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SURFACE TRANSPORTATION BOARD

DECISION

STB Ex Parte No. 664 (Sub-No. 1)

USE OF A MULTI-STAGE DISCOUNTED CASH FLOW MODEL IN DETERMINING THE RAILROAD INDUSTRY'S COST OF CAPITAL

The Board adopts the average of its Capital Asset Pricing Model and the Morningstar/Ibbotson multi-stage Discontinued Cash Flow model to determine the railroad industry's current cost of capital.

Decided: January 23, 2009

BY THE BOARD:

Since September 2006, we have been reviewing our regulatory process for annually determining the railroad industry's current cost of capital. The cost of capital figure includes both the cost of debt and the cost of equity. The cost of debt is readily available and observable; however, the cost of equity is not and must be estimated using finance models.

In the proceeding to determine the cost of capital for the year 2005, a group of interested shippers challenged the finance model—a single-stage Discounted Cash Flow (DCF) model—that had long been used by the agency to determine the cost of equity. In September, 2006, we instituted a broad rulemaking to obtain public comment from all interested parties on whether that method continued to be the most appropriate method to use for our regulatory purposes or whether another method would be better. As a result of that examination, in January 2008, we replaced our single-stage DCF model with a Capital Asset Pricing Model (CAPM) to determine with better accuracy the railroad industry's cost of capital.[1] In that decision, we stated that we would also "initiate a separate proceeding aimed at gathering additional information on the cost-of-capital-estimating methodology . . . [that would] be focused on detailed multi-stage DCF proposals that could be used in conjunction with CAPM in the future."[2] Having done so, we now conclude that using a simple average of CAPM and the Morningstar/Ibbotson multi-stage

[1] Methodology to be Employed in Determining the Railroad Industry's Cost of Capital, STB Ex Parte No. 664 (STB served Jan. 17, 2008) (Cost of Capital Methodology).

[2] Cost of Capital Methodology at 2-3.

DCF model to calculate the cost of equity will yield a more precise determination than relying on CAPM alone.

BACKGROUND

Each year the Board determines the railroad industry's current cost of capital. The Board then uses this cost-of-capital figure for a variety of regulatory purposes. It is used annually to evaluate the adequacy of individual railroads' revenues.[3] It is also employed in maximum rate cases, feeder-line applications, rail line abandonments, trackage rights cases, rail-merger reviews, and, more generally, in our Uniform Rail Costing System (URCS).

The Board calculates the cost of capital as the weighted average of the cost of debt and the cost of equity, with the weights determined by the capital structure (the fraction of capital from debt or equity on a market-value basis) of the railroad industry. While the cost of debt is observable and readily available, the cost of equity (the expected return that equity investors require) can only be estimated. Unlike the cost of debt, the cost of equity never reveals itself, not even historically. Because the cost of equity cannot be directly observed, estimating the cost of equity requires adopting a finance model and making a variety of simplifying assumptions.

In 1982, our predecessor, the Interstate Commerce Commission (ICC), decided to derive the cost-of-equity component of the cost of capital using a single-stage DCF model (1981 DCF Model).[4] This model came under scrutiny in the proceeding to calculate the cost of capital for the rail industry for the year 2005. There, the Western Coal Traffic League (WCTL) argued that there was a mismatch between the 5-year growth rate supplied to the Board by the Association of American Railroads (AAR) and the long-run growth potential of the economy as a whole. WCTL cited finance texts for the proposition that an industry's sustainable growth rate cannot significantly exceed the growth rate for the economy in perpetuity. WCTL suggested that we replace our 1981 DCF Model with CAPM.

The record in that proceeding, however, did not support abandoning a methodology that had been used for over 20 years.[5] Instead, we began a rulemaking proceeding, in Ex Parte No. 664, to gather more evidence and consider replacing the

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[3] 49 U.S.C. 10704(a)(2),(3); Standards for Railroad Revenue Adequacy, 364 I.C.C. 803 (1981), modified, 3 I.C.C.2d 261 (1986), aff'd sub nom. Consolidated Rail Corp. v. United States, 855 F.2d 78 (3d Cir. 1988).

[4] Railroad Cost of Capital – 1982, 367 I.C.C. 662, 670 (1983); Railroad Cost of Capital – 1981, 365 I.C.C. 734, 741 (1982). The key equation used ($r = D/P + g$) estimated the average return on equity (r) desired by investors by calculating the current dividend to price ratio (D/P) and adding to that a forecast of future growth (g). The computation of dividend yield was straightforward. To estimate the growth rate, the agency used the average of leading securities analysts' 5-year forecasts for growth in earnings per share.

