\$ in millions)

Company	CSX		KSU		NSC		UNP	
Initial Cash Flow	\$2,018		\$301		\$1,575		\$4,275	
Input for Terminal C.F.	\$2,483		\$577		\$2,216		\$5,153	
Stage One Growth	8.80%		14.54%		9.72%		10.35%	
Stage Two Growth	10.85%		10.85%		10.85%		10.85%	
Stage Three Growth*	5.07%		5.07%		5.07%		5.07%	
	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	Value on 12/31 of Each Year	Present Value
Year								
1	\$2,196	\$1,976	\$344	\$310	\$1,728	\$1,556	\$4,717	\$4,243
2	2,389	1,935	394	320	1,896	1,537	5,205	4,212
3	2,599	1,895	452	331	2,080	1,519	5,744	4,181
4	2,828	1,856	518	341	2,282	1,500	6,339	4,150
5	3,077	1,818	593	352	2,504	1,482	6,995	4,119
6	3,411	1,813	657	352	2,776	1,479	7,753	4,107
7	3,781	1,809	728	351	3,077	1,477	8,595	4,096
8	4,191	1,805	807	351	3,411	1,474	9,527	4,084
9	4,646	1,801	895	351	3,781	1,471	10,561	4,072
10	5,150	1,797	992	350	4,191	1,468	11,707	4,060
Terminal	\$110,367	\$38,517	\$33,920	\$11,979	\$103,482	\$36,257	\$243,093	\$84,313
Sum of Present Value	\$57,025		\$15,389		\$51,221		\$125,636	
Market Value	\$57,025		\$15,389		\$51,221		\$125,636	
COE	11.10%		10.97%		11.06%		11.17%	
Weighted COE	2.54%		0.68%		2.27%		5.63%	
Industry COE	11.12%							

Table 12
2019 Cost of Common Equity Capital

Model	
Capital Asset Pricing Model	10.22%
Multi-Stage Discounted Cash Flow	11.12%
Cost of Common Equity	10.67%

Table 13
2019 Cost & Market Value of Preferred Stock

Railroad	Dividend	Value Per Share	Div. Yield %	Shares (000)	Market Value (\$000)	Market Weight	Weighted Yield
CSX	0.00	0.00	0.00%	0	0.00	0.00%	0.00%
KCS	\$1.00	\$27.40	3.65%	222,625	\$6,100	100.00%	3.65%
NSC	0.00	0.00	0.00%	0	0	0.00%	0.00%
UPC	0.00	0.00	0.00%	0	0	0.00%	0.00%
Composite					\$6,100	100.00%	3.65%

Table 14
2019 Average Market Value for Common Equity

Railroad	Average Market (\$000)	Average Market Weight
CSX	\$57,850,795	24.17%
KCS	12,605,403	5.27%
NSC	49,351,436	20.62%
UPC	119,521,171	49.94%
COMPOSITE	\$239,328,804	100.00%

Table 15
2019 Capital Structure Mix

Railroad	Type of Capital	Market Value (\$000)	Weight
CSX	Debt	\$16,573,804	22.27%
	Equity	57,850,795	77.73%
	P. Equity	0	0.00%
KCS	Debt	2,643,633	17.33%
	Equity	12,605,403	82.63%
	P. Equity	6,100	0.04%
NSC	Debt	12,184,637	19.80%
	Equity	49,351,436	80.20%
	P. Equity	0	0.00%
UPC	Debt	23,082,125	16.19%
	Equity	119,521,171	83.81%
	P. Equity	0	0.00%
Composite Weight	Debt	54,484,199	18.54%
	Equity	239,328,804	81.45%
	P. Equity	6,100	0.00%
	Total	\$293,819,103	100.00%

Table 16
2019 Cost-of-Capital Computation

Type of Capital	Cost	Weight	Weighted Average
Long-Term Debt	3.48%	18.54%	0.65%
Common Equity	10.67%	81.45%	8.69%
Preferred Equity	3.65%	0.00%	0.00%
Composite Cost of Capital		100.00%	9.34%