DIRECT TESTIMONY
OF
BENTE VILLADSEN

TABLE OF CONTENTS

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I. INTRODUCTION AND PURPOSE

Q1. Please state your name, occupation and business address.

A1. My name is Bente Villadsen and I am a Principal of The Brattle Group, whose business address is One Beacon Street, Suite 2600, Boston, Massachusetts, 02108.

Q2. Please summarize your professional qualifications.

A2. I have 20 years of experience working with regulated utilities on cost of capital and related matters. My practice focuses on cost of capital, regulatory finance, and accounting issues. I have testified or filed expert reports on cost of capital in Alaska, Arizona, California, Illinois, Michigan, New Mexico, New York, Oregon, and Washington, as well as before the Federal Energy Regulatory Commission ("FERC"), Bonneville Power Administration, the Surface Transportation Board, the Alberta Utilities Commission, and the Ontario Energy Board. I have provided white papers on cost of capital to the British Columbia Utilities Commission, the Canadian Transportation Agency as well as to European and Australian regulators on cost of capital. I have testified or filed testimony on regulatory accounting issues before the FERC, the Regulatory Commission of Alaska, the Michigan Public Service Commission, the Texas Public Utility Commission as well as in international and U.S. arbitrations and regularly provide advice to utilities on regulatory matters as well as risk management. I hold a Ph.D. from Yale University and a BS/MS from University of Aarhus, Denmark. Exhibit YB-1000 contains more information on my professional qualifications as well as a list of my prior testimonies.

Q3. What is the purpose of your testimony in this proceeding?

A3. I have been asked by Young Brothers, LLC ("YB" or the "Company") to estimate the cost of capital that the Public Utilities Commission of the State of Hawaii ("Commission") should allow the Company an opportunity to earn on the debt and equity financed portions of its regulated (tug and barge) utility rate base. Specifically, I perform

cost of equity and cost of debt analyses and provide return on equity ("ROE") and cost of debt estimates derived from market data for a proxy group of comparable risk shipping companies ("Shipping Sample"). I also evaluate the business risk characteristics of YB and recommend a regulatory capital structure for the Company to be applied for ratemaking purposes.

Q4. Do you rely on any other witness testimony?

A4. Yes, I rely on the Direct Testimony of David St. Amand in YB T-11 to assist in sample selection and evaluation of the relative risk of the Company compared to the Shipping Sample.

II. SUMMARY OF CONCLUSIONS

Q5. Please summarize your findings and recommendations.

A5. I recommend that YB be allowed to earn a 10.7 percent rate of return on its regulated rate base. First, I find that a capital structure of 60 percent equity and 40 percent long-term debt, based on the high equity ratios in the capital structures of comparable Shipping Companies and on the negative cash flow impacts to utilities from the Tax Cuts and Jobs Act, is reasonable and may be conservative for the Company.

For the equity-financed portion of its regulated rate base, I recommend that YB be allowed to earn a 13.5 percent ROE. This recommendation is based on my implementations of standard cost of capital estimation models including two versions each of the Discounted Cash Flow ("DCF") model and Capital Asset Pricing Model ("CAPM") along with an analysis of YB's risks. Figure 1 and Figure 2 below summarize the ROE model results and the corresponding reasonable ranges that are presented and discussed in Section V below. Based on my consideration of the model results in the context of YB's specific business risk characteristics, financial circumstances, the findings of Mr. St. Amand's risk evaluation of the Shipping Sample, and of current capital market conditions, I believe it is appropriate to place YB's allowed return at 13.5 percent, which is in the midpoint of a reasonable range of 13 – 14 percent cost of equity based on the estimates suggested by my analysis.

Figure 1
Summary of ROE Results

Model		Estimate
Full Sample		
CAPM	[a]	13.1% - 15.2%
ECAPM (α = 1.5%)	[b]	12.6% - 14.4%
Single-Stage DCF	[c]	12.8%
Multi-Stage DCF	[d]	6.2%
Sub-Sample		
CAPM	[e]	12.6% - 14.6%
ECAPM (α = 1.5%)	[f]	12.3% - 13.9%
Single-Stage DCF	[g]	15.8%
Multi-Stage DCF	[h]	6.8%

Notes:
Estimates as of 6/30/2019.

Figure 2
Summary of Reasonable Ranges of ROE Estimates

Model		Estimate
CAPM/ECAPM	[a]	13% - 14%
DCF Models	[b]	11.25% - 15.75%

I recommend 6.50 percent for the cost of long-term debt based on yields for non-investment grade corporate bonds and 50 basis points for issuance costs. This would imply a regulatory cost of capital of 10.7 percent, as shown by Figure 3 below.

Figure 3
Recommended Cost of Capital

		Share	Cost	Weighted Cost
		[1]	[2]	[3]
Long-Term Debt	[a]	40%	6.50%	2.60%
Common Equity	[b]	60%	13.50%	8.10%
COST OF CAPITAL	[c]			**10.70%**

Compared to YB's most recent request in Docket No. 2017-0363, in YB T-11 and YB RT-6 of that proceeding, the recommendation has increased the recommended equity percentage due to a combination of the sample companies' book equity capital structure and the impact of the Tax Cut and Jobs Act ("TCJA") on cash flow. The ROE recommendation is lower due to the higher equity percentage and the cost of debt recommendation is lower because the spread between the yield on maritime debt issuances and that on the high yield debt index has declined.

Finally, YB has earned below its allowed rate of return in twelve of the last fourteen years and in 2017-2018 the Company has experienced net losses on its regulated operations. From 2005-2018 the Company has earned an average 2.7 percent rate of return. This is significantly below the allowed rate of return during that time period. The historical inability of YB to earn its allowed rate of return in combination with low credit metrics as discussed in Section V.C suggests that it would be difficult for the Company, as a standalone entity, to attract capital at reasonable rates.

Q6. How is the remainder of your testimony organized?

A6. Section III formally defines the cost of capital and explains the techniques for estimating it in the context of utility rate regulation. Section IV discusses conditions and trends in capital markets and their impact on the cost of capital. Section V explains my cost of equity analyses and presents the ROE results. Section VI explains my cost of debt analyses and presents the cost of short-term and long-term debt results. Finally, Section VII discusses YB's business risk characteristics and other company specific circumstances relevant to my recommended cost of capital for the Company.

III. COST OF CAPITAL PRINCIPLES AND APPROACH

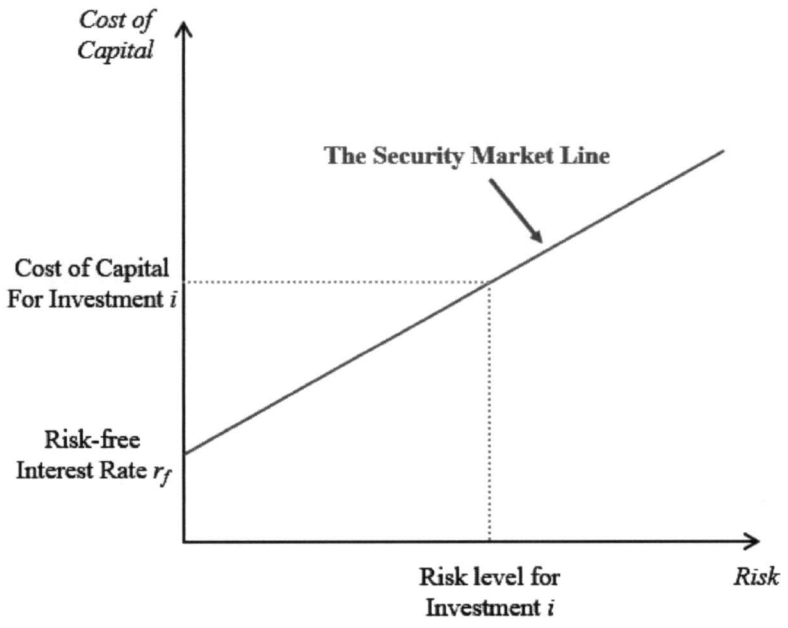
A. RISK AND THE COST OF CAPITAL

Q7. How is the "Cost of Capital" defined?

A7. The cost of capital is defined as the expected rate of return in capital markets on alternative investments of equivalent risk. In other words, it is the rate of return investors require based on the risk-return alternatives available in competitive capital markets. The cost of capital is a type of opportunity cost: it represents the rate of return that investors could expect to earn elsewhere without bearing more risk. "Expected" is used in the statistical sense: the mean of the distribution of possible outcomes. The terms "expect" and "expected," as in the definition of the cost of capital itself, refer to the probability-weighted average over all possible outcomes.

The definition of the cost of capital recognizes a tradeoff between risk and return that can be represented by the "security market risk-return line" or "Security Market Line" for short. This line is depicted in Figure 4 below. The higher the risk, the higher the cost of capital required.

Figure 4
The Security Market Line



Q8. What factors contribute to systematic risk for an equity investment?

A8. When estimating the cost of equity for a given asset or business venture, two categories of risk are important. The first is business risk, which is the degree to which the cash flows generated by the business (and its assets) vary in response to moves in the broader market. In context of the CAPM, business risk can be quantified in terms of an "assets beta" or "unlevered beta." For a company with an assets beta of 1, the value of its enterprise will increase (decrease) by 1% for a 1% increase (decline) in the market index.

The second category of risk relevant for an equity investment depends on how the business enterprise is financed and is called financial risk. Section III.B below explains how financial risk affects the systematic risk of equity.

Q9. What are the guiding standards that define a just and reasonable allowed rate of return on rate-regulated utility investments?

A9. The seminal guidance on this topic was provided by the U.S. Supreme Court in the *Hope* and *Bluefield* cases,[1] which found that:

- The return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks;[2]
- The return should be reasonably sufficient to assure confidence in the financial soundness of the utility; and
- The return should be adequate, under efficient and economical management for the utility to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties.[3]

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1 Bluefield Water Works & Improvement Co. v. Public Service Com'n of West Virginia, 262 U.S. 679 (1923) ("*Bluefield*"), and Federal Power Com'n v. Hope Natural Gas Co., 320 U.S. 591 (1944) ("*Hope*").

2 *Hope*, 320 U.S. at 603.

3 *Bluefield*, 262 U.S. at 680.

Q10. How does the standard for just and reasonable rate of return relate to the cost of capital?

A10. The first component of the *Hope* and *Bluefield* standard, as articulated above, is directly aligned with the financial concept of the opportunity cost of capital.[4] The cost of capital is the rate of return investors can expect to earn in capital markets on alternative investments of equivalent risk.[5]

By investing in a regulated utility asset, investors are tying up some capital in that investment, thereby foregoing alternative investment opportunities. Hence, the investors are incurring an "opportunity cost" equal to the returns available on those alternative investments. If the allowed return on the utility investment is not at least as high as the expected return offered by alternative investments of equivalent risk, investors will choose these alternatives instead, and the utility's ability to raise capital and adequately fund its operations will be adversely impacted or even prevented. This is a fundamental concept in cost of capital proceedings for regulated utilities such as YB.

Q11. Please summarize how you considered risk when estimating the cost of capital.

A11. To evaluate comparable business risk, I looked to a proxy group of Maritime, Railroad, and intermodal Trucking companies as well as a sub-sample of just the Maritime and Railroad companies. Further (as explained in Section III.B below), I analyzed and adjusted for differences in financial risk due to different levels of financial leverage among the proxy companies and between the capital structures of the proxy companies and the regulatory capital structure that will be applied to YB for ratemaking purposes. To determine where in the estimated range YB's ROE reasonably falls, I rely on the

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4 A formal link between the opportunity cost of capital as defined by financial economics and the proper expected rate of return for utilities is set forth by Stewart C. Myers, "Application of Finance Theory to Public Utility Rate Cases," Bell Journal of Economics & Management Science 3:58-97 (1972).

5 The opportunity cost of capital is also referred to as simply the "cost of capital," and can be equivalently described in terms of the "required return" needed to attract investment in a particular security or other asset (i.e., the level of expected return at which investors will find that asset at least as attractive as an alternative investment).

findings of Mr. St. Amand that YB is of average business risk as compared to the Shipping Sample, and also considered recent capital markets developments.

B. Financial Risk and the Cost of Equity

Q12. How does capital structure affect the cost of equity?

A12. Debt holders in a company have a fixed claim on the assets of the company and are paid prior to the company's owners (equity holders) who hold the inherently variable residual claim on the company's operating cash flows. Because equity holders only receive the profit that is left over after the fixed debt payments are made, higher degrees of debt in the capital structure amplify the variability in the expected rate of return earned by equity-holders. This phenomenon of debt resulting in financial leverage for equity holders means that, all else equal, a greater proportion of debt in the capital structure increases risk for equity holders, causing them to require a higher rate of return on their equity investment, even for an equivalent level of underlying business risk.

Q13. How do differences in financial leverage affect the estimation of the cost of equity?

A13. The CAPM and DCF model rely on market data to estimate the cost of equity for the proxy companies, so the results reflect the value of the capital that investors hold during the estimation period (market values).

The allowed ROE is applied to YB's rate base, which will be financed with a different portion of debt than the proxy companies. I consider the impact of any difference between the financial risk inherent in those cost of equity estimates and the capital structure used to determine YB's required return on equity.

Differences in financial risk due to the different degree of financial leverage in YB's regulatory capital structure compared to the capital structures of the proxy companies mean that the equity betas measured for the proxy companies must be adjusted before they can be applied to determining YB's CAPM return on equity. Similarly, the cost of equity measured by applying the DCF models to the proxy companies' market data

requires adjustment if it is to serve as an estimate of the appropriate allowed ROE for YB at its different regulatory capital structure.

Importantly, taking differences in financial leverage into account does not change the value of the rate base. Rather, it acknowledges the fact that a higher degree of financial leverage in the regulatory capital structure imposes a higher degree of financial risk for an equity investment in YB's rate base than is experienced by equity investors in the market-traded stock of the less leveraged proxy companies.

Q14. How specifically do you take financial risk into account in your analysis of the cost of equity using market data for the proxy group companies?

A14. There are several manners in which the impact of financial risk can be taken into account in an analysis of cost of equity using market-based models such as the DCF and CAPM. One way is to determine the after-tax weighted-average cost of capital for the proxy group using the equity and debt percentages as the weight assigned to the cost of equity and debt. If this figure is constant between the estimate obtained for the proxy group and the entity to which it is applied—in this case the capital structure used in the rate of return calculation—then the ROE that is required for the regulated entity can be determined. This approach assumes that the after-tax weighted average cost of capital is constant for a range that spans the capital structures used to estimate the cost of equity and the regulatory capital structure.

A second approach was developed by Professor Hamada, who estimated the cost of equity using the CAPM and made comparisons between companies with different capital structure using beta ("Hamada Approach"). Specifically, in the Hamada approach, I use the estimated beta to calculate what beta would be associated with a 100 percent equity financed firm to obtain a so called all-equity or assets beta and then re-lever the beta to determine the beta associated with the regulatory capital structure. This requires an estimate of the systematic risk associated with debt (*i.e.*, the debt beta), which is usually quite small. In Exhibit YB-1001, I set forth additional technical details related to methods to account for financial risk when estimating the cost of capital.

Q15. Can you provide a numerical illustration of how the cost of equity changes, all else equal, when the degree of financial leverage changes?

A15. Yes. I constructed a simple example below, where only the financial leverage of a company varies. I assumed the return on equity is 11.00 percent at a 50 percent equity capital structure and determine the return on equity that would result in the same overall return if the percentage of equity in the capital structure were reduced to 45 percent.

Figure 5
Illustration of Impact of Financial Risk on ROE

		Company A (50% Equity)	Company B (45% Equity)
Rate Base	[a]	$1,000	$1,000
Equity	[b]	$500	$450
Debt	[c]	$500	$550
Total Cost of Capital (8%)	[d] = [a] × 8%	$80.0	$80.0
Cost of Debt (5%)	[e] = [c] × 5%	$25.0	$27.5
Equity Return	[f] = [d] - [e]	$55.0	$52.5
Rate of Return on Equity (ROE)	**[g] = [f] / [b]**	**11.00%**	**11.67%**

Figure 5, above, illustrates how financial risk affects returns and the ROE. The overall return remains the same for Company A and B at $80. But Company B with the lower equity share and higher financial leverage must earn a higher percentage ROE in order to maintain the same overall return. This higher percentage allowed ROE represents the increased risk to equity investors caused by the higher degree of financial leverage.

The principle illustrated in Figure 5 is exemplary of the adjustments I performed to account for differences in financial risk when conducting estimates of the cost of equity applicable to YB.

C. Approach to Estimating the Cost of Equity

Q16. Please describe your approach for determining the cost of equity for YB.

A16. As stated above, the standard for establishing a fair rate of return on equity requires that a regulated utility be allowed to earn a return equivalent to what an investor could expect

to earn on an alternative investment of equivalent risk. Therefore, my approach to estimating the cost of equity for YB focuses on measuring the expected returns required by investors to invest in companies that face business and financial risks comparable to those faced by YB. Because certain of the models require market data, my consideration of comparable companies is restricted to those that have publicly traded stock. To this end, I have selected a proxy group consisting of publicly traded companies. The proxy group consists of companies providing primarily shipping services. With this proxy group, I derive estimates of the representative cost of equity according to standard financial models including two versions of the CAPM—the traditional version and an empirically-adjusted version—and single- and multi-stage versions of the DCF.

Q17. Why do you believe your approach to considering ranges of estimates derived from multiple versions of both the DCF and CAPM is justified?

A17. There is no one perfect model for estimating the cost of equity, and the various models and estimation approaches I employ each have different strengths and sensitivities. For example, the CAPM relies on an explicit measurement of systematic risk (beta) for which the cost of equity capital must compensate investors, but this parameter must be measured using historical data,[6] and thus changes more slowly in response to changes in industry risk characteristics. Conversely, the DCF models incorporate current market prices and the most recent dividends, enabling them to capture shifts over time. However, this also makes the DCF sensitive to short-term market phenomena that may or may not be representative of the capital market conditions and required investor returns that will prevail during the time YB's rates are in effect.[7]

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[6] I note that Value Line applies an empirical adjustment (the Blume adjustment) that converts the beta derived from historical return data into a better indicator of forward-looking systematic risk (i.e., a better predictor of beta going forward).

[7] In most of my work for regulated utilities, I also estimate a so-called implied risk premium model based on authorized ROEs and utility bond yields. However, to my knowledge, the number of cases involving barges is not sufficient for a statistical analysis.

Q18. Have other important utility regulatory bodies acknowledged the importance of relying on multiple models?

A18. Yes. Notably FERC, which regulates electric transmission operations, recently issued an order proposing to rely explicitly on four models in its determination of just and reasonable ROEs for transmission owners.[8] The FERC ROE Order represents a substantial change of FERC's historical practice of relying on only a single model—the DCF—to set allowed ROEs. In it, FERC explicitly recognizes that different models offer complementary views of investor requirements and market expectations and that it is necessary to evaluate and consider all such evidence. The Commission has also recognized the use of multiple models, including the DCF and CAPM, for determining the cost of equity.[9]

Q19. What reasons did FERC give for revising its approach to consider multiple models rather than only the DCF?

A19. In the FERC ROE Order, FERC stated its concern that compared to when it originally adopted the DCF model as its only focus of consideration for determining utility ROEs, "the DCF methodology may no longer singularly reflect how investors make their decisions," since "investors have increasingly used a diverse set of data sources and models to inform their investment decisions."[10] The FERC ROE Order also lays out other "difficulties with sole reliance on the DCF methodology," including that the single model's results appear at times to diverge from its underlying principles and the real world experience of capital market participants, and that the results sometimes move differently from the results of other models on which those market participants may rely to inform their investment decisions.[11] Ultimately, FERC views its proposal to rely on

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8 See Coakley v. Bangor Hydro-Electric Co., 165 FERC ¶ 61,030 (October 2018) (referred to herein as the "*FERC ROE Order*"). The ROE estimation methodologies in the FERC ROE Order include versions of the DCF and CAPM, as well as the implied Risk Premium method and an Expected Earnings analysis.

9 Decision and Order No. 18365 filed on February 8, 2001 in Docket No. 99-0207 at 68.

10 *FERC ROE Order*, paragraph 40.

11 *Id.*, paragraphs 40-45.

multiple models as a way to avoid this "model risk" and summarizes its rationale as follows.

> In relying on a broader range of record evidence to estimate [New England Transmission Owners'] cost of equity, we ensure that our chosen ROE is based on substantial evidence and bring our methodology into closer alignment with how investors inform their investment decisions.[12]

FERC's assessment and reasoning in this regard is very much in line with the principles that guide my own decision to inform my analysis based on the results of multiple complementary analyses.

Q20. Are there any potential concerns about how current capital market conditions may influence the DCF model results that may caution against giving it disproportionate weight in setting YB's ROE?

A20. Yes, to the extent shipping company stocks are trading at unrepresentatively high price-to-earnings ratios ("PE ratios")—and their dividend yields unrepresentatively low—compared to what investors might expect in a more normal (or normalizing) interest rate environment. Current PE ratios for the U.S. equities markets continue to be elevated relative to historical averages.[13] If this is the case, implementing the DCF model using current market data may produce results that understate what investors' required returns will be when interest rates move higher as expected in the near future (including during the time period YB's rates set during these proceedings will be in effect).

FERC addressed a similar issue in the FERC ROE Order, expressing its concern about the reliability of DCF model results in the current market environment as follows.

> Under [the premise of the DCF methodology], increases in a company's actual earnings or projected growth in earnings would ordinarily be required to justify an increase in the company's stock price. Moreover, there is no evidence that investments in the utility sector have become less risky during these periods. However, it appears that during the periods at issue in these complaint proceedings, average utility stock

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[12] *Id.*, p. 15.

[13] *See* Board of Governors of the Federal Reserve System, "Financial Stability Report", November 28, 2018.

> prices have increased by more than would be justified by any increase in actual utility earnings or projected growth in earnings. From October 1, 2012 through December 1, 2017, the Dow Jones Utility Average increased from about 450 to 762.59, an increase of almost 70 percent. However, utility earnings did not increase by nearly the same amount, as demonstrated in Figure 3 below, which shows the substantial increase in utilities' price to earnings (PE) ratio during the same period. Moreover, average IBES three to five year growth projections appear not to have increased during that period. Thus, there has not been an increase in either current or projected utility earnings that would justify the substantial increase in utility stock prices.[14]

FERC concluded from this discussion that recent investor behavior with respect to utility stocks appears to have diverged from the DCF model's predictions, a factor that informs FERC's decision (discussed in Section III.C) to reconsider its primary reliance on the DCF in favor of giving equal weight to four different and complementary models. Similarly, this concern informs the way I consider the results of the DCF models as well as the CAPM models in selecting my recommendation.

IV. CAPITAL MARKET CONDITIONS AND THE COST OF CAPITAL

Q21. Why do you discuss capital market conditions in testimony aimed at determining YB's cost of capital?

A21. This section discusses important market conditions that affect the inputs to the cost of equity models. Because the risk-free rate is an input to the CAPM, recent and expected developments in risk-free government interest rates are important to assess the validity of any measure of the risk-free rate. Similarly, the market risk premium ("MRP") is an input to the CAPM, so factors that affect the MRP (*e.g.*, volatility and changes in investors risk perception) are vital for an accurate determination of the ROE.