[5] Cost of Capital Methodology at 12-14.

1981 DCF Model with CAPM. After receiving written testimony and holding two public hearings, we concluded that the time had come to modernize our regulatory process and we replaced the aging single-stage DCF model with CAPM.[6]

In that rulemaking, several parties had urged us to use a multi-stage DCF in conjunction with CAPM. We saw merit with using both models to estimate the cost of equity. As we observed, "[w]hile CAPM is a widely accepted tool for estimating the cost of equity, it has certain strengths and weaknesses, and it may be complemented by a DCF model. In theory, both approaches seek to estimate the true cost of equity for a firm, and if applied correctly should produce the same expected result. The two approaches simply take different paths towards the same objective. Therefore, by taking an average of the results from the two approaches, we might be able to obtain a more reliable, less volatile, and ultimately superior estimate than by relying on either model standing alone."[7] However, the record was insufficient to support adopting any particular DCF model.

Accordingly, we began this proceeding to explore in depth an appropriate multi-stage DCF that could be used in the Board's cost-of-equity determination. In the Advance Notice of Proposed Rulemaking (ANPRM), we identified the following four requirements that a multi-stage DCF model should satisfy: (1) the DCF model should be a multi-stage model; (2) it should not focus on dividend payments only; broader measures of cash flow or shareholder returns should be incorporated as well; (3) it should be limited to those firms that pass the screening criteria set forth in Railroad Cost of Capital – 1984, 1 I.C.C.2d 989 (1985) (Railroad Cost of Capital -1984); and (4) when combined with CAPM, it should enhance the precision of the resulting cost-of-capital estimate.[8]

We received comments from Arkansas Electric Cooperative Corporation (AECC), AAR, and WCTL. AAR suggested we adopt the multi-stage DCF model used by Morningstar/Ibbotson, which it demonstrated could be easily adjusted to satisfy the four fundamental requirements identified by the Board. WCTL submitted a multi-stage DCF model of its own creation and asserted that such a model could provide further validation of the CAPM results.[9] WCTL also argued, however, that the time was not ripe to add multi-stage DCF calculations to the CAPM calculations and suggested that we revisit this matter in five years.[10]

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[6] 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. Cost of Capital Methodology at 7.

[7] Cost of Capital Methodology at 13 (citations omitted).

[8] Use of a Multi-Stage Discounted Cash Flow Model in Determining the Railroad Industry's Cost of Capital, STB Ex Parte No. 664 (Sub-No. 1) (STB served Feb. 11, 2008).

[9] WCTL Comments at 2 (filed Apr. 14, 2008).

[10] Id. at 3.

AECC did not offer a model, generally deferring to WCTL.[11] But AECC stated that the use of a multi-stage DCF model in conjunction with CAPM could enhance the precision of the resulting cost-of-equity estimate.[12]

Upon examination, we were satisfied that the Morningstar/Ibbotson model met the four requirements we had identified. First, the model is multi-staged, employing 3 different growth rates of the railroads' cash flows. Second, it does not limit future cash flows to dividend payments alone, but incorporates a wider array of cash flows for equity investors. Third, the model can easily be modified to use only those firms that pass the screening criteria set forth in Railroad Cost of Capital – 1984. Fourth, AAR demonstrated that the Morningstar/Ibbotson model, when combined with CAPM and applied over a sufficiently lengthy historical analysis period, enhanced the precision of the resulting cost-of-equity estimate by lowering the variance of a forecast.

In addition to meeting the four criteria we enumerated in the ANPRM, the record showed that the Morningstar/Ibbotson model is a commercially accepted multi-stage DCF model, developed by disinterested, respected third parties, that was created for use by the financial community in evaluating publicly traded equities and in making real-world investment decisions.

We therefore issued a notice of proposed rulemaking (NPRM) in which we proposed to determine the cost of equity of the railroad industry by using the average of the estimate produced by the CAPM model and the Morningstar/Ibbotson multi-stage DCF model.[13] We noted that the Morningstar/Ibbotson model has been tested in the marketplace and is used to estimate the cost of equity for different industries. We invited interested parties to comment on the proposal to use the two models in conjunction and on whether a simple average is the best way to integrate the two approaches.

We received two rounds of public comments on this proposal. Both AAR and the United States Department of Transportation (DOT) supported the use of the Morningstar/Ibbotson model in conjunction with CAPM, and each agreed that taking a simple average of the two models would improve the reliability of the resulting cost-of-capital calculation. AECC and WCTL[14] both expressed their dissatisfaction with the proposal because of various perceived deficiencies in the Morningstar/Ibbotson model. Both AECC and WCTL contended those

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[11] AECC Comments at 1 (filed Apr. 14, 2008).