As to DCF model inputs, developments in the economy in general affect growth rates and utility stock prices. Consequently, the capital market developments impact the growth rates, dividend yield, and general assessment of the estimates' reasonableness.

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[14] *FERC ROE Order*, paragraph 45 (citations omitted).

Finally, the Tax Cuts and Jobs Act of 2017 ("TCJA") affected utilities differently than other companies in that tax reductions generally flow to customers and, consequently, impacts the utility's credit metrics and earnings volatility. As a result, it is necessary that the allowed ROE and appropriate equity capital structure ratio for YB fulfill the requirements set forth by *Hope* and *Bluefield* once the implications of the TCJA are considered.

Q22. Please summarize your analysis of capital market conditions and how they affect your conclusions.

A22. First, I conclude that interest rates are at historically low levels and are on an increasing trajectory, with practitioner forecasts and bond yield spread evidence suggesting further increases in long-term government bond yields. This supports my reliance on forecasts of long-term U.S. Treasury yields for the risk-free rate.

Second, because forward-looking estimates of the MRP have recently been at or slightly above the long-term historical average level and market volatility indicators have recently been higher, I conclude my reliance on the historical average U.S. MRP of 6.91 percent is reasonable and conservative as an input to my CAPM and ECAPM analysis.

Third, I find that the yield spreads, the difference between corporate bond yields and government bond yields, is above its historical average levels. I therefore test two scenarios in which I apply a portion of that yield spread to either the risk-free rate or the MRP in order to account for this increased risk.

Finally, I conclude that because (all else equal) the TCJA results in reduced cash flows and increased volatility of cash flows for YB, it may be appropriate to increase the Company's allowed ROE, its equity capital structure, or both. While I do not make any explicit adjustment for TCJA's impact in my implementation of the models, I do consider it in my capital structure recommendation and in placing my ROE recommendation within the range of reasonable cost of equity results from the DCF and CAPM analyses.

A. Interest Rate Developments

Q23. What are the relevant developments regarding interest rates?

A23. Interest rates, including the long-term government bond yields that are typically used to represent the risk-free rate in the context of regulated utility ratemaking, have remained extremely low in the years since the global financial crisis of 2008. However, yields are forecasted to increase in coming years. The consensus forecast from Blue Chip Economic Indicators—which surveys more than 50 institutional market analysts and participants, including major banks, academic finance departments, credit rating agencies, institutional investors, and Fortune 500 companies—is that the yield on ten-year Treasury bonds will increase to 2.6 percent by 2020.[15] Figure 6 below plots these expected increases in the ten-year Treasury bond yield.

Figure 6
Historical and Projected Ten-Year Treasury Bond Yields

Source: Historical data from Bloomberg. Forecasts from Blue Chip Economic Indicators March 2019 issue.

[15] Blue Chip Economic Indicators, March 2019, at 3. The ten-year U.S. Treasury bond yield was 2.07 percent as of June 30, 2019.

Q24. What forces contributed to the sustained period of very low interest rates over the decade following the financial crisis?

A24. The monetary policy actions of the Federal Reserve (the "Fed") in response to the financial crisis were a key driver of the low interest rates. The Fed's Federal Open Market Committee ("FOMC") undertakes market actions to influence interest rates—especially the so-called "federal funds rate"[16]—subject to its statutory mandate to maximize employment and keep inflation under control. In response to the financial crisis, the FOMC drastically reduced its target federal funds rate from 5.25 percent in August 2007 to 0.00 - 0.25 percent starting in December 2008.[17] The Fed's zero interest rate policy remained in effect for the next seven years, ending in December 2015 when the FOMC finally raised its federal funds target to 0.25 - 0.50 percent.[18]

Concurrent with its sustained monetary policy actions related to the short-term federal funds rate, the Fed also implemented several unprecedented policy interventions with the explicit goal of reducing interest rates on long-term borrowing instruments. This "quantitative easing" program of long-term government bonds served to keep Treasury yields at very low levels for an extended period of time. And importantly, even after the FOMC ceased buying securities, it maintained trillions of dollars' worth of Treasuries and government-backed mortgage backed securities on its balance sheet, continuing to reinvest the principal when the assets matured.[19]

Global economic conditions also contributed to the unprecedented low rates on U.S. government debt. For example, at the height of the European sovereign debt crisis in 2011-2012, flight from European bonds and yield-lowering actions by the European

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[16] The federal funds rate is the rate at which large banks lend and borrow funds in the short-term. It is therefore influential in determining market interest rates throughout the economy.

[17] *See* FOMC Statements issued August 7, 2007 and December 16, 2008 accessed at https://www.federalreserve.gov/monetarypolicy/fomc_historical.htm

[18] *See* FOMC Statement, December 16, 2015 accessed at https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm

[19] As of March 14, 2019, the Fed's long-term Treasury and Agency securities balance was at $3.9 trillion. *See* Board of Governors of the Federal Reserve System, Credit and Liquidity Programs and the Balance Sheet, accessed at https://www.federalreserve.gov/releases/h41/.

Central Bank ("ECB") spurred increased demand for U.S. Treasury bonds—thus driving up prices and bringing yields down. This pattern repeated in 2016 in the period leading up to, and especially following, the "Brexit" vote. Indeed, on July 10, 2016, shortly after Great Britain officially voted to leave the European Union, the ten-year U.S. Treasury Yield reached its all-time low of 1.37%.[20]

Q25. What forces have contributed to the current rising trend in interest rates?

A25. As shown in Figure 6, U.S. Treasury bond yields have been on an increasing trend since their low point in mid-2016. This is consistent with the Fed's recognition that the economy has strengthened, employment conditions remain strong, and inflation—while still below its 2.0 percent target—has begun to increase. The FOMC has responded by increasing the target federal funds rate eight times since ending the zero interest rate policy in December 2015, consistently over each subsequent quarterly meeting. After the most recent hike announced at the FOMC's December 19, 2018 meeting, the federal funds target rate stands at 2.25 – 2.50 percent.[21] Most recently, at its June meeting, the Federal Reserve held the federal funds target rate at its level since December 2018.[22]

Importantly, the Fed has also recently enacted "Policy Normalization" procedures, whereby it is gradually decreasing its holdings of long-term bonds by not reinvesting principal from expiring securities. These procedures took effect starting in October 2017 and have continued ever since.[23]

In summary, central bank monetary policy action is aligned with and supportive of a continued gradual steady increase in interest rates, including yields on risk-free long-

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[20] Yield from Bloomberg. *See* also "U.S. 10-Year Treasury Yield Closes at Record Low" (July 5, 2016) The Wall Street Journal, accessed at https://www.wsj.com/articles/government-bond-yields-in-u-s-europe-hit-historic-lows-1467731411.

[21] *See* FOMC Statement, December 19, 2018, accessed at https://www.federalreserve.gov/monetarypolicy/files/monetary20181219a1.pdf.

[22] *See* FOMC Statement, June 19, 2019, accessed at https://www.federalreserve.gov/monetarypolicy/files/monetary20190619a1.pdf.

[23] *See* FOMC Communications related to Policy Normalization, March 20, 2019, accessed at https://www.federalreserve.gov/newsevents/pressreleases/monetary20190320c.htm.

term government bonds. This is consistent with the economic forecasts of continued increases in the risk-free rate continuing through the period at issue in this proceeding.

B. Risk Premiums and Yield Spreads

Q26. What is the Market Risk Premium?

A26. In general, a risk premium is the amount of "excess" return—above the risk-free rate of return—that investors require to compensate them for taking on risk. As illustrated above in Figure 4, the riskier the investment, the larger the risk premium investors will require.

The MRP is the risk premium associated with investing in the market as a whole. Since the so-called "market portfolio" embodies the maximum possible degree of diversification for investors,[24] the MRP is a highly relevant benchmark indicating the level of risk compensation demanded by capital market participants. It is also a direct input necessary to estimating the cost of equity using the CAPM and other risk-positioning models.

Q27. Do you have any data on how estimates of the MRP have evolved over the time leading up to and since the 2008 financial crisis?

A27. Yes. Bloomberg publishes a forward-looking estimate of the MRP based on market prices and expected dividends for U.S. stocks.[25] Figure 7 displays the development of Bloomberg's forecasted MRP since 2006.

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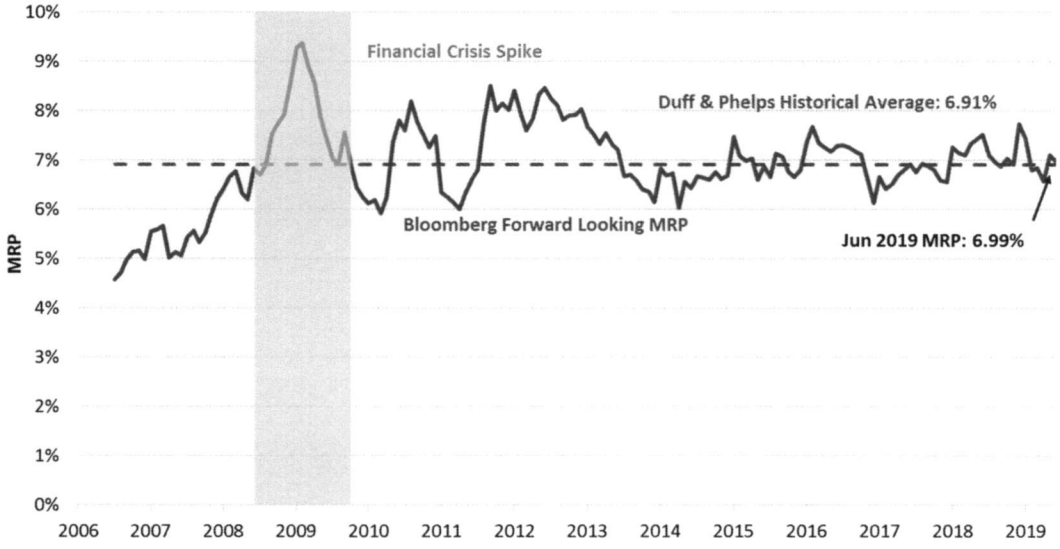
[24] In finance theory, the "market portfolio" describes a value-weighted combination of all risky investment assets (e.g., stocks, bonds, real estate) that can be purchased in markets. In practice, academics and financial analysts nearly always use a broad-based stock market index, such as the S&P 500, to represent the overall market.

[25] Bloomberg's calculation of the expected market return is based on an implementation of a multi-stage DCF model (see Section V.E.1 below) applied to all dividend paying stocks in the S&P 500 index; Bloomberg calculates the MRP by subtracting the current ten-year Treasury bond yield from the estimated expected market return, however, it is also possible to calculate the MRP measured relative to a 20-year Treasury bond yield, which is the calculation I perform for ease of comparison to historical average risk premiums calculated by comparing the Ibbotson data on stock market returns in excess income returns on long-term U.S. Treasury yields with an approximate average maturity of 20 years.

The Bloomberg MRP increased substantially with the onset of the financial crisis and has remained elevated relative to pre-crisis levels. Though the June 2019 average forward-looking MRP reported by Bloomberg is in line with the long-term historical average MRP,[26] the average since the 2008 financial crisis was 7.1 percent,[27] indicating the investors have displayed increased risk aversion and demanded higher compensation for taking on risk in the time since the financial crisis.

Figure 7
Bloomberg Forward looking MRP (2006-2019)



Source: Bloomberg as of 6/30/2019.

Q28. Is there any other market evidence concerning risk premiums?

A28. Yes. One observable risk premium is the spread between yields on risk-free Treasury bonds and the yields on corporate bonds of the same maturity. Unlike U.S. government bonds, debt instruments issued by corporate entities come with some probability of default and have some associated level of systematic risk. To compensate for this risk, corporate bonds—including utility bonds—offer higher expected returns (as measured by the market yield) than do government bonds.

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[26] As noted below, the historical average MRP calculated using the long-established Ibbotson stock and bond market data currently published by Duff & Phelps is 6.91 percent.

[27] Average of Bloomberg forecasted MRP (relative to 20-year Treasury Bonds) for the U.S. from January 2009 - June 2019. Bloomberg as of 6/30/2019.

Figure 8 plots the yield spread for BBB-rated utility bonds compared to Treasury bonds for the longest period of available data. As the figure shows, utility yield spreads spiked dramatically with the onset of the financial crisis and have remained elevated to their pre-crisis average level.

Figure 8
Spread between 20-year BBB-rated Utility Bond and 20-year Treasury Bond Yields

Source: Bloomberg as of 6/30/2019.

Q29. What are the implications of elevated yield spreads to the cost of equity?

A29. The yield spread is simply one form of risk premium, albeit for assets (corporate bonds) that are relatively lower risk compared to equity securities (*i.e.,* stock). Consequently, one explanation for the elevated yield spread is that investors are requiring a higher premium to take on market risk than they did on average prior to the financial crisis.[28] This would indicate an elevated MRP compared to the historical average.

An alternative explanation for the elevated yield spread is that the yield on Treasury bills remains artificially low due to the lingering after-effects of Fed's unprecedented

[28] *See* "Explaining the Rate Spread on Corporate Bonds," Edwin J. Elton, Martin J. Gruber, Deepak Agarwal, and Christopher Mann, The Journal of Finance, February 2001, pp. 247-277.

monetary policy. Under this explanation, the yield spread would be expected to return to its historical average level as the risk-free rate returns to more normal levels.

Regardless of which interpretation is correct, the consequence is that if the cost of equity is estimated using the current risk-free rate and a historical average MRP, the estimate will be downward biased. Hence, it is necessary to "normalize" the risk-free rate in CAPM model inputs, which I have done by using a forecast for the government bond yields.

C. Market Volatility

Q30. How does the stock market's volatility relate to the cost of capital?

A30. Academic research has found that investors expect higher risk premiums during more volatile periods,[29] indicating that the MRP may increase when market volatility is high, even when investors' level of risk aversion remains unchanged. This is relevant to estimating the Company's cost of equity because increased volatility suggests higher risk premiums and therefore higher market-required ROE.

A measure of the market's expectations for volatility is the VIX index, which measures the 30-day implied volatility of the S&P 500 index.[30] These indices are also referenced as the "market's fear gauge."[31] While the VIX had recently been trading substantially below its long term historical average of approximately 19.2, it spiked substantially

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[29] *See*, e.g., K. French, W. Schwert and R. Stambaugh (1987), "Expected Stock Returns and Volatility," Journal of Financial Economics, Vol. 19, p. 3:

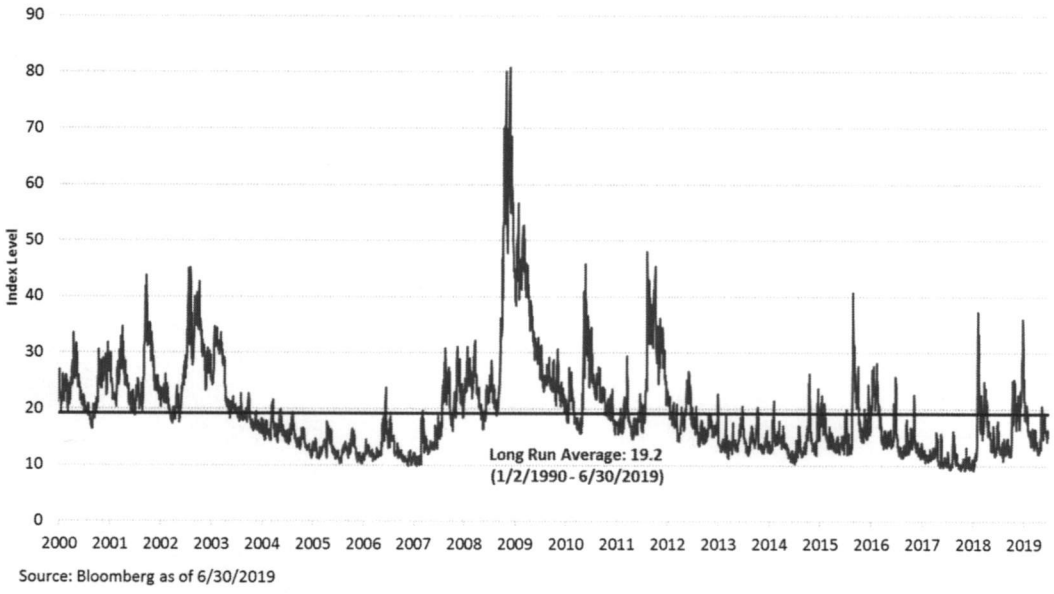
> We find evidence that the expected market risk premium (the expected return on a stock portfolio minus the Treasury bill yield) is positively related to the predictable volatility of stock returns. There is also evidence that unexpected stock returns are negatively related to the unexpected change in the volatility of stock returns. This negative relation provides indirect evidence of a positive relation between expected risk premiums and volatility.

[30] *See, e.g.*, Chicago Board Option Exchange at http://www.cboe.com/micro/VIX/vixintro.aspx.

[31] CNBC, "VIX, the Market's Fear Gauge Plunges in Historic One-Week Move," July 5, 2016.

above that level in early October and again in December 2018, each time concurrent with a significant drop in the stock market.[32]

Figure 9
VIX Index



Source: Bloomberg as of 6/30/2019

Q31. Do you look at any other indexes regarding market volatility?

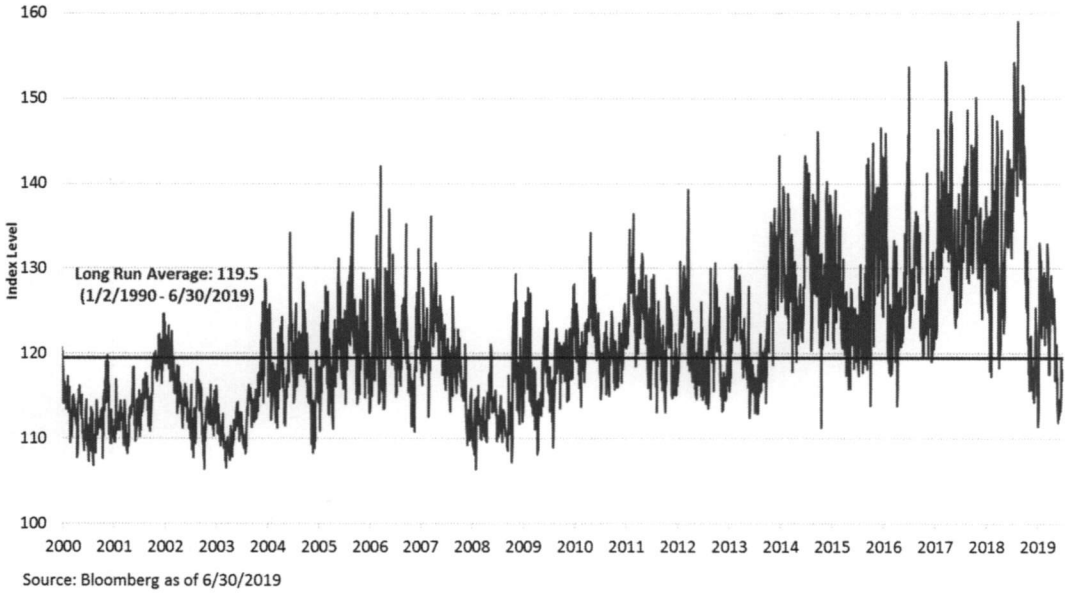
A31. Yes. The SKEW index, which measures the market's willingness to pay for protection against negative "black swan" stock market events (*i.e.*, sudden substantial downturns), offers a reason to be cautious of interpreting recent low VIX levels as an indicator of improved capital market certainty over the long term. A SKEW value of 100 indicates outlier returns are unlikely, but as the SKEW increases, the probability of outlier returns become more significant. Figure 10 shows that the SKEW currently stands at approximately 118 in June 2019 and was as high as 133 in January 2019, while the index has averaged 119 over the last 15 years.

The SKEW has recently dropped below its long-run average, but generally has been on an upward trend since at least 2015. This indicates that investors are willing to pay for

[32] As an illustration of the market volatility, the S&P 500 dropped more than 350 points (12%) during the first three weeks of December.

protection against downside risk and thus are exhibiting signs of elevated risk aversion concerns of downside tail risk.

Figure 10
SKEW Index



Q32. Are there reasons why capital markets may exhibit high volatility going forward?

A32. Yes. A few contributing reasons to capital market volatility recently include notably the shut-down of the federal government, which lasted from December 23, 2018 to January 25, 2019 and was the longest U.S. government shutdown in history. This may have impacted economic growth and regulatory policy implementation, and has likely contributed to uncertainty among capital market participants.

Additionally, the ongoing exchange of trade tariffs between the United States and China, challenging negotiations occurring in the European Union regarding finalization of the exit of Great Britain, which could lead to a no-deal Brexit, and the new agreement seeking to replace the North American Free Trade Agreement ("NAFTA").

Throughout 2018, the U.S. and China engaged in an exchange of new trade tariffs, as exemplified by China's September 18, 2018 response to a September 17, 2018 U.S.

declaration of tariffs on $200 billion of Chinese exports.[33] Most recently, the U.S. administration on May 9, 2019 increased the tariffs on Chinese goods.[34] As these trade tensions have unfolded and escalated, uncertainty in the markets has increased significantly because investors do not know when or if tariffs will be implemented on products affecting companies in which they hold equity. On any given day, a tariff could be announced, significantly affecting the value of a company or companies. Thus, the current market landscape embodies significant uncertainty.

To further the instability facing U.S. markets resulting from the trade dispute with China, the removal of NAFTA and the implementation of the United States-Mexico-Canada Agreement ("USMCA") has been an ongoing source of insecurity for all investors and those doing business throughout North America. Though the USMCA was formally signed in November 2018, the negotiation process was far from transparent and led to significant concerns of the fallout for investors holding equity in any business needing to trade across the applicable borders. Before the USMCA, which still requires approval from the U.S. Congress, is finally approved and implemented, certain tariffs and trade rules will change, likely leading investors to be unsure of the direction of certain businesses.

D. Implications of the Tax Cuts and Jobs Act of 2017 ("TCJA")

Q33. How does implementation of the TCJA affect regulated utilities?

A33. The TCJA reduced the federal corporate marginal tax rate from 35% to 21%. Although the TCJA is likely to be a net positive for investors in unregulated companies, for the Company, the vast majority (if not all) of the benefits will flow to customers. This is because the savings in income taxes will flow through to customers in the form of lower rates. At the same time, the implementation of the TCJA (including its treatment by utility

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[33] The U.S. announced a 10% tariff on these goods for the remainder of 2018, which will escalate to a 25% tariff afterward. The Chinese retaliation included $60 billion of U.S. goods. *See* "The Trade War is on: How We Got Here and What's Next, Bloomberg," 9/18/2018.

[34] *See*, e.g., CNBC, "US tariffs on China jump as deadline passes, China immediately says it will retaliate," May 10, 2019. Available at: https://www.cnbc.com/2019/05/10/china-trade-us-tariffs-jump-but-trade-war-talks-to-continue.html

regulators in a ratemaking context) will likely increase the risks facing regulated companies because they will experience (i) a near-term decrease in cash flows and (ii) an increase in the variability of after-tax earnings (and cash flows).

Q34. How does the lower corporate tax rate under the TCJA affect the expected volatility of cash flows for regulated companies?