[12] Id. at 2.

[13] Use of a Multi-Stage Discounted Cash Flow Model in Determining the Railroad Industry's Cost of Capital, STB Ex Parte No. 664 (Sub-No. 1) (STB served Aug. 11, 2008).

[14] WCTL filed its reply comments one day late, but included a motion for leave to late file. As no party was prejudiced and in the interest of a more complete record, we will grant WCTL's motion.

deficiencies are exacerbated by averaging it with CAPM, which they contend also overstates the cost of equity.[15]

DISCUSSION AND CONCLUSIONS

We conclude that we can improve our cost-of-capital determination by using a multi-stage DCF model in conjunction with CAPM to estimate the cost of equity for the railroad industry. Averaging the results of the commercially accepted Morningstar/Ibbotson multi-stage DCF with the results of CAPM establishes the best estimate of the railroad industry's cost of equity for our regulatory purposes. Below, we describe the Morningstar/Ibbotson model that will be used in conjunction with CAPM to determine the cost of equity for the railroad industry in future cost-of-capital proceedings. We then address the specific concerns raised by the parties.

I. The Morningstar/Ibbotson Model

The cost of equity in a 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 investors. These cash flows are not presumed to be paid out to investors; instead, it is assumed investors will ultimately benefit from these cash flows through higher regular dividends, special dividends, stock buybacks, or stock price appreciation. The incorporation of these cash flows and the expected growth of earnings are the essential aspects of the multi-stage DCF we are adopting here.

The Morningstar/Ibbotson 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

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

An average cash flow figure is used as the starting point of the analysis under the Morningstar/Ibbotson model. To find the average cash flow, the model uses the 5-year period leading up to the year being analyzed, and the total cash flows for that time period are divided by total sales, which determine the 5-year cash-flow-to-sales ratio. The ratio is then multiplied by the total sales for the year being analyzed to obtain the average cash flow estimate for that year. For the third (and final) stage of the Morningstar/Ibbotson multistage DCF model stage, Morningstar/Ibbotson uses two additional assumptions: that there is no depreciation or deferred taxes. Therefore, in the third stage, cash flows are based solely on income before extraordinary items.

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 1-5), the firm's annual earnings growth rate is assumed to be the median value of the qualifying

[15] AECC Comments at 2-3 (filed Sept. 15, 2008); WCTL Comments at 25 (filed Sept. 15, 2008).

railroad's 3- to 5-year growth estimates as determined by railroad industry analysts and published by Institutional Brokers Estimate System (IBES). In the second stage (years 6-10), the growth rate is the average of all growth rates in stage 1. In stage three (years 11 and onwards), the growth rate is the long-run nominal growth rate of the average 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.

II. Criticisms of the Noticed Proposal

Only two parties oppose our use of the Morningstar/Ibbotson model together with CAPM to estimate the cost of equity for the railroad industry: WCTL and AECC. Their objections can be categorized into four areas: (a) the adequacy of the notice, (b) our proposal to rely on an independent model developed by Morningstar/Ibbotson rather than create a multi-stage DCF model of our own, (c) various technical concerns with the Morningstar/Ibbotson multi-stage DCF model, (d) and whether it is reasonable to average the results from the multi-stage DCF model and CAPM. We address each area of concern below.

A. Sufficiency of the Notice

WCTL challenges the sufficiency of our NPRM, claiming that it did not "really state or explain" what we were proposing to adopt.[16] WCTL acknowledges that the appendix to the NPRM presented the algebraic formula for the multi-stage DCF model, but it argues that two key variables (the measure of cash flow and the growth rate to be used in the third stage) were not defined in the NPRM. It claims the failure to define these two variables rendered the notice deficient and prevents the agency from adopting any multi-stage DCF model at this time. In response, AAR argues that the NPRM made "abundantly clear what the Board is proposing, and WCTL knows full well what that is: adoption of the Morningstar/Ibbotson model, which was fully explained in [AAR's witness] Dr. Stangle's testimony and workpapers."[17]

We are satisfied that the NPRM was sufficient. The Administrative Procedure Act requires an agency to publish notice of "either the terms or substance of the proposed rule or a description of the subjects and issues involved," in order to "give interested persons an opportunity to participate in the rulemaking through submission of written data, views, or arguments."[18] Notice is considered sufficient "if it affords interested parties a reasonable opportunity to participate in the rulemaking process, and if the parties have not been deprived of the opportunity to present relevant information by lack of notice that the issue was there."[19] Here, our notice clearly stated that we proposed "to determine the cost of equity of the railroad industry by using the average of the estimate produced by the CAPM model and the

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[16] WCTL Comments at 2, 4 (filed Sept. 15, 2008).

[17] AAR Reply at 5 (filed Oct. 14, 2008).

[18] 5 U.S.C. 553.

[19] WJG Tel. Co., Inc. v. FCC, 675 F.2d 386, 389 (D.C. Cir. 1982) (citations and quotation marks omitted).

Morningstar/Ibbotson multi-stage DCF model identified by AAR."[20] The Morningstar/Ibbotson model had been fully identified and explained in the prior testimony and workpapers of AAR's witness. Moreover, there is no indication that any party was deprived of the opportunity to present relevant evidence regarding the Morningstar/Ibbotson model. DOT had no difficulty understanding and endorsing the proposal and WCTL's own pleading belies any claims that it did not understand the basic proposal and the underlying assumptions of the Morningstar/Ibbotson multi-stage DCF model.

WCTL also contends that we did not sufficiently consider the multi-stage DCF model it submitted in response to the ANPRM.[21] But in the NPRM, we acknowledged WCTL's model and explained our reasons for preferring the Morningstar/Ibbotson model. As we explained, the latter model met the criteria we had established and is commercially used for various industries.

B. The Independence of the Morningstar/Ibbotson Model

WCTL takes issue with our reliance on the independence of the Morningstar/Ibbotson model because, it asserts, there is no evidence that "anyone actually considers the Ibbotson model to be a reliable measure of the cost of capital for the railroad industry."[22] WCTL argues that a model more specific to the railroad industry would be more appropriate.[23] Similarly, AECC asserts that the Board should not simply defer to Wall Street for determining cost of capital.[24] WCTL also criticizes the simplicity of a multi-stage DCF relative to a CAPM methodology.[25]

We find these arguments unpersuasive. We see no need to construct a railroad-only multi-stage DCF model for the cost of equity when a reputable independent vendor provides a suitable model for our purposes. The Morningstar/Ibbotson model meets our criteria for a suitable multi-staged DCF model. A Wall Street measure can be instructive when the task is to measure the cost of equity, and this is a commercially accepted model, developed by disinterested, respected third parties, created for use by the financial community in evaluating publicly traded companies and in making real-world investment decisions. Indeed, WCTL's own experts have relied on information from Morningstar/Ibbotson in other cost-of-capital contexts because the company is a highly regarded, independent provider of information on the

[20] Use of a Multi-Stage Discounted Cash Flow Model in Determining the Railroad Industry's Cost of Capital, STB Ex Parte No. 664 (Sub-No. 1) (STB served Aug. 11, 2008).

[21] WCTL Comments at 4 (filed Sept. 15, 2008).

[22] Id. at 19.

[23] Id. at 4.

[24] AECC Reply at 2 (filed Oct. 14, 2008).

[25] WCTL Comments at 21 (filed Sep 15, 2008).

cost of capital for hundreds of industries.[26] Finally, the Morningstar/Ibbotson multi-stage DCF model may be simple, but we view simplicity as a virtue. Our goal is not to make our calculation of the cost of equity more complex, but to make it more precise. And using an average of this multi-stage DCF model and CAPM will provide a more robust, precise, and stable cost-of-equity estimate that is well suited for our regulatory purposes.

C. Technical Objections to Morningstar/Ibbotson Model

WCTL has voiced a number of technical concerns with the multi-stage DCF model used by Morningstar/Ibbotson. However, it has provided no supporting testimony by any accredited finance witness to support those allegations.[27] In contrast, AAR submitted a verified statement by a well-qualified finance witness to support the Morningstar/Ibbotson model.[28]

WCTL's failure to support its critiques with expert testimony is significant. WCTL has raised a number of complex critiques of an established model by a reputable commercial vendor, yet counsel's argument is not the same as substantive testimony by expert witnesses, particularly on these kinds of highly technical finance matters. Moreover, several of the arguments WCTL presented conflict with prior testimony by its finance witnesses, raising serious questions about the validity of the critiques.[29]

Nonetheless, given the importance of this issue, our technical staff carefully scrutinized the four criticisms raised by WCTL regarding the Morningstar/Ibbotson multi-stage DCF model. Upon review, we find WCTL's unsubstantiated claims to be without merit, for the reasons discussed below.