A34. For regulated companies, as for unregulated corporate taxpayers, the change in the income tax allowance will result in greater volatility of net income (and cash flow) because the income tax provides a "buffer" against the impact of variations in expected costs and expected revenue on net income. Consider for example the effect on net income of a 10% increase in sales revenue. All else equal, net income would increase by about 6.5% for a 35% income tax rate, (*i.e.,* 0.10 times (1 – 0.35)), but would increase by 7.9% for a 21% income tax rate. The change would be similar and symmetrical for a decrease in revenue.

Further, the amplified variability in net income due to the lower corporate tax rate is likely to amplify systematic risk, because variations in revenue are generally related to variations in the broader economy that affect the value of all risky assets, not just tax-paying corporations. Since systematic risk is the type of risk that affects the cost of capital, it is reasonable to expect that the TCJA will, all else equal, contribute to higher required returns for corporate equity holders, including those in regulated utilities.

Importantly, while this increase in variability of income applies to all corporate tax-paying entities, unlike unregulated corporations, regulated utilities do not benefit from after-tax higher profits under the new lower tax rate, because the revenue requirement is adjusted to pass the tax savings on to customers.[35]

[35] This discussion assumes that the revenue requirement has been adjusted to account for the lower corporate income tax rate.

Q35. How will the TCJA affect a regulated company's credit metrics?

A35. Credit metrics are negatively affected by regulatory ratemaking treatment of the TCJA, because such treatment causes a near-term reduction in the regulated utilities' cash flow and related cash flow metrics that are closely observed by debt ratings agencies. As discussed further in Section V.C below, the expected refunds of excess deferred taxes and lower tax deferrals associated with new investment due to the lower tax rate and loss of bonus depreciation under the TCJA will reduce cash flow. Yet the tax reform has no impact on the amount of assets needed for reliability and to serve customers, a portion of which will be debt-financed. Decreases in key cash flow metrics, such as the cash flow to debt ratios that inform the credit rating agencies credit opinions, have negatively affected the credit profile of many regulated utilities, and will continue to do so.[36] Though YB does not issue its own debt or have its own credit rating, the decrease in cash flow metrics due to the TCJA still impacts its operating and financing decisions and must be considered should the Commission regulate YB assuming a hypothetical debt- and equity-financed capital structure.

Q36. What are the implications of the reduced cash flows and increased volatility of cash flows in the context of these proceedings?

A36. These effects suggest that it could be appropriate to increase either the allowed ROE or the amount of equity in the capital structure (or possibly both) to help compensate for the increased financial risk imposed on regulated utilities by the TCJA.

While the uncertainty surrounding the passage of the TCJA has been removed, it is unlikely that impacts on the cost of capital will immediately appear in the estimation

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[36] *See* Moody's Investor Service, Global Credit Research, "Moody's changes outlooks on 25 US regulated utilities primarily impacted by tax reform," January 19, 2018; Sector Comment, "Tax reform is credit negative for sector, but impact varies by company," January 24, 2018; Regulated Utilities - U.S., "2019 outlook shifts to negative due to weaker cash flows, continued high leverage," June 18, 2018; and Regulated Utilities - U.S., "2019 outlook negative amid growing debt and stagnant cash flow," November 8, 2018. *See* also S&P Global Ratings, Rating Direct, "U.S. Tax Reform: For Utilities' Credit Quality, Challenges Abound," January 24, 2018 and Fitch Ratings, Special Report, "Tax Reform Impact on the U.S. Utilities, Power & Gas Sector: Tax Reform Creates Near-Term Credit Pressure for Regulated Utilities and Holding Companies," January 24, 2018.

models. The TCJA has not yet been in place for the period used to determine the cost of equity, and the regulatory treatments in various jurisdictions have been in effect for an even shorter period. A longer period of market data may be needed before the cost of capital estimation models can be expected to reflect impacts of the TCJA on investors' required returns.

Notwithstanding that decreases in cash flow metrics and increased volatility of earnings both increase financial risk in ways that may not be reflected in the cost of capital model results, I do not make an explicit upward adjustment to my estimate of the cost of equity or my recommended allowed ROE to account for the impact of the TCJA. However, in Section V.C below, I address the question of how increasing the proportion of equity in YB's regulatory capital structure could help to mitigate some of the TCJA's negative effects on credit quality.

V. ESTIMATING THE COST OF EQUITY

A. YOUNG BROTHERS' BUSINESS DESCRIPTION

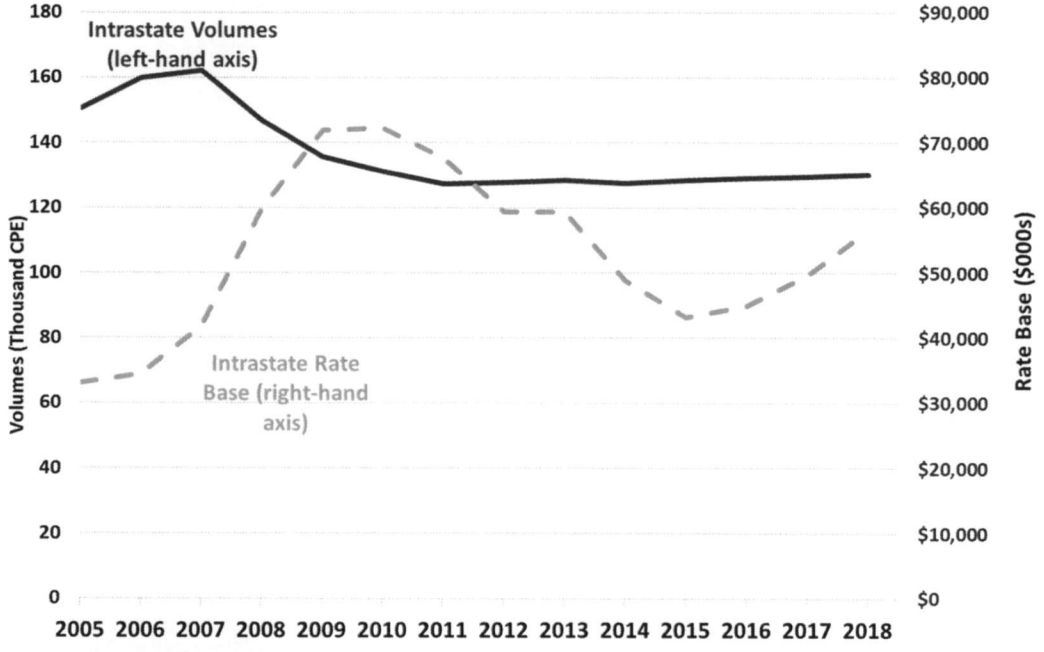
Q37. Please describe the Company's business operations.

A37. YB operates inter-island tug and barge shipping services between Honolulu and the neighboring Hawaiian Islands. Its services are separated into two types of business: tug and barge shipments of cargo originating in Hawaii ("intrastate") and barge shipments of cargo originating outside of Hawaii or destined for delivery outside of Hawaii ("interstate"). While the intrastate and interstate cargos are often commingled on YB's barges, only the intrastate business is subject to tariffs regulated by the Commission. Interstate cargoes are predominantly cargoes delivered to/from Hawaii by Pasha Hawaii Transport Lines LLC ("Pasha") or overflow cargoes from Matson, Inc. As discussed further in the testimony of Mr. St. Amand, YB's cargo primarily includes containerized freight and automobiles.

Q38. How have YB's intrastate cargo business changed recently?

A38. The Company's intrastate deliveries have declined since the peaks seen in 2006-2007 and growth has been relatively stagnant since 2011. See Figure 11 below. The Company scaled up its intrastate rate base in the mid-2000s in response to the higher intrastate volume levels. Yet these volumes declined by over 20% between 2007 and 2011.[37]

Figure 11
Historical Intrastate Rate Base and Volumes



Source: Data provided by Young Brothers.

The decline in volumes has negatively impacted the return to YB's investors. In addition, during this time period, the Commission decreased its allowed rate of return for the Company from 11.06 percent in 2005 to 9.56 percent in 2018. Notwithstanding, the Company has only been able to earn on average a 2.7 percent return on its intrastate rate base and has experienced negative returns (losses) on its regulated business in the past two years. See Figure 12 below. This is far below its allowed rate of return and below the level of returns for comparable businesses with commensurate risks to the Company. The inability to earn its allowed rate of return means that the Company would be challenged to raise capital financing at attractive rates.

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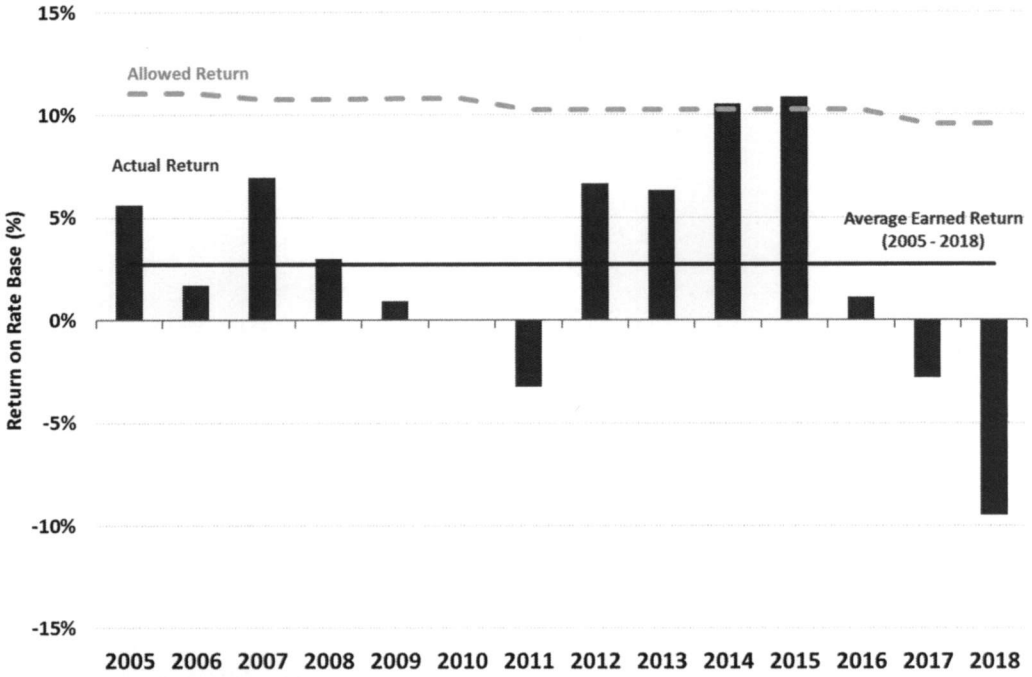
[37] *See* Exhibit YB-1002 at pages 5-6 for historical intrastate operations.

Figure 12
Historical Earned and Allowed Returns



Source: Data provided by Young Brothers.

Q39. How has Matson or Pasha's interstate business operations affected the risks of YB's intrastate business?

A39. As I understand from Mr. St. Amand's testimony, the Company faces significant bypass risk due to Matson's operations and potentially Pasha's operations. The competitive pressure and volume risk placed on YB's business by Matson and to some extent Pasha's operations increases, the uncertainty and business risk for the Company's regulated operations.

B. PROXY GROUP SELECTION

Q40. How do you identify proxy companies of comparable business risk to YB?

A40. YB is primarily engaged in the regulated tug and barge shipping operations. The business risk associated with these endeavors depends on many factors, including the specific characteristics of the service territory and regulatory environment in which the provider of these services operates. There is not currently available a large sample of publicly-traded, regulated tug and barge utilities. Consequently, it is not possible to identify

publicly traded proxy companies that replicate every aspect of YB's risk profile. However, selecting companies with business operations concentrated in similar lines of business and/or business environments is an appropriate starting point for selecting a proxy group of comparable risk to YB.

To this end, I worked with Mr. St. Amand in developing a sample group, which relies on companies focused on intermodal shipping business, including maritime, trucking, and railroad companies (the "Shipping Sample").

Q41. Please summarize how you selected the members of the Shipping Sample.

A41. To identify companies suitable for inclusion in the Shipping Sample, Mr. St. Amand and I jointly formed the sample from the universe of publicly traded companies in the maritime, trucking, and railroad industries as identified by *Value Line Investment Analyzer* (*"Value Line"*). This resulted in an initial group of 90 companies.

With this group of companies, I applied further screening criteria to eliminate companies,which have had recent significant events that could affect the market data necessary to perform cost of capital estimation. Specifically, I identify companies that are not currently issuing dividends or have cut their dividends or are engaged in substantial merger and acquisition ("M&A") activities over the relevant estimation window.[38] I eliminate companies with such dividend cuts because the announcement of a cut may produce disturbances in the stock prices and growth rate expectations in addition to potentially being a signal of financial distress. I generally eliminate companies with significant M&A activities because such events typically affect a company's stock price in ways that are not representative of how investors perceive its business and financial risk characteristics. For example, a utility's stock price will commonly jump upon the announcement of an acquisition to match the acquirer's bid.

38 As described in Section V.D, the CAPM requires five years of historical data, while the DCF relies on current market data.

Additionally, the companies must have operations in the intermodal shipping business and must not exhibit any signs of financial distress. I also require companies to have an investment grade credit rating.[39] A final, and fundamental, requirement is that the proxy companies have the necessary data available for estimation.

Q42. How many companies remained in your Shipping Sample after applying these selection criteria?

A42. The initial selection criteria results in a sample group of 10 companies, all of which were in the trucking or railroad industry.

Q43. Did you consider relaxing any selection criteria in order to include maritime companies in the sample?

A43. Yes. In order to include exposure to maritime companies into the sample group, I relaxed the criteria concerning current dividend issuances (Kirby Corp, along with multiple trucking companies, do not currently issue dividends) and the threshold for determining significant M&A activity (Matson carried out a large acquisition in 2014-2015 to acquire Horizon's barge business). This extended sample includes 17 companies, the 2 maritime companies identified above, 12 trucking companies, and 3 railroad companies.

I compared the cost of capital model estimates between the Full Sample and a Subsample including just the Maritime and Railroad companies which, as Mr. St. Amand notes, are subject to the risks of moving intermodal freight and share similar regulatory regimes. The Shipping Sample is summarized below in Figure 13. The figure reports the proxy companies' annual revenues for the most recent four quarters as of Q1, 2019 and also reports the market capitalization, credit rating, beta and growth rate. The annual revenue as well as the market cap was obtained from Bloomberg. The credit rating is reported by S&P Research Insight. The growth rate estimate is a weighted average between estimates from Thomson Reuters and *Value Line*. Betas were obtained from *Value Line* for most

39 In some cases, a proxy company does not have a credit rating from any of the major rating agencies. However, if they were to be rated, they would receive an investment grade rating. In these instances, I assign the company the average credit rating of the rest of the Shipping Sample.

of the companies, but I relied on Bloomberg for Schneider and US Express as Value Line did not report a beta.

Figure 13
Shipping Sample

Company	Annual Revenues (USD million)	Market Cap. 2019 Q2 (USD million)	Beta	S&P Credit Rating (2019)	Long Term Growth Est.
	[1]	[2]	[3]	[4]	[5]
Kirby Corp.	$2,974	$4,768	1.15	BBB	15.0%
Matson Inc.	$2,244	$1,600	1.10	BBB*	13.3%
CSX Corp.	$12,387	$62,763	1.20	BBB+	10.7%
Kansas City South'n	$2,750	$11,897	1.10	BBB	12.6%
Union Pacific	$22,741	$118,824	1.15	A-	12.8%
ArcBest Corp.	$3,106	$680	1.65	BBB*	6.4%
Covenant Transport Inc	$931	$269	1.40	BBB*	5.0%
Heartland Express	$594	$1,498	0.90	BBB*	18.9%
Hub Group	$4,064	$1,423	1.15	BBB*	11.0%
Hunt (J.B.)	$8,756	$9,714	1.00	BBB+	11.0%
Landstar Sys.	$4,604	$4,159	0.95	BBB*	3.7%
Old Dominion Freight	$4,109	$11,584	1.15	BBB*	6.8%
P.A.M. Transport Svcs	$542	$347	1.15	BBB*	16.5%
Saia Inc	$1,672	$1,587	1.10	BBB*	13.9%
Schneider National Inc	$5,032	$3,167	1.15	BBB*	8.0%
U.S. Xpress Enterprises 'A	$1,795	$254	1.53	BBB*	17.8%
Werner Enterprises	$2,491	$2,105	1.00	BBB*	6.8%
Average	$4,752	$13,920	1.17		11.2%

Sources and Notes:
[1]: Bloomberg as of 6/30/2019.
[2]: See Table No. BV-3 Panels A through Q.
[3]: See Supporting Schedule # 1 to Table No. BV-10.
[4]: S&P Credit Ratings from Research Insight as of 12/31/2018. * indcates company does not have S&P credit rating but has investment-grade cash flow metrics.
[5]: See Table No. BV-5.

Q44. How does the Shipping Sample compare to YB in terms of financial metrics?

A44. YB is significantly smaller than the companies included in the Shipping Sample. YB's regulated intrastate operations generated an annual revenue of approximately $80 million in 2018, which is less than 2 percent of the average Shipping Sample companies' revenues. The approximate rate base of YB is $56.6 million, less than 1 percent of the

market capitalization of the average member of the Shipping Sample.[40] The median credit rating of the Shipping Sample is BBB.

C. Capital Structure

Q45. What is YB's current capital structure?

A45. The Company is 100 percent equity financed by its corporate parent, Saltchuk Resources, Inc. ("Saltchuk") and YB is not publicly traded, and therefore, its equity has no readily observable market price. Given these constraints, it is preferable to use a hypothetical regulatory capital structure based on comparable companies in order to recommend an overall regulatory cost of capital for the Company. The hypothetical capital structure must assume a level of debt and equity that would be representative of the Company's capital structure if the Company pursued stand-alone financing. The cost of debt and the ROE are then estimated based on the financial risk inherent in this hypothetical capital structure. As I explained previously in Section III.B, accounting for financial risks when estimating the ROE assuming a hypothetical capital structure is necessary in order to fairly compensate the 100-percent equity shareholders.

Q46. What capital structure has been used in previous rate cases?

A46. The Commission approved a capital structure of 55 percent equity, 42 percent long-term debt, and 3 percent short-term debt in the Company's 2016 rate case in Docket No. 2016-0014 and in the Company's 2017 rate case in Docket No. 2017-0363, as part of the stipulated settlements.[41]

Q47. What other data did you consider in your recommended capital structure?

A47. I also considered the historical capital structures of comparable companies, such as those included in the Shipping Sample, and the capital structure of Saltchuk.

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[40] *See* Exhibit YB-1003.

[41] Decision and Order No. 34389, issued on February 13, 2017, and Decision and Order No. 36140, issued on February 1, 2019.

Q48. What is the average capital structure of the companies in the Shipping Sample?

A48. The group of comparable companies in the Shipping Sample has an average market-value share of equity in their capital structure of approximately 77 percent.[42] The average book value equity share in the Shipping Sample looking over the past five years was 67.9 percent, and was 65.1 percent as of second-quarter 2019.[43] The high equity share in these publicly traded companies is likely indicative of the risk associated with the shipping business.

Q49. What is the average capital structure of Saltchuk?

A49. Saltchuk, YB's parent company, is not publicly traded so its market value capital structure is not readily observable. As of year-end 2018, its book value capital structure included [redacted]. Over the past five years of 2014-2018, its equity share averaged [redacted]. Finally, over the past 20 years of 1999-2018, Saltchuk's equity share averaged [redacted].[44]

Q50. What regulatory capital structure do you recommend for YB in this proceeding?

A50. I rely on the higher equity shares found in the capital structures of the Shipping Sample in recommending a regulatory capital structure for YB of 60 percent equity and 40 percent debt. My recommended range for ROE is a function of the regulatory capital structure, the sample average overall cost of capital estimates, the Hamada adjustment procedures, and the relative risk of the Company compared to the sample.

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[42] The average equity share of as second-quarter 2019 was 77.1 percent and the average equity share over the past five years was 81.9 percent. *See* Exhibit YB-1003 at page 24.

[43] Exhibit YB-1003 at page 25.

[44] Exhibit YB-1002 at page 4.

Q51. Are there any reasons why it might be appropriate to consider including a higher equity ratio in YB's regulatory capital structure used for ratemaking purposes compared to what has been applied in past rate cases?

A51. Yes. The high equity shares found in the capital structures of comparable companies as well as the increased risk placed on the regulated company by the TCJA indicates that a higher equity share for YB's regulatory capital structure is warranted. The impact of the TCJA, coupled with continued risk and uncertainty in the market place, has placed downward pressure on the Company's cash flows. Furthermore, the inability of the Company to earn its allowed return suggests a potential difficulty to raise significant debt-financed capital at attractive rates.

Q52. How do the Company's credit metrics compare to those expected of investment grade companies in the shipping industry?

A52. I have compared YB's operations and financials with typical rating agency metrics used to determine credit ratings. The Company does not meet the investment grade metrics for most of the rating categories. Specifically, Moody's Investor Service publishes a Rating Methodology for Global Shipping Industry which explains its approach to assess credit risks and assign credit ratings for shipping industry companies. The Rating Methodology identifies the following 5 characteristics: Scale, Profitability, Leverage and Coverage, Fleet Characteristics, and Financial Policy as Broad Rating Factors of credit ratings.[45] Corporate bonds with credit ratings of Baa or better are considered to be investment grade while those rated Ba or worse are considered non-investment grade.

The following summarizes my comparison of YB operations from 2016 through 2018 to Moody's metrics:

- Scale – Moody's notes that an investment-grade company would have revenues greater than $3 billion. YB has intrastate revenues of approximately $80 million

[45] Moody's Investors Service Shipping Industry Rating Methodology, accessed at https://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_1100802.

in 2018. Moody's criteria prefers an investment grade company to have fleet size greater than 100 vessels. YB operates 13 tug and barge vessels.[46]

- Profitability – Moody's prefers an investment grade company's financials over the last three years to have an Earnings Before Interest and Taxes ("EBIT") margin greater than 15% and Return on Assets ("ROA") greater than 4%. YB's three-year intrastate EBIT Margin is -3.7%, while its intrastate ROA is -4.1%.[47] These negative profitability metrics are not preferable for investment grade credit ratings.

- Leverage and Coverage[48] – Moody's prefers an investment grade company's financials over the last three years to have Debt to Earnings Before Interest, Depreciation, and Amortization ("EBITDA") that is between 0x and 3.5x, Retained Cash Flow / Net Debt greater than 20%, and Funds from Operations ("FFO") / Interest Expense above 4.5x for investment grade companies. YB's intrastate operations had an average Debt to EBITDA over the past three years of 8.5x, which would place it outside of the preferred investment grade metrics. I do not have information on YB's intrastate Retained Cash Flow or FFO. Using EBITDA as a proxy for cash flow, I estimate that YB would have a FFO / Interest Expense of 2.8x (outside of the preferred range for investment grade metrics).

I conclude that the Company is below the industry norm per Moody's guidelines and hence would make an investment grade credit rating challenging on a stand alone basis. This has serious implications for YB's ability to attract capital.

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46 Young Brothers Company Overview, accessed at https://htbyb.com/company-overview/#1464125801494-df2ca488-0ac2.

47 See Exhibit YB-1004.

48 YB has no long-term debt. I therefore evaluated the leverage ratios of YB's intrastate operations as if it has a capital structure with 40% debt, as I recommend.

Q53. How does regulatory treatment of the TCJA lead to lower cash flows for regulated utilities such as YB?

A53. The TCJA can reduce cash flows for regulated companies in several ways. First, when the benefits of decreased tax costs are passed through to utility customers, this manifests in a lower "gross up" for taxes (*i.e.*, the income tax allowance) in the revenue requirement. Reduced revenues in turn lead to decreased pre-tax cash flows and associated credit metrics.[49]

Second, on an after-tax basis, the benefit of accelerated tax depreciation is reduced in proportion to tax rate, leading to a reduction in after-tax cash flows. Third, the TCJA eliminated bonus depreciation for utility assets, drastically reducing the amount of tax deductions that can be taken immediately for new capital investment.

Fourth, regulated utilities will be required to amortize back to customers the balances of Excess Deferred Income Taxes ("EDIT") that arise from the reduced corporate tax rate. EDIT relates to Accumulated Deferred Income Tax ("ADIT"), which represents the accumulated effect of timing difference in depreciation for income tax and regulatory purposes. Because tax depreciation deductions are accelerated relative to regulatory depreciation expense included in rates, utilities collect and accumulate positive deferred taxes in the early years of a regulated asset; these balances are drawn down in later years when the tax deductions are reduced below the levels of book depreciation (or entirely exhausted). The assumption is that the ADIT balance will return to zero for any asset at the end of its regulatory life. However, with a reduction in the corporate tax rate, some of the taxes deferred in the early years (at the higher tax rate) will never become due to the IRS in later years (at the new lower rate). This excess ADIT represents a temporary windfall to the utility until it is amortized back to customers via adjustments to the revenue requirement. As the EDIT is amortized, the portion of rate base that must be

[49] EBIT (earnings before interest and taxes) and EBITDA (earnings before interest, taxes, depreciation and amortization) are common measures of pre-tax cash flow that are considered by credit rating agencies as part of credit metrics such as EBIT and EBITDA interest coverage ratios or the debt-to-EBITDA ratio. As discussed below, cash flow measures such as Funds from Operations (FFO) and associated credit metrics (such as FFO-to-debt and FFO interest coverage) for regulated utilities are also negatively affected by the TCJA.

financed by investors increases, since EDIT (like ADIT) is a source of zero cost financing for the utility. However, despite this partially offsetting increase in required return on rate base, the net effect of returning EDIT to customers is to decrease the utility's cash flows, both before and after taxes, until the EDIT has been exhausted. In addition, because amortizing EDIT increases the proportion of rate base that must be financed with external capital, this may place additional downward pressure on cash flow-to-debt metrics (to the extent the additional capital required is in the form of debt).

Q54. Please illustrate how implementation of the TCJA reduces utility cash flows.

A54. Figure 14 below illustrates the impact of TCJA on incremental after-tax cash flows generated by a new investment in utility rate base. It compares the pre-TCJA status quo (*i.e.*, a 35% corporate tax rate and 40% year-1 bonus depreciation that was scheduled to be permitted for new utility investment in 2019 under the prior tax code) with the new situation, namely 21% tax rate and only the standard year-1 Modified Accelerated Capital Recovery System ("MACRS") tax depreciation deduction.[50] As shown, the funds from operations ("FFO")[51] measure of cash flow is dramatically lower under the new tax regime compared to what utilities would have forecasted for new rate base investments prior to the TCJA taking effect. In turn, the incremental impact of new capital expenditures on utilities' cash flow to debt ratios is diminished by the new law.[52]

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[50] For illustrative purposes, the figure posits a hypothetical $1 million investment in new utility assets with a 30-year economic life for depreciation purposes and qualifying for accelerated tax depreciation according to the 20-year MACRS schedule. The investment in rate base is assumed to be financed with 50.00% debt / 50.00% equity and receive a 10.00% allowed ROE.

[51] For purposes of this example, FFO is defined as the result of adding back depreciation expense and deferred taxes (which are non-cash expenses) to net income. All credit rating agencies consider an after-tax cash flow measure of this type for purposes of calculating cash flow to debt ratios.

[52] Under standard depreciated original cost ratemaking and absent the effects of accelerated tax depreciation, the incremental impact of a given rate base asset to the FFO-to-debt metric is lowest when the asset is new and improves as the asset depreciates; accelerated tax depreciation, and especially bonus depreciation, mitigates or even reverses this trend by providing more cash flow in early years.

Figure 14
TCJA Impact on Year-1 Incremental Cash Flow and Credit Metrics
Illustrated for $1,000 of New Utility Plant Investment
Financed with 50% Equity / 50% Debt

		No TCJA - 35% tax rate with bonus depreciation	TCJA - 21% tax rate without bonus depreciation	Difference
		[1]	[2]	[3] = [2] - [1]
Net Income	[a] = 500 * 10%	$50.0	$50.0	-
Depreciation	[b] = 1,000 / 30	$33.3	$33.3	-
Deferred income Taxes				
Tax Depreciation	[c]	$422.5	$37.5	($385.0)
Book Depreciation	[d] = [b]	$33.3	$33.3	-
Temporary Difference	[e] = [c] - [d]	$389.2	$4.2	($385.0)
Deferred Income Taxes	[f] = [e] * tax rate	$136.2	$0.9	($135.3)
Funds From Operations	[g] = [a] + [b] + [f]	$219.5	$84.2	($135.3)
FFO-to-Debt (%)	[h] = [g] / 500	43.9%	16.8%	-27.1%

Notes:
[1] [c] = 1,000 * 42.25%; Represents year-1 deduction from 20-year MACRS schedule with 40% bonus depreciation.
[2] [c] = 1,000 * 3.75%; Represents year-1 deduction from 20-year MACRS schedule.

I note that while Figure 14 focuses on the impact of TCJA for new investment, the combined effect of differences in on-going tax deferrals and EDIT amortization is to reduce cash flow and cash flow-to-debt metrics associated with many pre-existing rate base assets also. Indeed, Moody's has evaluated all components of the TCJA as a drag on credit quality across the regulated utility industry, estimating that the average reduction in the ratio of cash flow to debt for utilities due to implementing the new tax law is 150-250 bps.[53]

[53] Moody's Investor Service, "Moody's Changes Outlook on 25 US Regulated Utilities Primarily Impacted by Tax Reform," January 19, 2018. The average reflects bonus depreciation and the impact on cash flow and financing of both new and pre-existing assets. *See* also Moody's Investor Service, Regulated Utilities - U.S., "2019 outlook shifts to negative due to weaker cash flows, continued high leverage," June 18, 2018 and "2019 outlook negative amid growing debt and stagnant cash flow," November 8, 2018.

Q55. Can using a greater percentage of equity in the regulatory capital structure mitigate some of the detrimental impacts of the new tax law on utility credit quality?

A55. Yes, by financing a greater portion of rate base assets with equity, regulated utilities can both improve cash flow (due to earning an after-tax return) and reduce their debt obligations, both of which serve to improve credit metrics and overall credit quality as evaluated by rating agencies. Figure 15 below illustrates this point using a simple example of a utility with aggregate accelerated tax depreciation deductions approximately 1.5 times the composite depreciation expense included in rates.[54] This example demonstrates that, holding all other factors constant, increasing the percentage of equity vs. debt financing included in the regulatory capital structure can lead to meaningful improvements in after-tax cash flow-to-debt metrics.

Figure 15
Effect of Capital Structure on Cash Flow to Debt Credit Metrics
Illustrated per $1,000 of Rate Base

		48% Equity / 52% Debt	50% Equity / 50% Debt	52% Equity / 48% Debt
		[1]	[2]	[3]
Equity Portion of Rate Base	[a]	$480.0	$500.0	$520.0
Debt Portion of Rate Base	[b] = 1,000 - [a]	$520.0	$500.0	$480.0
Net Income	[c] = [a] * 10%	$48.0	$50.0	$52.0
Depreciation	[d] = 1,000 / 30	$33.3	$33.3	$33.3
Deferred income Taxes				
Tax Depreciation	[e] = 1,000 * 5.00%	$50.0	$50.0	$50.0
Book Depreciation	[f] = [d]	$33.3	$33.3	$33.3
Temporary Difference	[g] = [e] - [f]	$16.7	$16.7	$16.7
Deferred Income Taxes	[h] = [g] * 21%	$3.5	$3.5	$3.5
Funds From Operations	[i] = [c] + [d] + [h]	$84.8	$86.8	$88.8
FFO-to-Debt (%)	[j] = [i] / [b]	16.3%	17.4%	18.5%

[54] Specifically, the example assumes ratemaking depreciation at 3.33% and accelerated tax depreciation deductions at 5.00% of aggregate rate base value.

Q56. Have utilities and regulators recognized that increasing the equity ratio in the regulatory capital structure is a viable and effective mechanism for mitigating the negative credit impacts associated with regulatory implementation of the TCJA?

A56. Yes. The Georgia Public Utilities Commission increased Atlanta Gas Light Co's common equity ratio from 51.00 to 55.00 percent and also increased the equity thickness for Georgia Power.[55] Similarly, the Kentucky Public Service Commission allowed Atmos Kentucky to increase its equity percentage from 52.30 to 58.20 percent,[56] and the Alabama Public Service Commission has approved a plan to allow Alabama Power Company to gradually increase its regulatory equity ratio from 47.00 to 55.00 percent by 2025 or sooner.[57] In addition, the New Jersey Board of Public Utilities has authorized PSE&G to increase its regulatory equity ratio to 54.00 percent.[58]

At the same time, utilities have been issuing a larger volume of equity than at any time since the financial crisis according to Thompson Reuter's data.[59] According to Moody's, approximately $24 billion in new equity issuances by regulated U.S. utilities were announced in 2018 (though November).[60]

Both utility managers and utility regulators recognize that "deleveraging" through use of more equity financing—especially as accompanied by recognition of this greater reliance on equity financing for ratemaking purposes—is an effective and appropriate option for supporting utility operations in the face of the cash flow reductions and increased investor financing requirements imposed by regulatory implementation of the TCJA.

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55 GA PUC, Docket D-40828 and Southern Company, "Investor Presentation," Nov. 7, 2018.

56 KY PSC, Docket C-2018-00281.

57 *See* Moody's Investor Service, Regulated Utilities - U.S., "2019 outlook shifts to negative due to weaker cash flows, continued high leverage," June 18, 2018.

58 *See* BPU Docket Nos. ER18010029 and GR18010030, NJ BPU Decision, pp. 7, 14. PSE&E has been steadily increasing its regulatory equity ratio since 2013, a year in which its year end regulatory equity ratio was 51%. See BPU Docket Nos. ER18010029 and GR18010030, Direct Testimony of Scott Jennings, 12+0 Update, August 8, 2018, p. 55.

59 Reuters Business News, "US tax reform reenergizes equity markets for utility companies," June 12, 2018.

60 Moody's Investor Service, Regulated Utilities - U.S., "2019 outlook negative amid growing debt and stagnant cash flow," November 8, 2018.

D. The CAPM Based Cost of Equity Estimates

Q57. Please briefly explain the CAPM.

A57. In the CAPM the collective investment decisions of investors in capital markets will result in equilibrium prices for all risky assets such that the returns investors expect to receive on their investments are commensurate with the risk of those assets relative to the market as a whole. The CAPM posits a risk-return relationship known as the Security Market Line (*see* Figure 4 in Section III), in which the required expected return on an asset is proportional to that asset's relative risk as measured by that asset's beta.

More precisely, the CAPM states that the cost of capital for an investment, S (*e.g.*, a particular common stock), is determined by the risk-free rate plus the stock's systematic risk multiplied by the market risk premium. Mathematically, the relationship is given by the following equation:

$$r_s = r_f + \beta_s \times MRP \qquad (1)$$

- r_S is the cost of capital for investment S;
- r_f is the risk-free interest rate;
- β_S is the beta risk measure for the investment S; and
- MRP is the market equity risk premium.

The CAPM is a "risk-positioning model," which operates on the principle (corroborated by empirical data) that investors price risky securities to offer a higher expected rate of return than safe securities. It says that an investment whose returns do not vary relative to market returns should receive the risk-free interest rate (that is the return on a zero-risk security, the y-axis intercept in Figure 4), whereas investments of the same risk the overall market (*i.e.*, those that by definition have average systematic market risk) are priced so as to expect to return the risk-free rate plus the MRP. Further, it says that the risk premium of a security over the risk-free rate equals the product of the beta of that security and the MRP.

1. Inputs to the CAPM

Q58. What inputs does your implementation of the CAPM require?

A58. As demonstrated by equation (1), estimating the cost of equity for a given company requires a measure of the risk-free rate of interest and the MRP, as well as a measurement of the stock's beta. There are many methodological choices and sources of data that inform the selection of these inputs. I discuss these issues below. (Additional technical detail, along with a discussion of the finance theory underlying the CAPM is provided in Exhibit YB-1001.)

Q59. What value did you use for the risk-free rate of interest?

A59. I used the yield on a 20-year U.S. Treasury bond as the risk-free asset for purposes of my analysis. Recognizing the fact that the cost of capital set in this proceeding may be in place over the next several years, I rely on a forecast of what Treasury bond yields will be in 2020. Specifically, *Blue Chip Economic Indicators* projects that the yield on a ten-year Government Bond will be 2.6 percent by 2020.[61] I adjust this value upward by 50 bps, which is my estimate of the representative historical maturity premium for the 20-year over the ten-year Government Bond. This produces a basic risk-free rate of 3.1 percent for 2020. However, there is evidence that the risk-free rate is non-trivially downward biased as the spread between, for example, A rated utility bond yields and the 20-year government bond yield is elevated by 47 bps relative to its historical average. Consequently, publications such as Duff & Phelps "normalize" the risk-free rate.[62] I consider this case in Scenario 1, where I add a fraction of the increase in yield spread to the risk-free rate to obtain a risk-free rate of 3.35 percent (the basic risk-free rate for 2020 plus 25 basis points).

Alternatively, the increase in yield spread can be viewed as an increase in the return investors require to hold assets that are not risk-free; i.e., an increase in the Market Risk Premium ("MRP"). I consider this possibility in a second scenario, where I (i) evaluate what increase in the MRP the 47 bps increase in the yield spread indicates, and (ii) look

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61 Blue Chip Economic Indicators, June 2019, p. 3.

62 Duff & Phelps, *2017 Valuation Handbook U.S. Guide to Cost of Capital*, p. 3-23 to 3-25.

to forecasted MRPs to assess the increase in MRP over its historical average. Importantly, I do not allocate the increase in yield-spread to both the risk-free rate and the MRP in the same scenario.

Q60. What value did you use for the MRP?

A60. Like the cost of capital itself, the MRP is a forward-looking concept. It is by definition the premium above the risk-free interest rate that investors can *expect* to earn by investing in a value-weighted portfolio of all risky investments in the market. The premium is not directly observable. Rather, it must be inferred or forecasted based on known market information. One commonly used method for estimating the MRP is to measure the historical average premium of market returns over the income returns on government bonds over some long historical period. The average market risk premium from 1926 to the present (2017) is 6.91 percent.[63] I use this value of the MRP along with a risk-free rate of 3.35 percent in one of my CAPM scenarios.

I also calculate a forward-looking MRP of 7.91 percent, which I use in combination with a lower risk-free rate of 3.1 percent.

The 7.91 percent MRP was chosen by looking to forecasted MRP and the increase in yield spread discussed above. Specifically, Bloomberg's forward-looking market-implied MRP is currently estimated at approximately 6.99 percent (when expressed relative to 20-year bond yields) and was above the 6.91 percent long-term historical average value in most months of 2018.[64] At the same time, I recently estimated a MRP of 10.77 percent using the methodology in FERC's NETO Briefing Order.[65]

Lastly, the increase in yield spread can be used to provide a quantitative benchmark for the implied increase in MRP based on a paper by Edwin J. Elton, et al., which documents that the yield spread on corporate bonds is normally a combination of a default premium,

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63 Duff & Phelps, Ibbotson SBBI 2019 Valuation Yearbook at 10-21.

64 As noted earlier, the reliance on a forecasted MRP based on the methodology used in the NETO Remand Order would result in a higher MRP of 9.67%, while the FERC Staff witness recommendation corresponds to an MRP of 7.9 to 8.15% over the 20-year Treasury Bond..

65 Direct Testimony of Bente Villadsen in Docket No. RP19-1291, May 2019, Exhibit PPC-011.

a tax premium, and a systematic risk premium.[66] Of these components, it is the systematic risk premium that likely explains the vast majority of the yield spread increase. In other words, unless the risk-free rate is underestimated as described above, the market equity risk premium has increased relative to its "normal" level.[67] For example, assuming a beta of 0.25 for A rated debt[68] means that an increase in the MRP of one percentage point translates into a ¼ percentage point increase in the risk premium on A rated debt (i.e., 0.25 (beta) times 1 percentage point (increase in MRP) = ¼ percentage point increase in yield spread). Thus, a 25 bps increase in the yield spread is therefore consistent with a 1.0 percentage point increase in the MRP ($\frac{0.25\%}{0.25} = 1.0\%$). Thus, there is evidence that the current MRP is higher than the historical MRP of 6.91 percent.

The fact that recent forward-looking estimates of the MRP exceeded the historical average level is consistent with the broader body of evidence that risk premiums have remained elevated relative to their pre-financial crisis levels. (See Section IV above.)

Therefore, I believe the 6.91 percent long-term historical average MRP value I rely on is a low-end estimate of what the market risk premium will be during the period at issue in this proceeding. I similarly believe that the 7.91 percent I rely on for my Scenario 2, a 100 basis point increase relative to the MRP in Scenario 1, is a good approximation for the forward-looking MRP.I use this value of the MRP in my CAPM analyses.

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66 "Explaining the Rate Spread on Corporate Bonds," Edwin J. Elton, Martin J. Gruber, Deepak Agarwal, and Christopher Mann, *The Journal of Finance*, February 2001, pp. 247-277.

67 In theory, some of the increase in yield spread for A rated debt may be due to an increase in default risk, but the increase in default risk for A rated debt is undoubtedly very small because utilities with A range rated debt have a low default risk. This means that the vast majority—if not all—of the increase in A rated yield spreads is due to a combination of the increased systematic risk premium and the downward pressure on the yields of government debt. Although there is no increase in the tax premium discussed in the Elton et al. paper due to coupon payments, there may be some increase due to a small tax effect resulting from the probability of increased capital gains taxes when the debt matures.

68 Elton, *et al.* estimates the average beta on BBB-rated corporate debt as 0.26 over the period of their study, and A-rated debt will have a slightly lower beta than BBB-rated debt. I note that 0.25 is a conservatively high estimate of the beta on A-rated utility debt. Most academic estimates, including those presented in *Berk & Demarzo* that I utilize for my Hamada adjustments are significantly lower: in the range of 0.0 – 0.1 percent and would result in a substantially higher MRP estimate.

Q61. What betas did you use for the companies in the Shipping Sample?

A61. I used *Value Line* betas when available and otherwise on Bloomberg betas, which are estimated using the most recent five years of weekly historical returns data.[69] The *Value Line* levered equity betas measured for the Shipping Sample are reported in Figure 13 and average 1.17 for the Shipping Sample.[70] Importantly, as explained in Section III.B above, these betas—which are measured (by *Value Line*) using the market stock return data of the proxy companies—reflect the level of financial risk inherent in the proxy companies' market value leverage ratios over the estimation period. Because YB's regulatory capital structure includes a higher proportion of debt financing compared to the proxy companies, the financial risk associated with an equity investment in YB's rate base is correspondingly greater than the financial risk borne by investors in the proxy companies' publicly traded stock.[71]

Consequently, when standard textbook techniques are applied to unlever the *Value Line* betas reported in Figure 13 and relever the resulting asset betas at YB's regulatory capital structure, the resulting proxy group averages range from 1.44 to 1.53 for the Shipping Sample.[72]

2. The Empirical CAPM

Q62. What other equity risk premium model do you use?

A62. Empirical research has long shown that the CAPM tends to overstate the actual sensitivity of the cost of capital to beta: low-beta stocks tend to have higher risk premiums than

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69 *See* Value Line Glossary, accessible at http://www.valueline.com/Glossary/Glossary.aspx.

70 Value Line did not report betas for Schneider National Inc. and U.S. Xpress Enterprises 'A', so I relied on betas reported by Bloomberg for these companies.

71 A further detailed discussion is contained in Exhibit YB-1001, Section III.

72 *See* Exhibit YB-1003, Table Nos. BV-13 – BV-15. The Technical Appendix (Exhibit YB-1001) to this testimony provides a detailed description of the standard textbook formulas used to implement the "Hamada" technique for unlevering measured equity betas based on the proxy companies' capital structures to calculate "asset betas" that measure the proxy companies' business risk independent of the financial risk impact of differing capital structures. The proxy group average asset betas are then relevered at the target capital structure (i.e., YB's regulatory capital structure), with the precise relevered beta depending on the specific version of the unlevering/relevering formula employed.

predicted by the CAPM and high-beta stocks tend to have lower risk premiums than predicted.[73] A number of variations on the original CAPM theory have been proposed to explain this finding, but the observation itself can also be used to estimate the cost of capital directly, using beta to measure relative risk by making a direct empirical adjustment to the CAPM.

The second variation on the CAPM that I employ makes use of these empirical findings. It estimates the cost of capital with the equation:

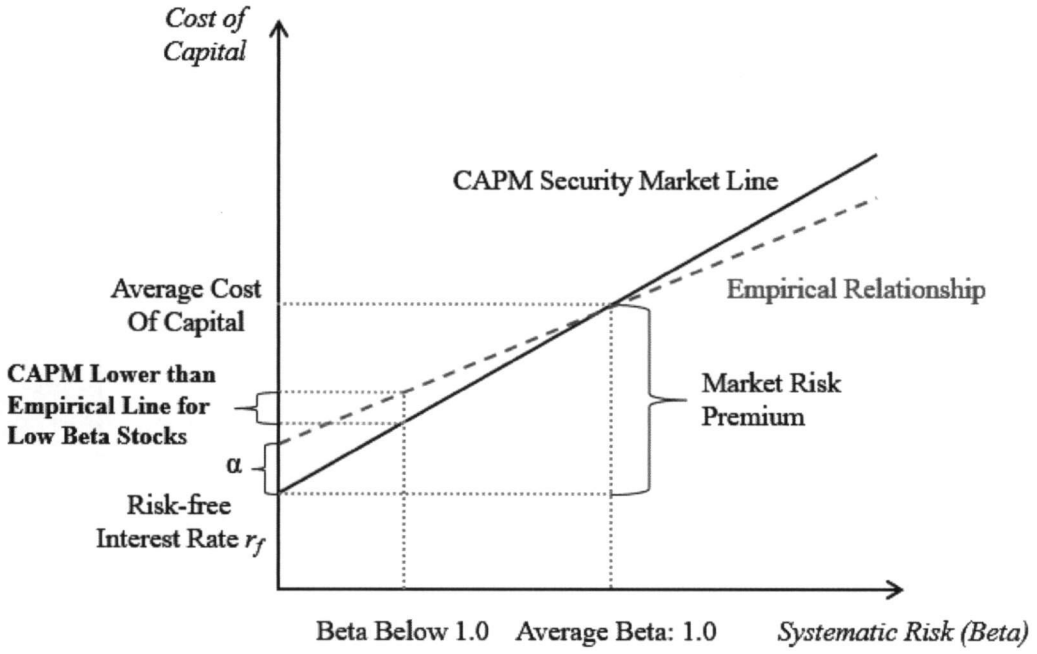
$$r_S = r_f + \alpha + \beta_S \times (MRP - \alpha) \quad (2)$$

where α is the "alpha" adjustment of the risk-return line, a constant, and the other symbols are defined as for the CAPM (see equation (2) above).