1. Second-Stage Growth Rate

The growth rate for the second stage of Morningstar/Ibbotson model (years 6 through 10) reflects the sample-wide average of the growth rate for the first stage. Because the sample only consists of four railroads, WCTL argues that the underlying assumption is that the forecast 5-year growth rate for the industry will continue for 10 years.[30] WCTL contends that 5-year forecasts of earnings growth will not likely be accurate for 10 years.[31] After the tenth year,

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[26] See WCTL Comments in STB Ex Parte No. 558 (Sub-No. 9) at 9-10 (filed Apr. 28, 2006) (noting that Ibbotson, "a leading provider of financial data was acquired on March 1, 2006 by Morningstar, Inc., a leading provider of independent investment research.").

[27] See WCTL Comments (filed Sept. 15, 2008); WCTL Reply (filed Oct. 15, 2008).

[28] AAR Reply, V.S. Stangle at 1-17 (filed Oct. 15, 2008).

[29] See, e.g., AAR Reply at 8 n.8. (filed Oct. 14, 2008).

[30] WCTL Comments at 5-6 (filed Sept. 15, 2008).

[31] Id. at 6.

WCTL claims the earnings growth will then jump to that of the economy as a whole, rather than WCTL's proposed gradual transition from the growth rate of the first stage to the third stage.[32]

We find that the Morningstar/Ibbotson model's second-stage growth rate is reasonable. An average of the individual carriers' first-stage growth rates in the second stage is an appropriate approach, because the returns of individual firms should revert to the industry average over time. WCTL has offered no basis for modifying this reasonable assumption, which is used by Morningstar/Ibbotson not only for the railroad industry, but to estimate the cost of equity for hundreds of other industries.[33]

WCTL's second claim is that assuming high earnings growth for 10 years is unrealistic. WCTL contends that this assumption means that railroad cash flow will double in the first 5 years and, therefore, quadruple by the end of 10 years.[34] WCTL posits that such growth appears to be driven by pricing power and not by volume or productivity.[35] This claim by WCTL leads it to the conclusion that the Morningstar/Ibbotson model derives an increased cost of capital due to the railroads' ability to impose rate increases.[36] Because rates are ultimately regulated using the cost-of-capital estimate, WCTL regards use of the model as fatally circular.[37]

We disagree. As WCTL is well aware, the vast majority of rail traffic is not subject to rate review before the agency. Most rates fall below the statutory threshold for rates established by the statute, and most of the remainder is either under contract (and thus, has been agreed to by the shipper) or involves the transportation of commodities that the Board has categorically found to be subject to effective competition and thus exempt from rate regulation. Only a fraction (roughly 10 to 20 percent) of railroad traffic is subject to potential STB rate review. Therefore, the growth estimates used by Morningstar/Ibbotson, which are provided by railroad industry analysts, are driven more by market forces than regulatory concerns. We assume that analysts making those growth estimates understand that most rail rates are unregulated and would take into consideration all rates, be they exempted, contractual, or otherwise, when making those projections. Furthermore, growth is not driven solely by rates, but can be driven by volume and

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[32] Id.

[33] We note that, even if we were to adjust the Morningstar/Ibbotson model to use a gradual transition, the end result would not be significantly different. For example, the gradual transition of the WCTL model would produce a cost of equity of 13.93% for 2006, while the Morningstar/Ibbotson model produces a cost of equity of 14.57%. See AAR Reply Comments at 7 (filed Oct. 14, 2008). Because we have proposed averaging the multi-stage DCF with the CAPM estimate, the actual impact on the proposed cost of equity is decreased by 50%, making the difference not material in the overall cost-of-capital determination.

[34] WCTL Comments at 9 (filed Sept. 15, 2008).

[35] Id.

[36] WCTL Comments at 9-10 (filed Sept. 15, 2008).

[37] Id. at 10.

productivity as well. Because analysts establish growth rates that represent what is actually occurring in the marketplace with regard to each railroad, the fact that growth rates may be high today does not preclude them from decreasing in the future. Actual railroad growth, or lack of growth, is what will determine the cost of capital, not simply pricing power. While we acknowledge that there is some relationship between the Board's cost-of-equity determination and the returns that railroads may be permitted to earn on regulated traffic, that effect is a small component of overall growth in the rail industry and would not create the kind of fatal circularity that should preclude the use of a multi-stage DCF model.

Further, WCTL's circularity argument is inconsistent with its earlier testimony in STB Ex Parte No. 664. In that proceeding, WCTL advocated the use of CAPM by observing that "very similar results are realized by utilizing a multi-phase or stage DCF model, one that incorporates the IBES forecasts for the first five years (first stage)."[38] Further, it accepted the use of IBES forecast in combination with a second stage that is phased down to the rate of growth in the general economy, but now objects to a second stage which is an average of the rates in the first stage. WCTL continues to contradict its earlier position on growth rates, where WCTL's witnesses proposed to use the truncated consensus IBES earnings forecasts.[39] For all of the reasons noted above, WCTL's argument does not convince us that this commercially accepted method is fatally circular.