I label this model the Empirical Capital Asset Pricing Model, or "ECAPM." The alpha adjustment has the effect of increasing the intercept but reducing the slope of the Security Market Line in Figure 4, which results in a Security Market Line that more closely matches the results of empirical tests. This adjustment is portrayed in Figure 16 below. In other words, the ECAPM produces more accurate predictions of eventual realized risk premiums than does the CAPM.

[73] *See* Figure A-3 in Exhibit YB-1001 for references to relevant academic articles.

Figure 16
The Empirical Security Market Line



Q63. Why do you use the ECAPM?

A63. Academic research finds that the CAPM has not generally performed well as an empirical model. One of its short-comings is directly addressed by the ECAPM, which recognizes the consistent empirical observation that the CAPM underestimates the cost of capital for low beta stocks. In other words, the ECAPM is based on recognizing that the actual observed risk-return line is flatter and has a higher intercept than that predicted by the CAPM. The alpha parameter (α) in the ECAPM adjusts for this fact, which has been established by repeated empirical tests of the CAPM. Exhibit YB-1001, Section II.C discusses the empirical findings that have tested the CAPM and also provides documentation for the magnitude of the adjustment, α.

3. Results from the CAPM Based Models

Q64. Please summarize the parameters of the scenarios and variations you considered in your CAPM and ECAPM analyses.

A64. The parameters are displayed in Figure 17 below. As discussed above, the risk-free interest rate represents Blue Chip Economic Indicators projection for the ten-year Treasury Yield to prevail in 2020, adjusted to a 20-year horizon. The MRP is the long-term historical arithmetic average of annual realized premiums of U.S. stock market returns over long-term (approximately 20-year maturity) Treasury bond income returns from 1926 to 2018 as reported by Duff and Phelps.

Figure 17
Parameters in Risk Positioning Analyses

	Scenario 1	Scenario 2
Risk-Free Interest Rate	3.35%	3.10%
Market Risk Premium	6.91%	7.91%

Q65. Please summarize the results of the CAPM-based models.

A65. The results of CAPM and ECAPM estimation for the Shipping Sample are presented in Figure 18 below. The ranges of results for each model (CAPM and ECAPM) reflect the application of different specific versions of the textbook formulas used to account for the impact of different financial leverage on financial risk.

Figure 18
CAPM Summary: Shipping Sample

	Scenario 1 [1]	Scenario 2 [2]
Full Sample		
Overall Cost of Capital		
CAPM	13.1%	14.3%
ECAPM (α = 1.5%)	12.8%	14.0%
Hamada Adjustment Method (with taxes)		
CAPM	13.3%	14.5%
ECAPM (α = 1.5%)	12.6%	13.8%
Hamada Adjustment Method (without taxes)		
CAPM	13.9%	15.2%
ECAPM (α = 1.5%)	13.1%	14.4%
Sub-Sample		
Overall Cost of Capital		
CAPM	12.6%	13.7%
ECAPM (α = 1.5%)	12.3%	13.5%
Hamada Adjustment Method (with taxes)		
CAPM	12.9%	14.1%
ECAPM (α = 1.5%)	12.4%	13.5%
Hamada Adjustment Method (without taxes)		
CAPM	13.4%	14.6%
ECAPM (α = 1.5%)	12.7%	13.9%

Scenario 1: Long-Term Risk Free Rate of 3.35%, Long-Term Market Risk Premium of 6.91%.
Scenario 2: Long-Term Risk Free Rate of 3.10%, Long-Term Market Risk Premium of 7.91%.

Q66. How do you interpret the results of your CAPM and ECAPM Analyses?

A66. The results above range from 12.6 to 14.6 percent for the full sample. As discussed above, the established academic evidence indicates that the traditional CAPM tends to understate the cost of equity for lower-than-average risk companies (and overstate the cost of equity for higher-than-average risk companies such as those in the Shipping Sample), I therefore give somewhat greater weight to the ECAPM results to inform my recommendation, which range from 12.6 to 14 percent. In my opinion, the estimates

reported above support a reasonable cost of equity range of 13 - 14 percent based on the Shipping Sample.[74]

The Subsample results in a similar range of estimates, from 12.3 percent at the low end (Overall Cost of Capital, ECAPM) to 14.6 percent at the high end (Hamada Adjustment Method without taxes, CAPM), further supporting my reasonable cost of equity range of 12¾ - 14 percent.

E. DCF Based Estimates

1. Single and Multi-Stage DCF Models

Q67. Can you describe the DCF model's approach to estimating the cost of equity?

A67. The DCF model attempts to estimate the cost of capital for a given company directly, rather than based on its risk relative to the market as the CAPM does. The DCF method assumes that the market price of a stock is equal to the present value of the dividends that its owners expect to receive. The method also assumes that this present value can be calculated by the standard formula for the present value of a cash flow—literally a stream of expected "cash flows" discounted at a risk-appropriate discount rate. When the cash flows are dividends, that discount rate is the cost of equity capital:

$$P_0 = \frac{D_1}{1+r} + \frac{D_2}{(1+r)^2} + \frac{D_3}{(1+r)^3} + \cdots + \frac{D_T}{(1+r)^T} \quad (3)$$

Where,

P_0 is the current market price of the stock;

D_t is the dividend cash flow expected at the end of period t;

T is the last period in which a dividend cash flow is to be received; and

r is the cost of equity capital.

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[74] I consider the lowest of the ECAPM estimates unreasonable and round the results to the nearest 0.25 percent to assess the reasonable range.

Importantly, this formula implies that if the current market price and the pattern of expected dividends are known, it is possible to "solve for" the discount rate r that makes the equation true. In this sense, a DCF analysis can be used to estimate the cost of equity capital implied by the market price of a stock and market expectations for its future dividends.

Many DCF applications assume that the growth rate lasts into perpetuity, so the formula can be rearranged algebraically to directly estimate the cost of capital. Specifically, the implied DCF cost of equity can then be calculated using the well-known "DCF formula" for the cost of capital:

$$\boldsymbol{r = \frac{D_1}{P_0} + g = \frac{D_0}{P_0} \times (1 + g) + g} \qquad (4)$$

where $\boldsymbol{D_0}$ is the current dividend, which investors expect to increase at rate $\boldsymbol{g}$ by the end of the next period, and over all subsequent periods into perpetuity.

Equation (4) says that if equation (3) holds, the cost of capital equals the expected dividend yield plus the (perpetual) expected future growth rate of dividends. I refer to this as the single-stage DCF model; it is also known as the Gordon Growth model, in honor of its originator Professor Myron J Gordon of the University of Toronto.

Q68. Are there other versions of the DCF model?

A68. Yes. There are many alternative versions, notably (i) multi-stage models, (ii) models that use cash flow rather than dividends, or versions that combine aspects of (i) and (ii).[75] One such alternative expands the Gordon Growth model to three stages. In the multistage model, earnings and dividends can grow at different rates, but must grow at the same rate in the final, constant growth rate period. [76]

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75 The Surface Transportation Board uses a cash flow based model with three stages. *See*, e.g., Surface Transportation Board Decision, "STB Ex Parte No. 664 (Sub-No. 1)," Decided January 23, 2009.

76 *See* Exhibit YB-1001, Section I for further discussion of the various versions of the DCF model, as well as the details of the specific versions I implement in this proceeding.

In my implementation of the multi-stage DCF, I assume that companies grow their dividend for five years at the forecasted company-specific rate of earnings growth, with that growth then tapering over the next five years toward the growth rate of the overall economy (*i.e.*, the long-term GDP growth rate forecasted to be in effect ten years or more into the future).

2. DCF Inputs and Results

Q69. What growth rate information do you use?

A69. The first step in my DCF analysis (either constant growth or multi-stage formulations) is to examine a sample of investment analysts' forecasted earnings growth rates for companies in my proxy group. For the single-stage DCF and for the first stage of the multi-stage DCF, I use investment analyst forecasts of company-specific growth rates sourced from *Value Line* and Thomson Reuters IBES.

For the long-term growth rate for the final, constant-growth stage of the multistage DCF estimates, I use the long-term U.S. GDP growth forecast of 4.0 from Blue Chip Economic Indicators.[77] Thus, the long-run (or terminal) growth rate in the multi-stage model is nominal GDP growth.

Q70. What are the pros and cons of the input data?

A70. Both the Gordon Growth and single-stage DCF models require forecast growth rates that reflect investor expectations about the pattern of dividend growth for the companies over a sufficiently long horizon, but estimates are typically only available for three - five years. In the multi-stage version, I taper these growth rates toward a stable growth rate corresponding to a forecast of long-term GDP growth for all companies.

One issue with the data is that it includes solely dividend payments as cash distributions to shareholders, while some companies also use share repurchases to distribute cash to shareholders. This is particularly true for companies in the Shipping Sample, where

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[77] *See* Blue Chip Economic Indicators, March 2019, p. 14.

shares outstanding have declined by an average 5.6% between second-quarter 2014 and second-quarter 2019. The omission of net share repurchases from the DCF model causes a downward bias (underestimation) of the ROE estimates for companies that rely on net share repurchases rather than dividends to distribute cash to shareholders.

Q71. Please summarize the DCF based cost of equity estimates for the Shipping Sample.

A71. The results of the DCF based estimation for the Shipping Sample are displayed below in Figure 19.

Figure 19
DCF Model Results: Shipping Sample

Full Sample	
Single-Stage	12.8%
Multi-Stage	6.2%
Sub-Sample	
Single-Stage	15.8%
Multi-Stage	6.8%

Q72. How do you interpret the results of your DCF analyses?

A72. As discussed above, the DCF models are currently estimated based on dividend yields that may be expected to increase as interest rates continue to rise in the coming months and years. As a consequence, the multi-stage DCF model's assumption that *current* prices reflect investor's expectations that dividend growth will converge with the rate of GDP growth in the long term may underestimate how that pattern of expected dividends will be valued in the market throughout the period for which the rates decided in this proceeding will be in effect (*i.e.*, 2019 onward).[78] Furthermore, the multi-stage DCF

[78] Blue Chip's forecasted GDP growth was 4.5 percent at the time of estimation, while the realized nominal GDP growth for 2018 was 5.2 percent. *See* https://www.bea.gov/news/glance.

model does not consider the expectation for cash flow to be returned to shareholders through share buybacks. Thus, while I acknowledge that the single-stage DCF model makes the strong assumption that current three-to-five year Earnings Per Share growth expectations will persist into perpetuity, I conclude that a reasonable estimate of the cost of equity falls somewhere between what is estimated by the two versions of the model and (at the low end) and the single-stage DCF (at the high end). The average from the two models is 9.5 percent and the single-stage DCF is 12.8 percent for the Full Sample. Both estimates are at or below the low range of the CAPM-based estimates.

Looking just at the Subsample, the single-stage DCF estimates a cost of equity of 15.8 percent and the multi-stage estimates a cost of equity of 6.8 percent. The average from the two models is 11.3 percent. These Subsample results are higher than the Full Sample results, indicating that placing more weight on maritimes and railroad companies in the sample results in higher estimates of the ROE. Given that these subsample results are more in line with the CAPM-based estimates, I give them greater weight than the Full Sample results in forming a reasonable range. Focusing on the single-stage DCF results of 12.75% (rounding to the nearest ¼ percent) and noting the high end of 15.75%, which is 200 basis points above the focal estimate, I find that the estimates support a DCF range of 10.75 to 15.75 percent.

Q73. What range do you recommend?

A73. I found a range of 13 - 14 percent implementing the CAPMs and a range of 11.25 to 15.75 percent implementing the DCF models. The overlapping range is 13 to 14 percent, which I find to be the most appropriate range to consider for YB.

VI. COST OF DEBT

Q74. How do you calculate the cost of long-term debt?

A74. I estimate the cost of long-term debt for YB based on the corporate bond issuances of comparable-risk companies, plus a 50 basis point issuance cost adjustment. I believe that YB would be rated as non-investment grade, if it were to issue corporate bonds as a stand-alone company, given its small size and inability to earn its allowed returns on rate base.

I therefore use an index of non-investment grade corporate bond yields in order to estimate the cost of long-term debt for the Company.

Q75. Why do you find that YB's cost of debt is best represented by non-investment grade corporate bond yields?

A75. In Section V.C, I compared YB's operations and financials with typical rating agency metrics used to determine credit ratings. I conclude that, based on a comparison of Scale, Profitability, and Leverage/Coverage, YB's regulated intrastate business would not meet investment grade credit metrics as a stand-alone business. As a result, I look to the cost of debt for non-investment grade entities.

Q76. What do you determine from the index of non-investment grade corporate bond yields?

A76. I used the Bank of America Merrill Lynch US Corporate High Yield Debt index in order to measure the appropriate cost of long-term debt for a non-investment grade company. This non-investment grade index reports recent average yields equal to 6.0 percent.[79]

Q77. Is the non-investment grade corporate bond index specific to maritime companies?

A77. No, the Bank of America Merrill Lynch US Corporate High Yield Debt index is comprised of many different sectors across Financials, Industrials, and Utility. There is not a maritime-specific subsector reported as part of this index. The subsector most comparable to the Shipping Sample would be the Transportation sector. I reviewed sector-specific information provided by Bank of American Merrill Lynch regarding the U.S. High Yield Index which shows that the average yield on Transport Infrastructure/Services bonds was 9.53 percent and the average yield on Trucking & Delivery bonds was 10.96 percent; the effective yield of the overall index was only 5.90 percent at this time.[80] This data shows that transportation and shipping company bonds

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[79] *See* Exhibit YB-1003 at page 76.

[80] Bank of America Merrill Lynch, "US High Yield Master II Index (H0A0) – distribution characteristics as of 6/30/2019," downloaded from https://indices.theice.com/home.

may require higher yields than the average non-investment grade corporate bond reported in the Bank of America Merrill Lynch US Corporate High Yield Debt index. Also, the Company's inability to earn its allowed return over twelve of the past fourteen years could impede it from raising significant debt capital at attractive rates should the Company pursue stand-alone financing that reflected the hypothetical capital structure.

However, yields on debt issuances can depend heavily on company-specific factors, the exact maturity years of the debt, the seniority of the debt, and whether the debt is secured or not. So while there is evidence that shipping companies may experience higher costs of debt than other companies in the Bank of America Merrill Lynch US Corporate High Yield Debt index, I have conservatively made no additional adjustment to my long-term cost of debt estimate.

Q78. What do you recommend for the cost of long-term debt for the Company?

A78. I recommend 6.5 percent. I derived this estimate by starting with 6.0 percent based on an index of non-investment grade corporate yields and include 50 basis points adjustment for issuance costs. This results in an estimate of 6.5 percent for the cost of long-term debt of YB.

VII. YOUNG BROTHERS SPECIFIC CIRCUMSTANCES AND COST OF CAPITAL RECOMMENDATION

A. Business Risk Characteristics

Q79. How does the business risk of YB compare to the Shipping Sample?

A79. Based on the testimony of Mr. St. Amand, YB has comparable business risk relative to the Shipping Sample. I therefore consider YB to be of average risk relative to the sample and make no additional adjustments.

B. Cost of Capital Recommendation

Q80. What do you recommend for YB's cost of capital in this proceeding?

A80. I recommend that YB be allowed to earn a 10.7 percent rate of return on its regulated rate base. First, I find that a capital structure of 60 percent equity and 40 percent long-term debt, based on the high equity ratios in the capital structures of comparable Shipping Companies and on the negative cash flow impacts to utilities from the Tax Cuts and Jobs Act, is appropriate for the Company.

For the equity-financed portion of its regulated rate base, I recommend that YB be allowed to earn a 13.5 percent ROE. As noted above, (i) YB faces somewhat elevated uncertainty and business risk related to substantial market forces and volume risks, and (ii) the TCJA has resulted in greater volatility of equity cash flows for the Company. Based on my consideration of the model results in the context of YB's specific business risk characteristics, financial circumstances, the findings of Mr. St. Amand's risk evaluation of the Shipping Sample, and of current capital market conditions, I believe it is appropriate to place YB's allowed return at 13.5 percent. This is the midpoint of the overall 13 - 14 percent range of reasonable cost of equity based on the estimates from my analysis.

I recommend 6.5 percent for the cost of long-term debt based on yields for non-investment grade corporate bonds and 50 basis points for issuance costs. This would imply a regulatory cost of capital of 10.7 percent, as shown by Figure 20 below.

Figure 20
Recommended Cost of Capital

		Share	Cost	Weighted Cost
		[1]	[2]	[3]
Long-Term Debt	[a]	40%	6.50%	2.60%
Common Equity	[b]	60%	13.50%	8.10%
COST OF CAPITAL	[c]			**10.70%**

Notes and Sources:
[1]: The Brattle Group.
[2][a]: Merrill Lynch US Corporate High Yield Debt Rate, last 15 days of trading as of 06/30/2019 plus 50 bps for issuance costs.
[2][b]: The Brattle Group.

Q81. Does this conclude your direct testimony?

A81. Yes, it does.

BENTE VILLADSEN
Principal

Boston, MA | +1.617.864.7900 | Bente.Villadsen@brattle.com

Dr. Bente Villadsen's work concentrates in the areas of regulatory finance and accounting. Her recent work has focused on accounting issues, damages, cost of capital and regulatory finance. Dr. Villadsen has testified on cost of capital and accounting, analyzed credit issues in the utility industry, risk management practices as well the impact of regulatory initiatives such as energy efficiency and de-coupling on cost of capital and earnings. Among her recent advisory work is the review of regulatory practices regarding the return on equity, capital structure, recovery of costs and capital expenditures as well as the precedence for regulatory approval in mergers or acquisitions. Dr. Villadsen's accounting work has pertained to disclosure issues and principles including impairment testing, fair value accounting, leases, accounting for hybrid securities, accounting for equity investments, cash flow estimation as well as overhead allocation. Dr. Villadsen has estimated damages in the U.S. as well as internationally for companies in the construction, telecommunications, energy, cement, and rail road industry. She has filed testimony and testified in federal and state court, in international and U.S. arbitrations and before state and federal regulatory commissions on accounting issues, damages, discount rates and cost of capital for regulated entities.

Dr. Villadsen holds a Ph.D. from Yale University's School of Management with a concentration in accounting. She has a joint degree in mathematics and economics (BS and MS) from University of Aarhus in Denmark. Prior to joining The Brattle Group, Dr. Villadsen was a faculty member at Washington University in St. Louis, University of Michigan, and University of Iowa.

She has taught financial and managerial accounting as well as econometrics, quantitative methods, and economics of information to undergraduate or graduate students. Dr. Villadsen serves as the president of the Society of Utility Regulatory Financial Analysts for 2016-2018.

AREAS OF EXPERTISE

- Regulatory Finance
  - Cost of Capital
  - Cost of Service (including prudence)
  - Energy Efficiency, De-coupling and the Impact on Utilities Financials
  - Relationship between regulation and credit worthiness
  - Risk Management
  - Regulatory Advisory in Mergers & Acquisitions
- Accounting and Corporate Finance
  - Application of Accounting Standards
  - Disclosure Issues
  - Credit Issues in the Utility Industry
- Damages and Valuation (incl. international arbitration)
  - Utility valuation

- Lost Profit for construction, oil&gas, utilities
- Valuation of construction contract
- Damages from the choice of inaccurate accounting methdology

EXPERIENCE

Regulatory Finance

- Dr. Villadsen has testified on cost of capital and capital structure for many regulated entities including electric and gas utilities, pipelines, railroads, and water utilities in many jurisdictions including at the FERC, the Surface Transportation Board, the states of Alaska, Arizona, California, Illinois, New Mexico, New York, Oregon, and Washington as well as in the provinces of Alberta and Ontario.
- On behalf of the Association of American Railroads, Dr. Villadsen appeared as an expert before the Surface Transportation Board (STB) and submitted expert reports on the determination of the cost of equity for U.S. freight railroads. The STB agreed to continue to use two estimation methods with the parameters suggested.
- For several electric, gas and transmission utilities as well as pipelines in Alberta, Canada, Dr. Villadsen filed evidence and appeared as an expert on the cost of equity and appropriate capital structure for 2015-17. Her evidence was heard by the Alberta Utilities Commission.
- Dr. Villadsen has estimated the cost of capital and recommended an appropriate capital structure for natural gas and liquids pipelines in Canada, Mexico, and the US. using the jurisdictions' preferred estimation technique as well as other standard techniques. This work has been used in negotiations with shippers as well as before regulators.
- For the Ontario Energy Board Staff, Dr. Villadsen submitted evidence on the appropriate capital structure for a power generator that is engaged in a nuclear refurbishment program.
- She has estimated the cost of equity on behalf of Anchorage Municipal Light and Power, Arizona Public Service, Portland General Electric, Anchorage Water and Wastewater, American Water, California Water, and EPCOR in state regulatory proceedings. She has also submitted testimony before the Bonneville Power Authority. Much of her testimony involves not only cost of capital estimation but also capital structure, the impact on credit metrics and various regulatory mechanisms such as revenue stabilization, riders and trackers.
- In Australia, she has submitted led and co-authored a report on cost of equity and debt estimation methods for the Australian Pipeline Industry Association. The equity report was

filed with the Australian Energy Regulator as part of the APIA's response to the Australian Energy Regulator's development of rate of return guidelines and both reports were filed with the Economic Regulation Authority by the Dampier Bunbury Pipeline. She has also submitted a report on aspects of the WACC calculation for Aurizon Network to the Queensland Competition Authority.

- In Canada, Dr. Villadsen has co-authored reports for the British Columbia Utilities Commission and the Canadian Transportation Agency regarding cost of capital methodologies. Her work consisted partly of summarizing and evaluating the pros and cons of methods and partly of surveying Canadian and world-wide practices regarding cost of capital estimation.
- Dr. Villadsen worked with utilities to estimate the magnitude of the financial risk inherent in long-term gas contracts. In doing so, she relied on the rating agency of Standard & Poor's published methodology for determining the risk when measuring credit ratios.
- She has worked on behalf of infrastructure funds, pension funds, utilities and others on understanding and evaluating the regulatory environment in which electric, natural gas, or water utilities operate for the purpose of enhancing investors ability to understand potential investments. She has also provided advise and testimony in the approval phase of acquisitions.
- On behalf of utilities that are providers of last resort, she has provided estimates of the proper compensation for providing the state-mandated services to wholesale generators.
- In connection with the AWC Companies application to construct a backbone electric transmission project off the Mid-Atlantic Coast, Dr. Villadsen submitted testimony before the Federal Energy Regulatory Commission on the treatment the accounting and regulatory treatment of regulatory assets, pre-construction costs, construction work in progress, and capitalization issues.
- On behalf of ITC Holdings, she filed testimony with the Federal Energy Regulatory Commission regarding capital structure issues.
- Testimony on the impact of transaction specific changes to pension plans and other rate base issues on behalf of Balfour Beatty Infrastructure Partners before the Michigan Public Service Commission.
- On behalf of financial institutions, Dr. Villadsen has led several teams that provided regulatory guidance regarding state, provincial or federal regulatory issues for integrated electric utilities, transmission assets and generation facilities. The work was requested in connection with the institutions evaluation of potential investments.