2. Terminal Growth Rate

WCTL also takes issue with the terminal growth rate produced by the Morningstar/Ibbotson model, arguing that it is on the high side of acceptable values.[40] The model uses the average annual percentage change in real GDP from 1930 to the year being analyzed and an estimated long-run inflation rate reflecting the median 10-year inflation forecast from the Federal Reserve Bank in Philadelphia. WCTL argues that in measuring the future growth rate from year 11 out, the model should exclude the historical period that encompasses the Great Depression and should rely on the long-term estimate of long-term future growth, such as the projection of the Social Security trustees.[41]

We have reviewed the evidence and find no reason to believe that the proposed method for the terminal growth rate is inaccurate. Though there are many other ways to calculate this rate, that fact alone does not persuade us to adjust the current Morningstar/Ibbotson model.[42]

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[38] WCTL Comments in STB Ex Parte No. 664, at 2 (filed Dec. 8, 2006).

[39] WCTL Comments at 9 (filed Apr. 14, 2008).

[40] WCTL Comments at 11 (filed Sept. 15, 2008).

[41] Id. 11-12.

[42] We also note that in WCTL's comments filed on April 14, 2008, WCTL suggests that the terminal growth stage should reflect the long-term expected growth rate in the Gross Domestic Product (GDP), specifically using the consensus forecast of the long-term nominal growth in the GDP, as calculated by Blue Chip Economic Indicators (Blue Chip). WCTL Comments, V.S. Thomas D. Crowley and Daniel L. Fapp at 11 (filed Apr. 14, 2008). According

(continued . . .)

With the understanding that long-term trends are informative of future prospects, the Morningstar/Ibbotson model uses historical growth because a number of factors drive long-run growth. As noted by AAR, the estimate of long-run inflation is consistent with the estimates of the Consumer Price Index's growth as reported by the Social Security trustees and forecasts from the Federal Reserve Bank in Philadelphia.[43]

AECC commented that using a multi-stage DCF with CAPM is only useful if the long-run growth rate of the economy is incorporated as a stabilizing factor.[44] Because the economy's growth rate is not incorporated until stage 3, AECC contends that the Morningstar/Ibbotson model could allow for the estimated cost of capital to deviate from the long-run growth rate of the entire economy. AECC's concern is that deviation from the economy's growth means analysts' projections form the basis of the first two stages' growth rates, allowing increases in the exercise of rail market power to contribute to increases in the estimated cost of capital. Because both CAPM and the first two stages of the Morningstar/Ibbotson model share this characteristic, AECC argues that it may tend to give a wrong answer.[45]

We do not find this challenge credible. One of the benefits of the Morningstar/Ibbotson model is its use in the third stage of the growth rate of the entire economy from year 11 on. Using the growth rate of the entire economy for all years in the Morningstar/Ibbotson model would defeat the purpose of our criteria requiring a multi-stage model. Further, analysts' projections are not based on just regulated rates, but include all rates and factors that contribute to industry growth. Also, we note that averaging two models is supported by significant economic literature. AECC provided no evidence in support of its argument to convince us otherwise.

3. Measure of Cash Flows

WCTL expresses concerns regarding how the Morningstar/Ibbotson model measures cash flows. Specifically, it argues that the model (1) does not take into account the exercise of stock options or share repurchases; (2) makes no adjustment for changes in working capital; and (3) defines cash flows as only income before extraordinary items in the terminal stage.[46]

(. . . continued)
to WCTL, the March 10, 2008 issue of Blue Chip places long-term GDP growth at 5.0%. Id. at 11. In its September 15, 2008 opening comments, however, WCTL suggests that a better approach is the very long-term estimate of long-term future growth, such as the projection of the trustees for the Social Security Administration, which is 4.6%. WCTL Comments at 12 (filed Sept. 15, 2008).

[43] AAR Reply at 8 (filed Oct. 14, 2008).

[44] AECC Comments at 2 (filed Sept. 15, 2008).

[45] Id. at 2-3.

[46] WCTL Comments at 13-14 (filed Sept. 15, 2008).

First, WCTL complains that the model does not address stock options or share repurchases.[47] WCTL appears to argue that not taking these cash flows into account is somehow at odds with our statement in the NPRM that the model takes into account all cash flows that a reasonable investor would expect.[48]

The Morningstar/Ibbotson model does not explicitly account for stock options and stock repurchases because it focuses on a broader measure of free cash flow that is potentially available to equity investors.[49] Although the model does not assume that these cash flows are actually paid out to equity investors, it does assume that investors will ultimately benefit from these flows through specific distributions or stock price appreciation. Certainly there are numerous ways in which to account for cash flows, and the Morningstar/Ibbotson model includes one reasonable means of doing so. Indeed, WCTL's free cash flow model did not explicitly account for stock options or stock repurchases.

Second, WCTL claims that the railroad industry is capital intensive, and that not taking into account working capital when measuring cash flows is a significant deficiency with the model.[50] WCTL argues that an industry, like the railroads, with a high level of capital expenditures would also face demands for working capital.[51]

The Morningstar/Ibbotson model does not include changes in working capital because it focuses on permanent changes in cash flows that are likely to affect shareholder value. Shareholder value can be defined as the sum of all strategic decisions that affect the firm's ability to efficiently increase the amount of free cash flow over time. We do not think that one year of fluctuating working capital should affect shareholder value. In fact, as WCTL demonstrated, working capital can increase or decrease year over year, therefore cancelling out over time. WCTL has not convinced us that adjusting the Morningstar/Ibbotson model by including working capital would be justifiable. To modify the model's focus from permanent changes in cash flows to incorporate working capital is inappropriate, as it would require revising a commercially accepted model to include fluctuations in working capital that are otherwise assumed to even out over time.

Finally, the terminal stage of the Morningstar/Ibbotson model defines cash flows by only income before extraordinary expenditures. WCTL claims that this is another deficiency with the model, because the requirement for a broad measure of cash flows is not met in stage three but

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[47] Id. at 13.

[48] Id.

[49] AAR Reply, V.S. Stangle at 11 (filed Oct. 14, 2008).

[50] WCTL Comments at 14 (filed Sept. 15, 2008).

[51] Id.

only in the first two stages.[52] WCTL requests that its model's definition of cash flows be given greater consideration.[53]

We find reasonable the assumption regarding the terminal stage cash flows. In the terminal growth stage, the Morningstar/Ibbotson model sets capital expenditures equal to depreciation (i.e., net investment is assumed to be zero) because that assumption is consistent with an industry reaching a steady state of operations and growing at a rate equal to that of the overall economy. This assumption may run counter to the actual investment plans of the major railroads, but it does not bias the cost of equity upwards, as suggested by WCTL. Rather, if we relaxed the assumption of zero net investment, we would also have to relax the assumption that the growth rate in the third stage is equal to the long-run growth rate of the overall economy. If the railroads were to continue making large capital expenditures in excess of depreciation during the third stage of the model, this stage of the model would have above-normal growth prospects.[54] Thus, lowering the cash flows (as advocated by WCTL) would require a counterbalancing increase in growth rate (as noted by AAR). It would also require the Board to make a long-run forecast of the amount of capital investment in the railroad industry and the long-run growth rates. The difficulty of that endeavor probably explains why Morningstar/Ibbotson adopted the simplifying assumption of zero net investment for the terminal phase of the DCF model. We also find this simplifying assumption reasonable, as it permits a reasonable estimate of the cost of equity without a complex and detailed company-specific forecast of industry conditions 11 years into the future and beyond.

4. Derivation of 5-Year Growth Rates

WCTL expresses concern that the derivation of the 5-year growth rates for the first 5 years will simply be taken from the Ibbotson publication without additional review or scrutiny.[55] WCTL proposes that we instead use a truncated average, excluding the highest and lowest estimates for each carrier for each month, which it posits will improve accuracy and transparency.[56] WCTL also notes that relying on forecasts can raise quality issues as well, since there are sharp disparities in forecasts and the number of estimates can vary.[57]

As we have noted previously, the Morningstar/Ibbotson model is a commercially accepted multi-stage DCF model, with variables that can be estimated from readily available data, including the Ibbotson publication. To the extent that WCTL is concerned about transparency, this model satisfies the Board's interest in allowing all parties the equal opportunity to verify the variables. Using a truncated average is certainly one option; however,

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[52] Id.

[53] Id.

[54] AAR Reply, V.S. Stangle at 13 (filed Oct. 14, 2008).

[55] WCTL Comments at 17 (filed Sept. 15, 2008).

[56] Id. at 17-18.

[57] Id. at 18.

the approach used by Morningstar/Ibbotson is also reasonable. Were the use of a truncated average a consistently more accurate approach, then presumably it would have been used in the Morningstar/Ibbotson model. But it is not used in that model, and WCTL has not convinced us that the model should be adjusted in such a manner.