- For a natural gas utility facing concerns over mark to market losses on long term gas hedges, Dr. Villadsen helped develop a program for basing a portion of hedge targets on trends in market volatility rather than on just price movements and volume goals. The approach was refined and approved in a series of workshops involving the utility, the state regulatory staff, and active intervener groups. These workshops evolved into a forum for quarterly updates on market trends and hedging positions.
- She has advised the private equity arm of three large financial institutions as well as two infrastructure companies, a sovereign fund and pension fund in connection with their acquisition of regulated transmission, distribution or integrated electric assets in the U.S. and Canada. For these clients, Dr. Villadsen evaluated the regulatory climate and the treatment of acquisition specific changes affecting the regulated entity, capital expenditures, specific cost items and the impact of regulatory initiatives such as the FERC's incentive return or specific states' approaches to the recovery of capital expenditures riders and trackers. She has also reviewed the assumptions or worked directly with the acquirer's financial model.
- On behalf of a provider of electric power to a larger industrial company, Dr. Villadsen assisted in the evaluation of the credit terms and regulatory provisions for the long-term power contract.
- For several large electric utility, Dr. Villadsen reviewed the hedging strategies for electricity and gas and modeled the risk mitigation of hedges entered into. She also studies the prevalence and merits of using swaps to hedge gas costs. This work was used in connection with prudence reviews of hedging costs in Colorado, Oregon, Utah, West Virginia, and Wyoming.
- She estimated the cost of capital for major U.S. and Canadian utilities, pipelines, and railroads. The work has been used in connection with the companies' rate hearings before the Federal Energy Regulatory Commission, the Canadian National Energy Board, the Surface Transportation Board, and state and provincial regulatory bodies. The work has been performed for pipelines, integrated electric utilities, non-integrated electric utilities, gas distribution companies, water utilities, railroads and other parties. For the owner of Heathrow and Gatwick Airport facilities, she has assisted in estimating the cost of capital of U.K. based airports. The resulting report was filed with the U.K. Competition Commission.
- For a Canadian pipeline, Dr. Villadsen co-authored an expert report regarding the cost of equity capital and the magnitude of asset retirement obligations. This work was used in arbitration between the pipeline owner and its shippers.
- In a matter pertaining to regulatory cost allocation, Dr. Villadsen assisted counsel in collecting necessary internal documents, reviewing internal accounting records and using this information to assess the reasonableness of the cost allocation.

- She has been engaged to estimate the cost of capital or appropriate discount rate to apply to segments of operations such as the power production segment for utilities.
- In connection with rate hearings for electric utilities, Dr. Villadsen has estimated the impact of power purchase agreements on the company's credit ratings and calculated appropriate compensation for utilities that sign such agreements to fulfill, for example, renewable energy requirements.
- Dr. Villadsen has been part of a team assessing the impact of conservation initiatives, energy efficiency, and decoupling of volumes and revenues on electric utilities financial performance. Specifically, she has estimated the impact of specific regulatory proposals on the affected utilities earnings and cash flow.
- On behalf of Progress Energy, she evaluated the impact of a depreciation proposal on an electric utility's financial metric and also investigated the accounting and regulatory precedent for the proposal.
- For a large integrated utility in the U.S., Dr. Villadsen has for several years participated in a large range of issues regarding the company's rate filing, including the company's cost of capital, incentive based rates, fuel adjustment clauses, and regulatory accounting issues pertaining to depreciation, pensions, and compensation.
- Dr. Villadsen has been involved in several projects evaluating the impact of credit ratings on electric utilities. She was part of a team evaluating the impact of accounting fraud on an energy company's credit rating and assessing the company's credit rating but-for the accounting fraud.
- For a large electric utility, Dr. Villadsen modeled cash flows and analyzed its financing decisions to determine the degree to which the company was in financial distress as a consequence of long-term energy contracts.
- For a large electric utility without generation assets, Dr. Villadsen assisted in the assessment of the risk added from offering its customers a price protection plan and being the provider of last resort (POLR).
- For several infrastructure companies, Dr. Villadsen has provided advice regarding the regulatory issues such as the allowed return on equity, capital structure, the determination of rate base and revenue requirement, the recovery of pension, capital expenditure, fuel, and other costs as well as the ability to earn the allowed return on equity. Her work has spanned

12 U.S. states as well as Canada, Europe, and South America. She has been involved in the electric, natural gas, water, and toll road industry.

Accounting and Corporate Finance

- On behalf of a construction company in arbitration with a sovereign, Dr. Villadsen filed an expert report report quantifying damages in the form of lost profit and consequential damages.
- In arbitration before the International Chamber of Commerce Dr. Villadsen testified regarding the true-up clauses in a sales and purchase agreement, she testified on the distinction between accruals and cash flow measures as well as on the measurement of specific expenses and cash flows.
- On behalf of a taxpayer, Dr. Villadsen recently testified in federal court on the impact of discount rates on the economic value of alternative scenarios in a lease transaction.
- On behalf of a taxpayer, Dr. Villaden has provided an expert report on the nature of the cost of equity used in regulatory proceedings as well as the interest rate regine in 2014.
- In an arbitration matter before the International Centre for Settlement of Investment Disputes, she provided expert reports and oral testimony on the allocation of corporate overhead costs and damages in the form of lost profit. Dr. Villadsen also reviewed internal book keeping records to assess how various inter-company transactions were handled.
- Dr. Villadsen provided expert reports and testimony in an international arbitration under the International Chamber of Commerce on the proper application of US GAAP in determining shareholders' equity. Among other accounting issues, she testified on impairment of long-lived assets, lease accounting, the equity method of accounting, and the measurement of investing activities.
- In a proceeding before the International Chamber of Commerce, she provided expert testimony on the interpretation of certain accounting terms related to the distinction of accruals and cash flow.
- In an arbitration before the American Arbitration Association, she provided expert reports on the equity method of accounting, the classification of debt versus equity and the distinction between categories of liabilities in a contract dispute between two major oil companies. For the purpose of determining whether the classification was appropriate, Dr. Villadsen had to review the company's internal book keeping records.

- In U.S. District Court, Dr. Villadsen filed testimony regarding the information required to determine accounting income losses associated with a breach of contract and cash flow modeling.
- Dr. Villadsen recently assisted counsel in a litigation matter regarding the determination of fair values of financial assets, where there was a limited market for comparable assets. She researched how the designation of these assets to levels under the FASB guidelines affect the value investors assign to these assets.
- She has worked extensively on litigation matters involving the proper application of mark-to-market and derivative accounting in the energy industry. The work relates to the proper valuation of energy contracts, the application of accounting principles, and disclosure requirements regarding derivatives.
- Dr. Villadsen evaluated the accounting practices of a mortgage lender and the mortgage industry to assess the information available to the market and ESOP plan administrators prior to the company's filing for bankruptcy. A large part of the work consisted of comparing the company's and the industry's implementation of gain-of-sale accounting.
- In a confidential retention matter, Dr. Villadsen assisted attorneys for the FDIC evaluate the books for a financial investment institution that had acquired substantial Mortgage Backed Securities. The dispute evolved around the degree to which the financial institution had impaired the assets due to possible put backs and the magnitude and estimation of the financial institution's contingencies at the time of it acquired the securities.
- In connection with a securities litigation matter she provided expert consulting support and litigation consulting on forensic accounting. Specifically, she reviewed internal documents, financial disclosure and audit workpapers to determine (1) how the balance's sheets trading assets had been valued, (2) whether the valuation was following GAAP, (3) was properly documented, (4) was recorded consistently internally and externally, and (5) whether the auditor had looked at and documented the valuation was in accordance with GAAP.
- In a securities fraud matter, Dr. Villadsen evaluated a company's revenue recognition methods and other accounting issues related to allegations of improper treatment of non-cash trades and round trip trades.
- For a multi-national corporation with divisions in several countries and industries, Dr. Villadsen estimated the appropriate discount rate to value the divisions. She also assisted the

company in determining the proper manner in which to allocate capital to the various divisions, when the company faced capital constraints.

- Dr. Villadsen evaluated the performance of segments of regulated entities. She also reviewed and evaluated the methods used for overhead allocation.
- She has worked on accounting issues in connection with several tax matters. The focus of her work has been the application of accounting principles to evaluate intra-company transactions, the accounting treatment of security sales, and the classification of debt and equity instruments.
- For a large integrated oil company, Dr. Villadsen estimated the company's cost of capital and assisted in the analysis of the company's accounting and market performance.
- In connection with a bankruptcy proceeding, Dr. Villadsen provided litigation support for attorneys and an expert regarding corporate governance.

Damages and Valuation

- For the Alaska Industrial Development and Export Authority, Dr. Villadsen co-authored a report that estimated the range of recent acquisition and trading multiples for natural gas utilities.
- On behalf of a taxpayer, Dr. Villadsen testified on the economic value of alternative scenarios in a lease transaction regarding infrastructure assets.
- For a foreign construction company involved in an international arbitration, she estimated the damages in the form of lost profit on the breach of a contract between a sovereign state and a construction company. As part of her analysis, Dr. Villadsen relied on statistical analyses of cost structures and assessed the impact of delays.
- In an international arbitration, Dr. Villadsen estimated the damages to a telecommunication equipment company from misrepresentation regarding the product quality and accounting performance of an acquired company. She also evaluated the IPO market during the period to assess the possibility of the merged company to undertake a successful IPO.

- On behalf of pension plan participants, Dr. Villadsen used an event study estimated the stock price drop of a company that had engaged in accounting fraud. Her testimony conducted an event study to assess the impact of news regarding the accounting misstatements.

- In connection with a FINRA arbitration matter, Dr. Villadsen estimated the value of a portfolio of warrants and options in the energy sector and provided support to counsel on finance and accounting issues.

- She assisted in the estimation of net worth of individual segments for firms in the consumer product industry. Further, she built a model to analyze the segment's vulnerability to additional fixed costs and its risk of bankruptcy.

- Dr. Villadsen was part of a team estimating the damages that may have been caused by a flawed assumption in the determination of the fair value of mortgage related instruments. She provided litigation support to the testifying expert and attorneys.

- For an electric utility, Dr. Villadsen estimated the loss in firm value from the breach of a power purchase contract during the height of the Western electric power crisis. As part of the assignment, Dr. Villadsen evaluated the creditworthiness of the utility before and after the breach of contract.

- Dr. Villadsen modeled the cash flows of several companies with and without specific power contract to estimate the impact on cash flow and ultimately the creditworthiness and value of the utilities in question.

BOOKS

"*Risk and Return for Regulated Industries*," (with Michael J. Vilbert, Dan Harris, and A. Lawrence Kolbe) Elsevier, May 2017.

PUBLICATIONS AND REPORTS

"Impact of New Tax Law on Utilities' Deferred Taxes," (with Mike Tolleth and Elliott Metzler), *CRRI 37'th Annual Eastern Conference*, June, 2018.

"Implications of the New Tax Law for Regulated Utilities," The Brattle Group, January 2018.

"Using Electric and Gas Forwards to Manage Market Risks: When a power purchase agreement with a utility is not possible, standard forward contracts can act as viable hedging instruments," *North American Windpower*, May 2017, pp. 34-37.

"*Managing Price Risk for Merchant Renewable Investments: Role of Market Interactions and Dynamics on Effective Hedging Strategies*," (with Onur Aydin and Frank Graves), Brattle Whitepaper, January 2017.

"Aurizon Network 2016 Access Undertaking: Aspects of the WACC," (with Mike Tolleth), filed with the *Queensland Competition Authority*, Australia, November 2016.

"Report on Gas LDC multiples," with Michael J. Vilbert, *Alaska Industrial Development and Export Authority*, May 2015.

"Aurizon Network 2014 Draft Access Undertaking: Comments on Aspects of the WACC," prepared for Aurizon Network and submitted to the *Queensland Competition Authority*, December 2014

"Brattle Review of AE Planning Methods and Austin Task Force Report." (with Frank C. Graves) September 24, 2014.

Report on "Cost of Capital for Telecom Italia's Regulated Business" with Stewart C. Myers and Francesco Lo Passo before the *Communications Regulatory Authority of Italy* ("AGCOM"), March 2014. *Submitted in Italian.*

"Alternative Regulation and Ratemaking Approaches for Water Companies: Supporting the Capital Investment Needs of the 21st Century," (with J. Wharton and H. Bishop), prepared for the *National Association of Water Companies*, October 2013.

"Estimating the Cost of Debt," (with T. Brown), prepared for the Dampier Bunbury Pipeline and filed with the *Economic Regulation Authority*, Western Australia, March 2013.

"Estimating the Cost of Equity for Regulated Companies," (with P.R. Carpenter, M.J. Vilbert, T. Brown, and P. Kumar), prepared for the Australian Pipeline Industry Association and filed with the *Australian Energy Regulator* and the *Economic Regulation Authority*, Western Australia, February 2013.

"Calculating the Equity Risk Premium and the Risk Free Rate," (with Dan Harris and Francesco LoPasso), prepared for *NMa and Opta, the Netherlands*, November 2012.

"Shale Gas and Pipeline Risk: Earnings Erosion in a More Competitive World," (with Paul R. Carpenter, A. Lawrence Kolbe, and Steven H. Levine), *Public Utilities Fortnightly*, April 2012.

"Survey of Cost of Capital Practices in Canada," (with Michael J. Vilbert and Toby Brown), prepared for *British Columbia Utilities Commission*, May 2012.

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Technical Appendix to the Direct Testimony of Bente Villadsen

This technical appendix contains methodological details related to my implementations of the DCF and CAPM / ECAPM models. It also contains a discussion of both the basic finance principles and the specific standard formulations of the financial leverage adjustments employed to determine the cost of equity for a company with the level of financial risk inherent in YB's recommended regulatory capital structure.

Table of Contents

I. DCF Models

A. DCF Estimation of Cost of Equity

The DCF method for estimating the cost of equity capital assumes that the market price of a stock is equal to the present value of the dividends that its owners expect to receive. The method also assumes that this present value can be calculated by the standard formula for the present value of a cash flow stream:

$$P_0 = \frac{D_1}{1+r} + \frac{D_2}{(1+r)^2} + \frac{D_3}{(1+r)^3} + \cdots + \frac{D_T}{(1+r)^T} \quad (1)$$

where P_0 is the current market price of the stock; D_t is the dividend cash flow expected at the end of period t; r is the cost of equity capital; and T is the last period in which a dividend cash flow is to be received. The formula simply says that the stock price is equal to the sum of the expected future dividends, each discounted for the time and risk between now and the time the dividend is expected to be received. Since the current market price is known, it is possible to infer the cost of equity that corresponds to that price and a forecasted pattern of expected future dividends. In terms of Equation (1), if P_0 is known and $D_1, D_2, \ldots D_T$ are estimated, an analyst can "solve for" the cost of equity capital r.

B. Details of the DCF Model

Perhaps the most widely known and used application of the DCF method assumes that the expected rate of dividend growth remains constant forever. In the so-called Gordon Growth Model, the relationship expressed in Equation (1) is such that the present value equation can be rearranged algebraically into a formula for estimating the cost of equity. Specifically, if investors expect a dividend stream that will grow forever at a steady rate, then the market price of the stock will be given by

$$P_0 = \frac{D_1}{r-g} \quad (2)$$

where D_1 is the dividend expected at the end of the first period, g is the perpetual growth rate, and P_0 and r are the market price and the cost of capital, as before. Equation (2) is a simplified version of Equation (1) that can be solved algebraically to yield the well-known "DCF formula" for the cost of equity capital,

$$r = \frac{D_1}{P_0} + g = \frac{D_0 \times (1+g)}{P_0} + g \qquad (3)$$

There are other versions of the DCF model that relax this restrictive assumption and posit a more complex or nuanced pattern of expected future dividend payments. For example, if there is reason to believe that investors do *not* expect a company's dividends to grow at a steady rate forever, but rather have different growth rate expectations in the near term (e.g., over the next five or ten years), compared to the distant future (e.g., a period *starting* ten years from the present moment), a "multi-stage" growth pattern can be modeled in the present value formula (Equation (1)).

1. Dividends, Cash Flows, and Share Repurchases

In addition to the DCF model described above, there are many alternative formulations. Notable among these are versions of the model that use cash flows rather than dividends in the present value formula (Equation (1)).[1]

Because investors are interested in cash flow, it is technically important to capture *all* cash flows that are distributed to shareholders when estimating the cost of equity using the DCF method. In some circumstances, investors may expect to receive cash in forms other than dividends. An important example concerns the fact that many companies distribute cash to shareholders through share buybacks in addition to dividends. To the extent such repurchases are expected by investors, but not captured in the forecasted pattern of future dividends; a dividend-based implementation of the DCF model will underestimate the cost of equity.

Similarly, if investors have reason to suspect that a company's dividend payments will not reflect a full distribution of its available cash free cash flows in the period they were generated, it may be appropriate replace the forecasted dividends with estimated free cash flows to equity in the present value formula (Equation (1)). Focusing on *available* cash rather than that actually distributed in the form of dividends can help account for instances when near-term investing and financing activities (e.g., capital expenditures or asset sales, debt issuances or retirements, or share repurchases) may cause dividend growth patterns to diverge from growth in earnings.

[1] For an example in a regulatory context, the U.S. Surface Transportation Board uses a cash flow based model with three stages to estimate the cost of equity for the railroads. See Surface Transportation Board Decision, "STB Ex Parte No. 664 (Sub-No. 1)," Decided January 23, 2009. Confirmed in EP-664 (Sub-No. 2), October 31, 2016.

While many electric and natural gas utilities have long histories of paying a dividend, the trends for companies in my Shipping Sample are more varied. Multiple companies issue quarterly dividends and supplement those with, often much larger, special dividends in some years. Others may not issue dividends at all, in which case they are excluded from the DCF analyses. It is therefore possible that the DCF model will underestimate the cost of equity for these companies that choose methods other than regular dividends to distribute cash flows to shareholders.

C. DCF Model Inputs

1. Dividends and Prices

As described above, DCF models are forward-looking, comparing the *current* price of a stock to its expected *future* dividends to estimate the required expected return demanded by the market for that stock (i.e., the cost of equity). Therefore, the models demand the current market price and currently prevailing forecasts of future dividends as inputs.

The stock price input I employ for each proxy group company is the average of the closing stock prices for the 15 trading days ending on the date of my analysis. This guards against biases that may arise on a single trading day, yet is consistent with using current stock prices.

2. Company Specific Growth Rates

a. Analysts' Forecasted Growth Rates

Finding the right growth rate(s) is usually the "hard part" of applying the DCF model, which is sometimes criticized due to what has been called "optimism bias" in the earnings growth rate forecasts of security analysts. Optimism bias is defined as tendency for analysts to forecast earnings growth rates that are higher than are actually achieved. Any optimism bias might be related to incentives faced by analysts that provide rewards not strictly based upon the accuracy of the forecasts. To the extent optimism bias is present in the analysts' earnings forecasts the cost of capital estimates from the DCF model would be too high.

While academic researchers during the 1990s as well as in early 2000s found evidence of analysts' optimism bias, there is some evidence that regulatory reforms have eliminated the issue. A more recent paper by Hovakimina and Saenyasiri (2010) found that recent efforts to curb analysts' incentive to provide optimistic forecasts have worked, so that "the median forecast bias essentially

disappeared."[2] Thus, some recent research indicates that the analyst bias may be a problem of the past.

The findings of several academic studies[3] show that analyst earnings forecasts turn out to be too optimistic for stocks that are more difficult to value, for instance, stocks of smaller firms, firms with high volatility or turnover, younger firms, or firms whose prospects are uncertain. Coincidentally, stocks with greater analyst disagreement have higher analyst optimism bias—all of these describe companies that are more volatile and/or less transparent. In considering a recommended ROE based on the range of estimates, I supplement my single-stage DCF analysis, relying exclusively on analyst growth rates, with a multi-stage DCF analysis in which growth rates trend towards the GDP growth rate in the long-term.

b. Sources for Forecasted Growth Rates

For the reasons described above, I rely on analyst forecasts of earnings growth for the company-specific growth rate inputs to my implementations of the single- and multi-stage DCF models. Most companies in my proxy group have coverage from equity analysts reporting to Thomson Reuters IBES, so I use the consensus 3-5 year EPS growth rate provided by that service. I supplement these consensus values with growth rates based on EPS estimates from *Value Line*.[4]

II. CAPM and ECAPM

A. The Capital Asset Pricing Model (CAPM)

The Capital Asset Pricing Model (CAPM) is a theoretical model stating that the collective investment decisions of investors in capital markets will result in equilibrium prices for all risky assets such that the returns investors expect to receive on their investments are commensurate with the risk of those assets relative to the market as a whole. The CAPM posits a risk-return

2 A. Hovakimian and E. Saenyasiri, "Conflicts of Interest and Analyst Behavior: Evidence from Recent Changes in Regulation," *Financial Analysts Journal*, vol. 66, 2010.

3 These studies include the following: (i) Hribar, P, McInnis, J. "Investor Sentiment and Analysts' Earnings Forecast Errors," *Management Science* Vol. 58, No. 2 (February 2012): pp. 293-307; (ii) Scherbina, A. (2004), "Analyst Disagreement, Forecast Bias and Stock Returns," downloaded from Harvard Business School Working Knowledge: http://hbswk.hbs.edu/item/5418.html; and (iii) Michel, J-S., Pandes J.A. (2012), "Are Analysts Really Too Optimistic?" downloaded from http://www.efmaefm.org.

4 Specifically, I compute the growth rate implied by *Value Line*'s current year EPS estimate and its projected 3-5 year EPS estimate. I then average this in with the IBES consensus estimate as an additional independent estimate, giving it a weight of 1 and weighting the IBES consensus according to the number of analysts who contributed estimates.

relationship known as the Security Market Line (see Figure 3 in my Direct Testimony), in which the required expected return on an asset is proportional to that asset's risk relative to the market as measured by its "beta". More precisely, the CAPM states that the cost of capital for an investment *S* (e.g., a particular common stock), is given by the following equation:

$$\boldsymbol{r_s = r_f + \beta_s \times MRP} \tag{4}$$

where $\boldsymbol{r_S}$ is the required return on investment S;
$\boldsymbol{r_f}$ is the risk-free interest rate;
$\boldsymbol{\beta_S}$ is the beta risk measure for the investment S; and
$\boldsymbol{MRP}$ is the market equity risk premium.