As for WCTL's concerns with the use and reliability of forecasts, since our Cost of Capital Methodology decision we have explained our desire for incorporation of a multi-stage DCF into our cost-of-capital calculation. A multi-stage DCF uses analysts' forecasts as one of its inputs. To say that analysts' forecasts are unreliable and should not be used essentially would eliminate consideration of a multi-stage DCF in our cost-of-equity calculation. But multi-stage DCF models are widely accepted as a method for such calculations.

D. Averaging the Morningstar/Ibbotson Model and CAPM

In our NPRM, we proposed incorporating the Morningstar/Ibbotson model with CAPM by using a simple average of the estimates produced by each model. Ultimately, both CAPM and DCF are economic models that seek to measure the same thing. CAPM seeks to do so by estimating the level of expected returns that investors would demand given the perceived risks associated with the company. By contrast, DCF models estimate the expected rate of return based on the present value of the cash flows that the company is expected to generate. Both approaches are plausible and intuitive, but are merely models.

AAR supported our proposed use of the Morningstar/Ibbotson model and supported using a simple average of the two models as the best approach for calculating the railroad industry's cost of equity.[58] Similarly, DOT noted that economic and financial academic research favors combining different models, and concluded that the use of the average of the Morningstar/Ibbotson model and CAPM will improve the reliability and stability of our cost-of-equity calculation.[59]

Both AECC and WCTL opposed averaging of the two models due to perceived deficiencies in the models, as discussed above, rather than on grounds relating to the best way to integrate two different economic models to estimate the cost of equity. With regard to our specific proposal to incorporate the two models, WCTL claims that the reduced standard deviation produced here should not be confused with increased substantive accuracy.[60] AECC argues that, while averaging the two may give an appearance of reliability and stability, both methods overstate the cost of capital and essentially provide cover for the industry to charge higher prices.[61]

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[58] AAR Comments at 1 (filed Sept. 15, 2008).

[59] DOT Comments at 5-6 (filed Sept. 15, 2008).

[60] WCTL Comments at 21-23 (filed Sept. 15, 2008).

[61] AECC Comments at 3 (filed Sept. 15, 2008).

In sum, we find WCTL's and AECC's substantive criticisms of the Morningstar/Ibbotson model to be without merit, and neither WCTL nor AECC demonstrate that any alternative method of combining that model with CAPM would be superior to the simple averaging that we have proposed. Therefore, we will adopt a cost-of-equity calculation methodology that takes a simple average of the calculation results provided by CAPM and the Morningstar/Ibbotson model. As the Federal Reserve Board noted in its testimony in STB Ex Parte No. 664, academic studies had demonstrated that using multiple models will improve estimation techniques when each model provides new information.[62] In addition, there is robust economic literature confirming that, in many cases, combining forecasts from different models is more accurate than relying on a single model.[63]

CONCLUSION

We find that the cost-of-equity component of our annual cost-of-capital estimate for the railroad industry should be calculated by using a simple average of the estimates produced by the CAPM model adopted in STB Ex Parte No. 664 and the Morningstar/Ibbotson model described above. We find that a simple average of the two results will produce the best estimate of the rail industry's cost of equity that will aid us in performing a variety of regulatory responsibilities.

Indeed, if our exploration of this issue has revealed nothing else, it has shown that there is no single simple or correct way to estimate the cost of equity for the railroad industry, and countless reasonable options are available. Both the CAPM and the multi-stage DCF models we propose to use have their own strengths and weaknesses, and both take different paths to estimate the same illusory figure. By using an average of the results produced by both models, we harness the strengths of both models while minimizing their respective weaknesses. The result should be a stable yet precise estimate of the cost of equity that we can use in future regulatory proceedings and to gauge the financial health of the railroad industry.

Pursuant to 5 U.S.C. 605(b), we conclude that our action in this proceeding will not have a significant economic impact on a substantial number of small entities. This action will not

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[62] February 2007 Hearing Tr. at 18, in STB Ex Parte No. 664.

[63] See generally David F. Hendry & Michael P. Clements, Pooling of Forecasts, VII Econometrics Journal 1 (2004); J.M Bates & C.W.J. Granger, The Combination of Forecasts in Essays in Econometrics: Collected Paper of Clive W.J. Granger. Vol. I: Spectral Analysis, Seasonality, nonlinearity. Methodology, and Forecasting 391-410 (Eric Ghysels, Norman R. Swanson, & Mark W. Watson, eds., 2001); Spyros Makridakis and Robert L. Winkler, Averages of Forecasts: Some Empirical Results, XXIX Management Science 987 (1983).

significantly affect either the quality of the human environment or the conservation of energy resources. Notice of this decision will be published in the Federal Register.

By the Board, Chairman Nottingham, Vice Chairman Mulvey, and Commissioner Buttrey.

Anne K. Quinlan
Acting Secretary