The CAPM is based on portfolio theory, and recognizes two fundamental principles of finance: (1) investors seek to minimize the possible variance of their returns for a given level of expected returns (or alternatively, they demand higher *expected* returns when there is greater uncertainty about those returns), and (2) investors can reduce the variability of their returns by diversifying—constructing portfolios of many assets that do not all go up or down at the same time or to the same degree. Under the assumptions of the CAPM, the market participants will construct portfolios of risky investments that minimize risk for a given return so that the aggregate holdings of all investors represent the "market portfolio". The risk-return trade-off faced by investors then concerns their exposure to the risk inherent in the market portfolio, as they weight their investment capital between the portfolio of risky assets and the risk-free asset.

Because of the effects of diversification, the relevant measure of risk for an individual security is its *contribution* to the risk of the market portfolio. Therefore, beta (β) is defined to capture the sensitivity of the security's returns to the market's returns. Formally,

$$\boldsymbol{\beta_s} = \frac{covariance(\boldsymbol{r_s}, \boldsymbol{R_m})}{variance(\boldsymbol{R_m})} \tag{5}$$

where $\boldsymbol{R_m}$ is the return on the market portfolio.

Beta is usually calculated by statistically comparing (using regression analysis) the excess (positive or negative) of the return on the individual security over the government bond rate with the excess of the return on a market index such as the S&P 500 over a government bond rate.

The basic idea behind beta is the risk that cannot be diversified away in large portfolios is what matters to investors. Beta is a measure of the risks that *cannot* be eliminated by diversification. It

is this non-diversifiable risk, or "systematic risk", for which investors require compensation in the form of higher expected returns. By definition, a stock with a beta equal to 1.0 has average non-diversifiable risk; its returns vary to the same degree as those on the market as a whole. According to the CAPM, the required return demanded by investors (i.e., the cost of equity) for investing in that stock will match the expected return on the market as a whole. Similarly, stocks with betas above 1.0 have more than average risk, and so have a cost of equity greater than the expected market return; those with betas below 1.0 have less than average risk, and are expected to earn lower than market levels of return.

B. INPUTS TO THE CAPM

1. The Risk-free Interest Rate

The precise meaning of a "risk-free" asset according to the finance theory underlying the CAPM is an investment whose return is guaranteed, with no possibility that it will vary around its expected value in response to the movements of the broader market. (Equivalently, the CAPM beta of a risk-free asset is zero.) In developed economies like the U.S., government debt is generally considered have no default risk. In this sense they are "risk-free"; however, unless they are held to maturity, the rate of return on government bonds may in fact vary around their stated or expected yields.[5]

The theoretical CAPM is a single period model, meaning that it posits a relationship between risk and return over a single "holding period" of an investment. Because investors can rebalance their portfolios over short horizons, many academic studies and practical applications of the CAPM use the short-term government bond as the measure of the risk-free rate of return. However, regulators frequently use a version based on a measure of the long-term risk-free rate; e.g., a long-term government bond. I rely on the 20-year Treasury bond as a measure of the risk-free asset in this proceeding.[6] I use the term "risk-free rate" as describing the yield on the 20-year Treasury bond.

However, I do not believe the *current* yield on long-term Treasury bonds is a good estimate for the risk-free rate that will prevail over the time period relevant to this proceeding as currently prevailing bond yields are near historic lows for a variety of circumstances that should not be expected to persist for the reasons discussed in my direct testimony. For this reason I rely on Blue

[5] This is due to interest rate fluctuations that can change the market value of previously issued debt in relation to the yield on new issuances

[6] The use of a 20-year government bond is consistent with the measurement of the Ibbotson MRP and permits me to use a series that has been in consistent circulation since the 1990's (the 30-year government bond was not issued from 2002 to 2006).

Chip's forecast of 2.6% for the yield on a 10-year Treasury bond for 2020.[7] I adjust this value upward by 50 basis points, which is my estimate of the maturity premium for the 20-year over the 10-year Treasury Bond.[8] This gives me a basic risk-free rate of 3.1% for 2020.

2. The Market Equity Risk Premium

a. Historical Average Market Risk Premium

Like the cost of capital itself, the market risk premium is a forward-looking concept. It is by definition the premium above the risk-free interest rate that investors can *expect* to earn by investing in a value-weighted portfolio of all risky investments in the market. The premium is not directly observable, and must be inferred or forecasted based on known market information.

One commonly use method for estimating the MRP is to measure the historical average premium of market returns over the income returns on risk-free government bonds over some long historical period. When such a calculation is performed using the traditional industry standard Ibbotson data, the result is an arithmetic average of 6.91% for annual observed premiums of U.S. stock market returns over income returns on long-term (approximate average maturity of 20-years) U.S. Treasury bonds from 1926 to the present is 6.91%.[9]

b. Forward Looking Market Equity Risk Premium

An alternative approach to estimating the MRP eschews historical averages in favor of using current market information and forecasts to infer the expected return on the market as a whole, which can then be compared to prevailing government bond yields to estimate the equity risk premium. Bloomberg performs such estimates of country-specific MRPs by implementing the DCF model on the market as a whole—using forecast market-wide dividend yields and current level on market indexes; for the U.S. Bloomberg performs a multi-stage DCF using dividend-paying stocks in the S&P 500 to infer the expected market return.

When calculated relative to 20-year Treasury bond yields, Bloomberg's estimate of the forward-looking market-implied MRP over the month leading up to my analysis was approximately 6.99%.

7 Blue Chip Economic Indicators, June 10, 2019.

8 This maturity premium is estimated by comparing the average excess yield on 20-year versus 10-year Treasury Bonds over the period January 1990 – June 2019, using data from Bloomberg. See Exhibit YB-1003, Table No. BV-9.

9 Duff & Phelps, "2019 SBBI Yearbook," p. 10-21.

c. *Yield Spreads and the Market Equity Risk Premium*

As shown in Figure A-1 below, the yield spreads for 20-year BBB rated utility debt over 20-year Treasury bonds is elevated relative to its historical norm by about 57 bps relative to its long-term average leading up to the 2008 financial crisis. The A rated utility debt's yield is elevated by 47 bps over the 20-year Treasury bond relative to the period preceding the financial crisis. This means that investors require a higher return on investment grade utility debt relative to the return on T-bonds than they did before the crisis and ensuing economic turmoil.

Figure A-1
Yield Spread

Spreads between U.S. Utility Bond (20 year maturity) and U.S. Government Bond (20 year maturity) - bps

Periods	A-Rated Utility and Treasury	BBB-Rated Utility and Treasury	Notes
Period 1 - Average Apr-1991 - 2007	93	123	[1]
Period 2 - Average Aug-2008 - Jun-2019	148	194	[2]
Period 3 - Average Jun-2019	132	169	[3]
Period 4 - Average 15-Day (Jun 10, 2019 to Jun 28, 2019)	141	180	[4]
Spread Increase between Period 2 and Period 1	55	71	[5] = [2] - [1]
Spread Increase between Period 3 and Period 1	39	46	[6] = [3] - [1]
Spread Increase between Period 4 and Period 1	47	57	[7] = [4] - [1]

Sources and Notes:
Spreads for the periods are calculated from Bloomberg's yield data.
Average monthly yields for the indices were retrieved from Bloomberg as of June 30, 2019.

This information can be used to provide a quantitative benchmark for the implied increase in MRP based on a paper by Edwin J. Elton, et al., which documents that the yield spread on corporate bonds is normally a combination of a default premium, a tax premium, and a systematic risk premium.[10] Of these components, it is the systematic risk premium that likely explains the vast majority of the yield spread increase. In other words, unless the risk-free rate is underestimated as

[10] "Explaining the Rate Spread on Corporate Bonds," Edwin J. Elton, Martin J. Gruber, Deepak Agarwal, and Christopher Mann, *The Journal of Finance*, February 2001, pp. 247-277.

described above, the market equity risk premium has increased relative to its "normal" level.[11] For example, assuming a beta of 0.25 for A rated debt[12] means that an increase in the MRP of one percentage point translates into a ¼ percentage point increase in the risk premium on A rated debt (i.e., 0.25 (beta) times 1 percentage point (increase in MRP) = ¼ percentage point increase in yield spread). Thus, a 25 bps increase in the yield spread is therefore consistent with a 1 percentage point increase in the MRP ($\frac{0.25\%}{0.25} = 1\%$). Thus there is evidence that the current MRP is elevated relative to the historical MRP of 6.91%. As discussed in my testimony, I also evaluate a scenario using an MRP of 7.91% to consider this increased risk in the market as reflected by the elevated yield spreads.

C. THE EMPIRICAL CAPM

1. Description of the ECAPM

Empirical research has shown that the CAPM tends to overstate the actual sensitivity of the cost of capital to beta: low-beta stocks tend to have higher risk premiums than predicted by the CAPM and high-beta stocks tend to have lower risk premiums than predicted. A number of variations on the original CAPM theory have been proposed to explain this finding, but the observation itself can also be used to estimate the cost of capital directly, using beta to measure relative risk by making a direct empirical adjustment to the CAPM.

The Empirical CAPM (ECAPM) makes use of these empirical findings. It estimates the cost of capital with the equation,

$$\boldsymbol{r_S = r_f + \alpha + \beta_S \times (MRP - \alpha)} \qquad (6)$$

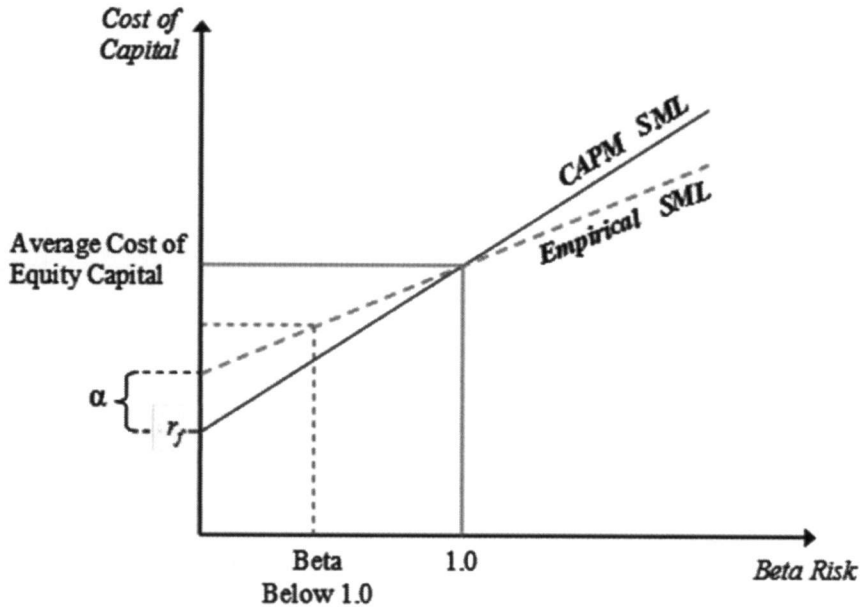
where $\boldsymbol{\alpha}$ is the "alpha" adjustment of the risk-return line, a constant, and the other symbols are defined as for the CAPM (see Equation (4)). The alpha adjustment has the effect of increasing the

[11] In theory, some of the increase in yield spread for A rated debt may be due to an increase in default risk, but the increase in default risk for A rated debt is undoubtedly very small because utilities with A range rated debt have a low default risk. This means that the vast majority—if not all—of the increase in A rated yield spreads is due to a combination of the increased systematic risk premium and the downward pressure on the yields of government debt. Although there is no increase in the tax premium discussed in the Elton et al. paper due to coupon payments, there may be some increase due to a small tax effect resulting from the probability of increased capital gains taxes when the debt matures.

[12] Elton, *et al.* estimates the average beta on BBB-rated corporate debt as 0.26 over the period of their study, and A-rated debt will have a slightly lower beta than BBB-rated debt. I note that 0.25 is a conservatively high estimate of the beta on A-rated utility debt. Most academic estimates, including those presented in *Berk & Demarzo* that I utilize for my Hamada adjustments are significantly lower: in the range of 0.0 – 0.1 percent and would result in a substantially higher MRP estimate.

intercept but reducing the slope of the Security Market Line, which results in a Security Market Line that more closely matches the results of empirical tests. In other words, the ECAPM produces more accurate predictions of eventual realized risk premiums than does the CAPM.

Figure A-2
The Empirical Security Market Line



2. Academic Evidence on the Alpha Term in the ECAPM

Figure A-3 below summarizes the empirical results of tests of the CAPM, including their estimates of the "alpha" parameter necessary to improve the accuracy of the CAPM's predictions of realized returns.

Figure A-3

EMPIRICAL EVIDENCE ON THE ALPHA FACTOR IN ECAPM*

AUTHOR	RANGE OF ALPHA	PERIOD RELIED UPON
Black (1993)[1]	1% for betas 0 to 0.80	1931-1991
Black, Jensen and Scholes (1972)[2]	4.31%	1931-1965
Fama and McBeth (1972)	5.76%	1935-1968
Fama and French (1992)[3]	7.32%	1941-1990
Fama and French (2004)[4]	N/A	
Litzenberger and Ramaswamy (1979)[5]	5.32%	1936-1977
Litzenberger, Ramaswamy and Sosin (1980)	1.63% to 3.91%	1926-1978
Pettengill, Sundaram and Mathur (1995)[6]	4.6%	1936-1990

*The figures reported in this table are for the longest estimation period available and, when applicable, use the authors' recommended estimation technique. Many of the articles cited also estimate alpha for sub-periods and those alphas may vary.

[1]Black estimates alpha in a one step procedure rather than in an un-biased two-step procedure.

[2]Estimate a negative alpha for the subperiod 1931-39 which contain the depression years 1931-33 and 1937-39.

[3]Calculated using Ibbotson's data for the 30-day treasury yield.

[4]The article does not provide a specific estimate of alpha; however, it supports the general finding that the CAPM underestimates returns for low-beta stocks and overestimates returns for high-beta stocks.

[5]Relies on Lizenberger and Ramaswamy's before-tax estimation results. Comparable after-tax alpha estimate is 4.4%.

[6]Pettengill, Sundaram and Mathur rely on total returns for the period 1936 through 1990 and use 90-day treasuries. The 4.6% figure is calculated using auction averages 90-day treasuries back to 1941 as no other series were found this far back.

Sources:

Black, Fischer. 1993. Beta and Return. *The Journal of Portfolio Management* 20 (Fall): 8-18.

Black, F., Michael C. Jensen, and Myron Scholes. 1972. The Capital Asset Pricing Model: Some Empirical Tests, from Studies in the theory of Capital Markets. In *Studies in the Theory of Capital Markets*, edited by Michael C. Jensen, 79-121. New York: Praeger.

Fama, Eugene F. and James D. MacBeth. 1972. Risk, Returns and Equilibrium: Empirical Tests. *Journal of Political Economy* 81 (3): 607-636.

Fama, Eugene F. and Kenneth R. French. 1992. The Cross-Section of Expected Stock Returns. *Journal of Finance* 47 (June): 427-465.

Fama, Eugene F. and Kenneth R. French. 2004. The Capital Asset Pricing Model: Theory and Evidence. *Journal of Economic Perspectives* 18 (3): 25-46.

Litzenberger, Robert H. and Krishna Ramaswamy. 1979. The Effect of Personal Taxes and Dividends on Capital Asset Prices, Theory and Empirical Evidence. *Journal of Financial Economics* XX (June): 163-195.

Litzenberger, Robert H. and Krishna Ramaswamy and Howard Sosin. 1980. On the CAPM Approach to Estimation of a Public Utility's Cost of Equity Capital. *The Journal of Finance* 35 (2): 369-387.

III. Financial Risk and the Cost of Equity

A common issue in regulatory proceedings is how to apply data from a benchmark set of comparable securities when estimating a fair return on equity for the target/regulated company.[13] It may be tempting to simply estimate the cost of equity capital for each of the proxy companies (using one of the above approaches) and average them. After-all, the companies were chosen to be comparable in their business risk characteristics, so why would an investor necessarily prefer equity in one to the other (on average)?

The problem with this argument is that it ignores the fact that underlying asset risk (i.e., the risk inherent in the lines of business in which the firm invests its assets) for each company is typically divided between debt and equity holders. The firm's debt and equity are therefore financial derivatives of the underlying asset return, each offering a differently structured claim on the cash flows generated by those assets. Even though the risk of the underlying assets may be comparable, a different capital structure splits that risk differently between debt and equity holders. The relative structures of debt and equity claims are such that higher degrees of debt financing increase the variability of returns on equity, *even when the variability of asset returns remains constant*. As a consequence, otherwise identical firms with different capital structures will impose different levels of risk on their equity holders. Stated differently, increased leverage adds financial risk to a company's equity.[14]

A. The Effect of Financial Leverage on the Cost of Equity

To develop an intuition for the manner in which financial leverage affects the risk of equity, it is helpful to consider a concrete example. Figure A-4 and Figure A-5 below demonstrate the impact of leverage on the risk and return for equity by comparing equity's risk when a company uses no debt to finance its assets, and when it uses a 50-50 capital structure (i.e., it finances 50 percent of its assets with equity, 50 percent with debt). For illustrative purposes, the figures assume that the cash flows will be either $5 or $15 and that these two possibilities have the same chance of occurring (e.g., the chance that either occurs is ½).

[13] This is also a common valuation problem in general business contexts.

[14] I refer to this effect in terms of *financial risk* because the additional risk to equity holders stems from how the company chooses to finance its assets. In this context financial risk is distinct from and independent of the *business risk* associated with the manner in which the firm deploys its cash flow generating assets. The impact of leverage on risk is conceptually no different than that faced by a homeowner who takes out a mortgage. The equity of a homeowner who finances his home with 90% debt is much riskier than the equity of one who only finances with 50% debt.

Figure A-4: All Equity Capital Structure

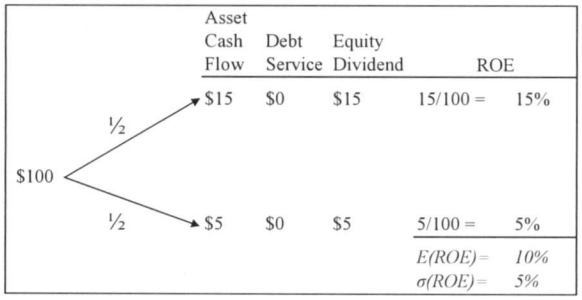
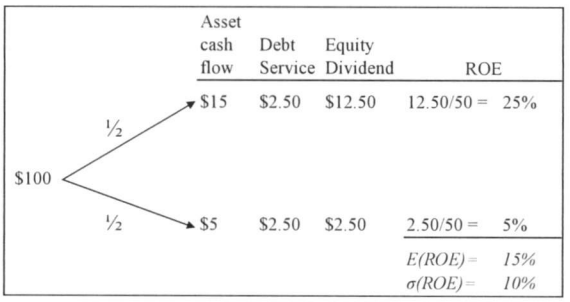


Figure A-5: 50/50 Capital Structure



In the figures, E(ROE) indicates the mean return and σ(ROE) represents the standard deviation. This simple example illustrates that the introduction of debt increases both the mean (expected) return to equity holders and the variance of that return, even though the firm's expected cash flows—which are a property of the line of business in which its assets are invested—are unaffected by the firm's financing choices. The "magic" of financial leverage is not magic at all—leveraged equity investors can only earn a higher return because they take on greater risk.

B. Methods to Account for Financial Risk

1. Cost of Equity Implied by the Overall Cost of Capital

If the companies in a proxy group are truly comparable in terms of the systematic risks of the underlying assets, then the overall cost of capital of each company should be about the same across companies (except for sampling error), so long as they do not use extreme leverage or no leverage. The intuition here is as follows. A firm's asset value (and return) is allocated between equity and debt holders.[15] The expected return to the underlying asset is therefore equal to the value weighted

[15] Other claimants can be added to the weighted average if they exist. For example, when a firm's capital structure contains preferred equity, the term $\frac{P}{V} \times r_p$ is added to the expression for the overall cost of capital shown in Equation (7), where P refers to the market value of preferred equity, r_P is the cost of preferred equity and $V = E + D + P$. In my analysis, I attribute the same implied yield to the cost of preferred equity as to the cost of debt.

average of the expected returns to equity and debt holders – which is the overall cost of capital ($\boldsymbol{r}^*$), or the expected return on the assets of the firm as a whole.[16]

$$\boldsymbol{r}^* = \frac{E}{V} \times r_E + \frac{D}{V} \times r_D(1 - \tau_c) \tag{7}$$

where r_D is the market cost of debt,
r_E is the market cost of equity,
τ_c is the corporate income tax rate,
D is the market value of the firm's debt,
E is the market value of the firm's equity, and
$V = E + D$ is the total market value of the firm.

Since the overall cost of capital is the cost of capital for the underlying asset risk, and this is comparable across companies, it is reasonable to believe that the overall cost of capital of the underlying companies should also be comparable, so long as capital structures do not involve unusual leverage ratios compared to other companies in the industry.[17]

The notion that the overall cost of capital is constant across a broad middle range of capital structures is based upon the Modigliani-Miller theorem that choice of financing does not affect the firm's value. Franco Modigliani and Merton Miller eventually won Nobel Prizes in part for their work on the effects of debt.[18] Their 1958 paper made what is in retrospect a very simple point: if there are no taxes and no risk to the use of excessive debt, use of debt will have no effect on a company's operating cash flows (i.e., the cash flows to investors as a group, debt and equity combined). If the operating cash flows are the same regardless of whether the company finances

[16] As this is on an after-tax basis, the cost of debt reflects the tax value of interest deductibility. Note that the precise formulation of the weighted average formula representing the required return on the firm's *assets* independent of financing (sometimes called the *unlevered* cost of capital) depends on specific assumptions made regarding the value of tax shields from tax-deductible corporate debt, the role of personal income tax, and the cost of financial distress. See Taggart, Robert A., "Consistent Valuation and Cost of Capital Expressions with Corporate and Personal Taxes," *Financial Management*, 1991; 20(3) for a detailed discussion of these assumptions and formulations. Equation (7) represents the overall weighted average cost of capital to the firm, which can be assumed to be constant across a relatively broad range of capital structures.

[17] Empirically, companies within the same industry tend to have similar capital structures, while typical capital structures may vary between industries, so whether a leverage ratio is "unusual" depends upon the company's line of business.

[18] Franco Modigliani and Merton H. Miller (1958), "The Cost of Capital, Corporation Finance and the Theory of Investment," *American Economic Review*, 48, pp. 261-297.

mostly with debt or mostly with equity, then the value of the firm cannot be affected at all by the debt ratio. In cost of capital terms, this means the overall cost of capital is constant regardless of the debt ratio, too.

Obviously, the simple and elegant Modigliani-Miller theorem makes some counterfactual assumptions: no taxes and no cost of financial distress from excessive debt. However, subsequent research, including some by Modigliani and Miller,[19] showed that while taxes and costs to financial distress affect a firm's incentives when choosing its capital structure as well as its overall cost of capital,[20] the latter can still be shown to be constant across a broad range of capital structures.[21]

This reasoning suggests that one could compute the overall cost of capital for each of the proxy companies and then average to produce an estimate of the overall cost of capital associated with the underlying asset risk. Assuming that the overall cost of capital is constant, one can then re-arrange the overall cost of capital formula to estimate what the implied cost of equity is at the target company's capital structure on a book value basis.[22]

2. Unlevering and Relevering Betas in the CAPM (Hamada Adjustment)

An alternative approach to account for the impact of financial risk is to examine the impact of leverage on beta. Notice that this means working within the CAPM framework as the methodology cannot be applied directly to the DCF models.

[19] Franco Modigliani and Merton H. Miller (1963), "Corporate Income Taxes and the Cost of Capital: A Correction," *American Economic Review*, 53, pp. 433-443.

[20] When a company uses a high level of debt financing, for example, there is significant risk of bankruptcy and all the costs associated with it. The so called costs of financial distress that occurs when a company is over-leveraged can increase its cost of capital. In contrast a company can generally decrease its cost of capital by taking on reasonable levels of debt, owing in part to the deductibility of interest from corporate taxes.

[21] This is a simplified treatment of what is generally a complex and on-going area of academic investigation. The roles of taxes, market imperfections and constraints, etc. are areas of on-going research and differing assumptions can yield subtly different formulations for how to formulate the weighted average cost of capital that is constant over all (or most) capital structures.

[22] Market value capital structures are used in estimating the overall cost of capital for the proxy companies.

Recognizing that under general conditions, the value of a firm can be decomposed into its value with and without a tax shield, I obtain:[23]

$$V = V_U + PV(ITS) \tag{8}$$

where $V = E + D$ is the total value of the firm as in Equation (7),
V_U is the "unlevered" value of the firm—its value if financed entirely by equity
$PV(ITS)$ represents the present value of the interest tax shields associated with debt

For a company with a fixed book-value capital structure and no additional costs to leverage, it can be shown that the formula above implies:

$$r_E = r_U + \frac{D}{E}(1 - \tau_c)(r_U - r_D) \tag{9}$$

where r_U is the "unlevered cost of capital"—the required return on assets if the firm's assets were financed with 100% equity and zero debt—and the other parameters are defined as in Equation (7).

Replacing each of these returns by their CAPM representation and simplifying them gives the following relationship between the "levered" equity beta β_L for a firm (i.e., the one observed in market data as a consequence of the firm's actual market value capital structure) and the "unlevered" beta β_U that would be measured for the same firm if it had no debt in its capital structure:

$$\beta_L = \beta_U + \frac{D}{E}(1 - \tau_c)(\beta_U - \beta_D) \tag{10}$$

where β_D is the beta on the firm's debt. The unlevered beta is assumed to be constant with respect to capital structure, reflecting as it does the systematic risk of the firm's assets. Since the beta on

[23] This follows development in Fernandez (2003). Other standard papers in this area include Hamada (1972), Miles and Ezzell (1985), Harris and Pringle (1985), Fernandez (2006). (See Fernandez, P., "Levered and Unlevered Beta," IESE Business School Working Paper WP-488, University of Navarra, Jan 2003 (rev. May 2006); Hamada, R.S., "The Effect of the Firm's Capital Structure on the Systematic Risk of Common Stock," *Journal of Finance*, 27, May 1972, pp. 435-452; Miles, J.A. and J.R. Ezzell, "Reformulating Tax Shield Valuation: A Note," *Journal of Finance*, XL5, Dec 1985, pp. 1485-1492; Harris, R.S. and J.J. Pringle, "Risk-Adjusted Discount Rates Extensions form the Average-Risk Case," *Journal of Financial Research*, Fall 1985, pp. 237-244; Fernandez, P., "The Value of Tax Shields Depends Only on the Net Increases of Debt," IESE Business School Working Paper WP-613, University of Navarra, 2006.) Additional discussion can be found in Brealey, Myers, and Allen (2014).

an investment grade firm's debt is much lower than the beta of its assets (i.e., $\beta_D < \beta_U$), this equation embodies the fact that increasing financial leverage (and thereby increasing the debt to equity ratio) increases the systematic risk of *levered* equity (β_L).

An alternative formulation derived by Harris and Pringle (1985) provides the following equation that holds when the market value capital structures (rather than book value) are assumed to be held constant:

$$\beta_L = \beta_U + \frac{D}{E}(\beta_U - \beta_D) \qquad (11)$$

Unlike Equation (10), Equation (11) does not include an adjustment for the corporate tax deduction. However, both equations account for the fact that increased financial leverage increases the systematic risk of equity that will be measured by its market beta. And both equations allow an analyst to adjust for differences in financial risk by translating back and forth between β_L and β_U. In principal, Equation (10) is more appropriate for use with regulated utilities, which are typically deemed to maintain a fixed book value capital structure. However, I employ both formulations when adjusting my CAPM estimates for financial risk, and consider the results as sensitivities in my analysis.

It is clear that the beta of debt needs to be determined as an input to either Equation (10), or Equation (11). Rather than estimating debt betas, I rely on the standard financial textbook of Professors Berk & DeMarzo, who report a debt beta of 0.05 for A rated debt and a beta of 0.10 for BBB rated debt.[24]

Once a decision on debt betas is made, the levered equity beta of each proxy company can be computed (in this case by Value Line) from market data and then translated to an unlevered beta at the company's market value capital structure. The unlevered betas for the proxy companies are comparable on an "apples to apples" basis, since they reflect the systematic risk inherent in the assets of the proxy companies, independent of their financing. The unlevered betas are averaged to produce an estimate of the industry's unlevered beta. To estimate the cost of equity for the regulated target company, this estimate of unlevered beta can be "re-levered" to the regulated

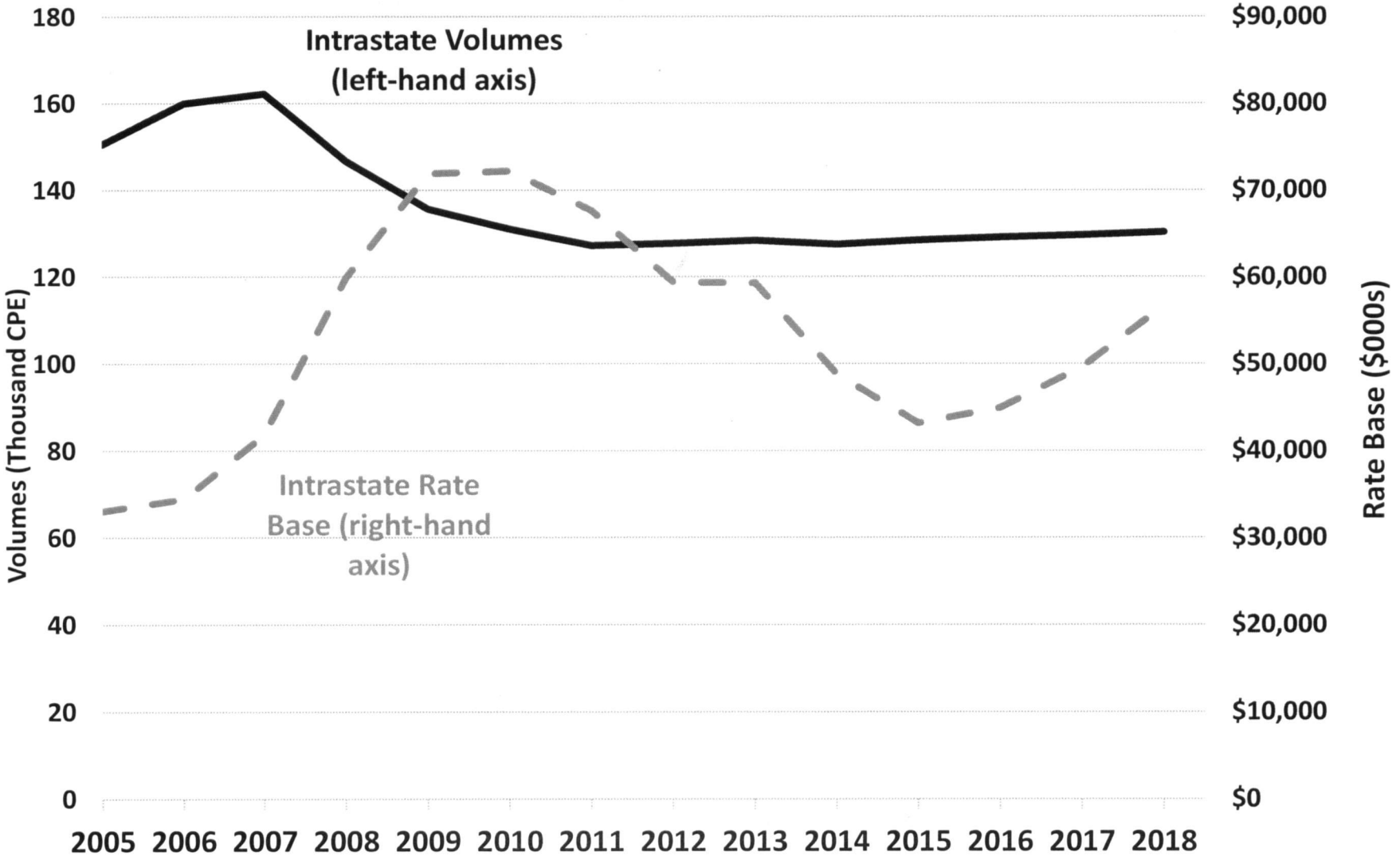
[24] Berk, J. & DeMarzo, P., *Corporate Finance, 2nd Edition.* 2011 Prentice Hall, p. 389.

company's capital structure, and CAPM reapplied with this levered beta, which reflects both the business and financial risk of the target company.

Hamada adjustment procedures—so-named for Professor Robert S. Hamada who contributed to their development[25]—are ubiquitous among finance practitioners when using the CAPM to estimate discount rates.

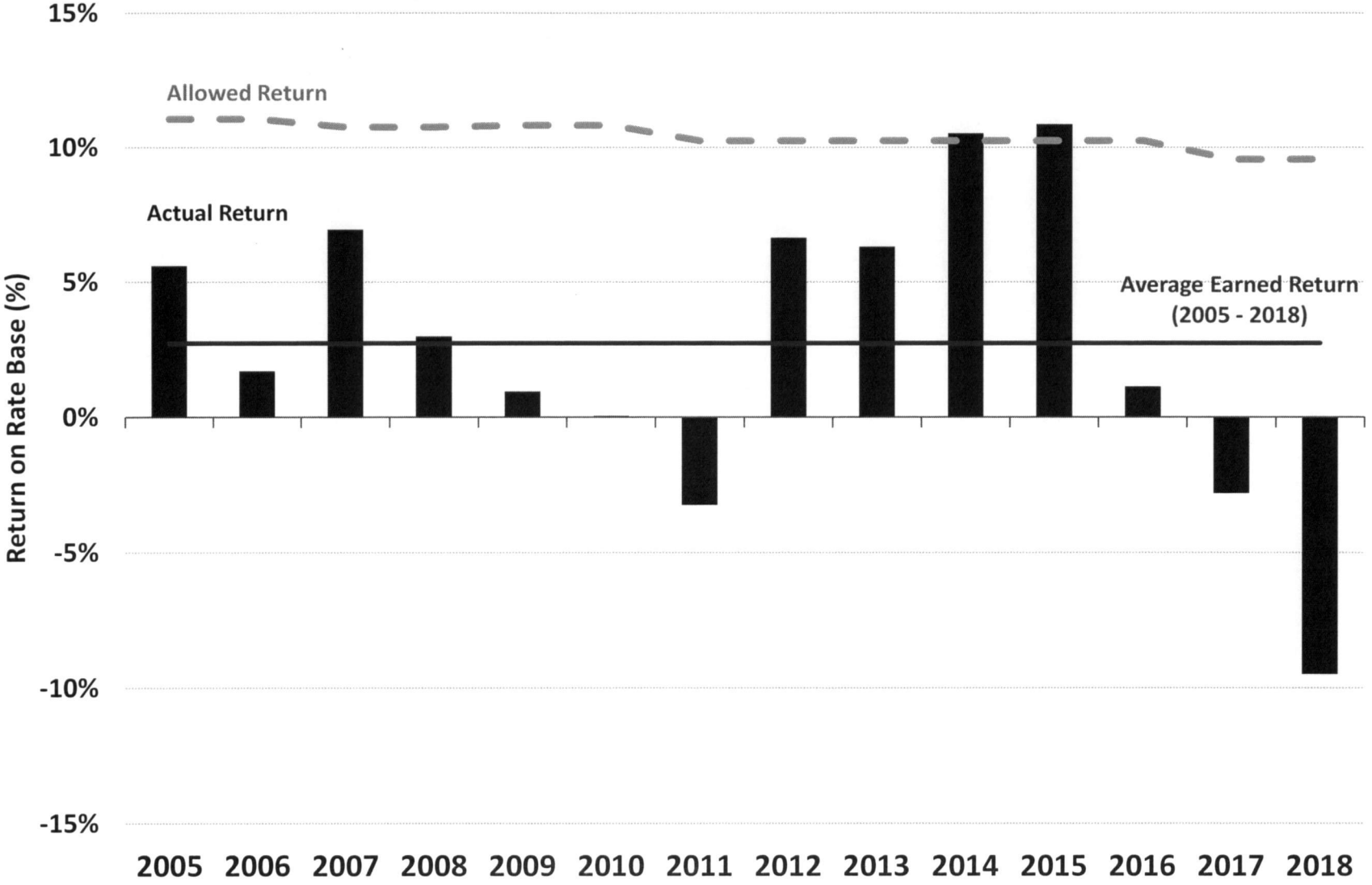
[25] Hamada, R.S., "The Effect of the Firm's Capital Structure on the Systematic Risk of Common Stock", *The Journal of Finance*, 27(2), 1971, pp. 435-452.

Figure 11
Historical Intrastate Rate Base and Volumes



Source: Data provided by Young Brothers.

Figure 12
Historical Earned and Allowed Returns



Source: Data provided by Young Brothers.

Young Brothers Historical Operations
Supporting Table for Graphs

Year	Intrastate Volumes	Intrastate Rate Base	Actual Return	Allowed Return	Average Earned Return (2005 - 2018)
	(thousand CPE)	*($000s)*	*(%)*	*(%)*	*(%)*
2005	150.5	$33,059	5.60%	11.06%	2.73%
2006	159.9	$34,444	1.70%	11.06%	2.73%
2007	162.2	$41,837	6.96%	10.76%	2.73%
2008	146.7	$59,881	2.99%	10.76%	2.73%
2009	135.6	$71,905	0.94%	10.82%	2.73%
2010	131.0	$72,188	0.04%	10.82%	2.73%
2011	127.2	$67,647	-3.24%	10.25%	2.73%
2012	127.7	$59,372	6.65%	10.25%	2.73%
2013	128.4	$59,294	6.31%	10.25%	2.73%
2014	127.5	$48,785	10.52%	10.25%	2.73%
2015	128.5	$43,158	10.86%	10.25%	2.73%
2016	129.1	$44,934	1.12%	10.25%	2.73%
2017	129.6	$49,630	-2.81%	9.56%	2.73%
2018	130.3	$56,631	-9.48%	9.56%	2.73%

Source: Data provided by Young Brothers.

Saltchuk Historical Capital Structure

Period	Debt (%)	Equity (%)
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Source: Data provided by Young Brothers.

Young Brothers Historical Rate Base and Return on Rate Base

	Rate Base ($000s)			Net Income ($000s)		Intrastate Return on Rate Base (%)	
Year	Interstate	Intrastate	Consolidated	Consolidated	Intrastate	Allowed Rate of Return	Actual Rate of Return
2005	$12,408	$33,059	$45,467	$3,878	$1,855	11.06%	5.60%
2006	$13,576	$34,444	$48,020	$2,391	$582	11.06%	1.70%
2007	$20,451	$41,837	$62,288	$5,610	$2,910	10.76%	6.96%
2008	$24,943	$59,881	$84,824	$2,462	$1,792	10.76%	2.99%
2009	$26,355	$71,905	$98,260	$2,033	$678	10.82%	0.94%
2010	$28,163	$72,188	$100,351	$2,842	$32	10.82%	0.04%
2011	$23,996	$67,647	$91,643	-$162	-$2,190	10.25%	-3.24%
2012	$24,726	$59,372	$84,098	$10,088	$3,947	10.25%	6.65%
2013	$25,656	$59,294	$84,950	$8,302	$3,740	10.25%	6.31%
2014	$23,759	$48,785	$72,544	$10,808	$5,132	10.25%	10.52%
2015	$24,725	$43,158	$67,883	$12,116	$6,026	10.25%	10.86%
2016	$24,632	$44,934	$69,567	$4,042	$504	10.25%	1.12%
2017	$21,044	$49,630	$70,674	$2,476	-$1,394	9.56%	-2.81%
2018	$32,571	$56,631	$89,202	-$4,434	-$5,369	9.56%	-9.48%

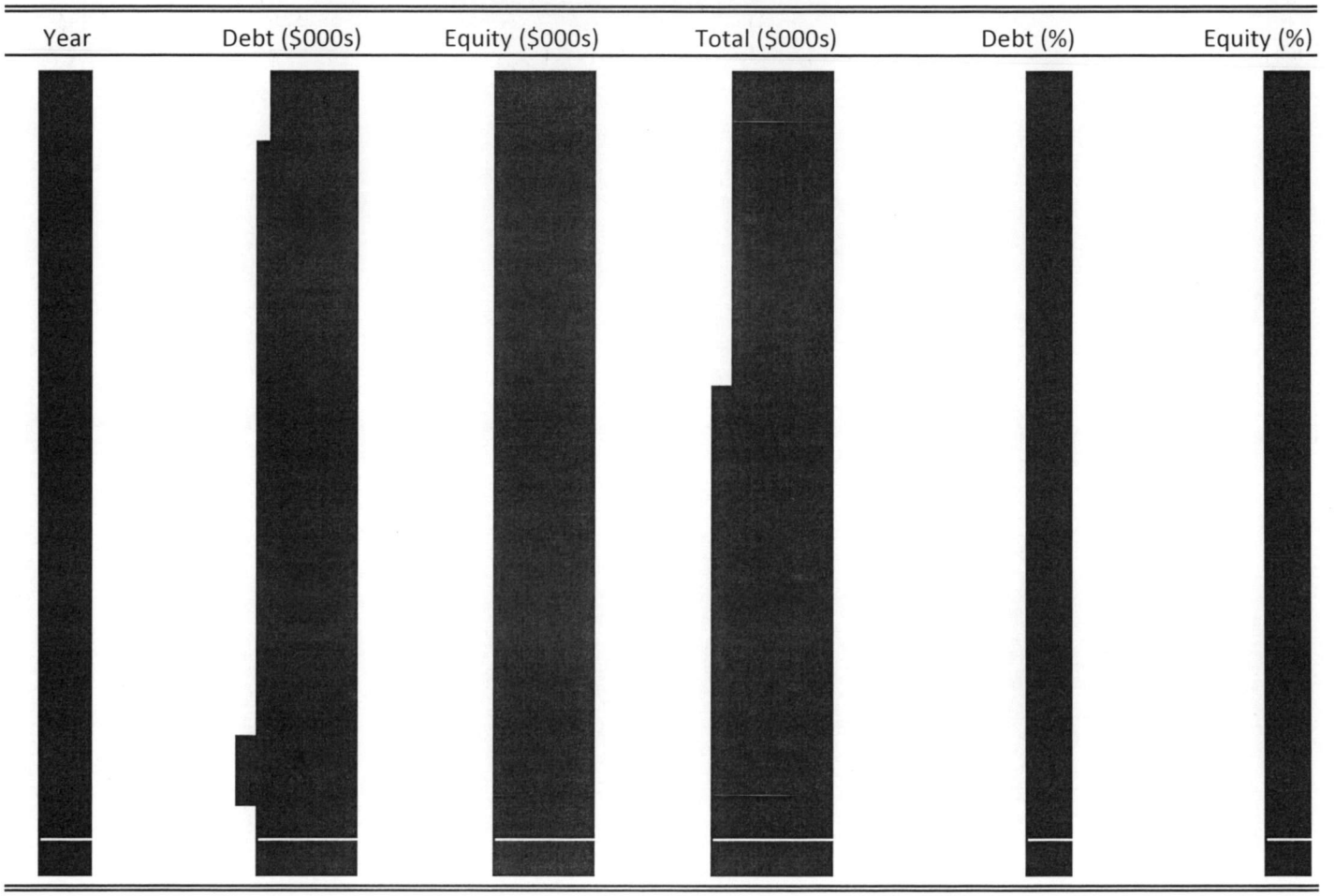
Source: Data provided by Young Brothers.

Young Brothers Historical Volumes (Thousand CPE)

Year	Interstate	Intrastate	Total
2000	46.4	135.3	181.7
2001	54.9	129.1	184.0
2002	68.6	132.0	200.6
2003	74.8	150.1	225.0
2004	64.8	142.8	207.6
2005	74.8	150.5	225.3
2006	77.9	159.9	237.8
2007	101.8	162.2	264.0
2008	71.0	146.7	217.7
2009	64.0	135.6	199.6
2010	63.3	131.0	194.3
2011	62.4	127.2	189.7
2012	84.5	127.7	212.2
2013	68.6	128.4	197.0
2014	81.7	127.5	209.2
2015	79.2	128.5	207.7
2016	79.3	129.1	208.4
2017	71.4	129.6	201.0
2018	74.4	130.3	204.7

Source: Data provided by Young Brothers.

Saltchuk Resources Historical Capital Structure



Source: Data provided by Young Brothers.

Table No. BV-1

Table of Contents

Table No. BV-2

Business Description of Sample Companies

Company	Ticker	Business Description
Kirby Corp.	KEX	Kirby Corporation operates domestic tank barges in the United States. Its Marine Transportation segment provides marine transportation services and towing vessels transporting bulk liquid products, as well as operates tank barges throughout the Mississippi River System, on the Gulf Intracoastal Waterway, coastwise along three United States coasts, and in Alaska and Hawaii. This segment also transports petrochemicals, black oil, refined petroleum products, and agricultural chemicals by tank barges; and operates offshore dry-bulk barge and tugboat units that are engaged in the offshore transportation of dry-bulk cargoes in the United States coastal trade. It serves oil refining and petrochemical companies. As of February 22, 2019, this segment owned or operated 1,003 inland tank barges with 21.8 million barrels of capacity, 285 inland towboats, 53 coastal tank barges with 5.1 million barrels of capacity, 50 coastal tugboats, 4 offshore dry-bulk cargo barges, 4 offshore tugboats, and 1 docking tugboat. The company's Distribution and Services segment sells replacement parts; provides service mechanics to overhaul and repair medium-speed and high-speed diesel engines, transmissions, reduction gears, and related oilfield services equipment; rebuilds component parts or diesel engines, transmissions, reduction gears, and related equipment used in oilfield services, marine, mining, power generation, on-highway, and other industrial applications; rents generators, fork lifts, and pumps and compressors; and manufactures and remanufactures pressure pumping units. It serves oilfield service, on-highway transportation, marine transportation, commercial fishing, construction, and power generation companies, as well as oil and gas operators and producers, and the United States government. The company was formerly known as Kirby Exploration Company, Inc. and changed its name to Kirby Corporation in 1990. Kirby Corporation was founded in 1921 and is headquartered in Houston, Texas.
Matson Inc.	MATX	Matson, Inc. provides ocean transportation and logistics services. The company's Ocean Transportation segment offers ocean freight transportation services to the domestic non-contiguous economies of Hawaii, Alaska, and Guam, as well as to other island economies in Micronesia. It primarily transports dry containers of mixed commodities, refrigerated commodities, packaged foods and beverages, building materials, automobiles, and household goods; livestock; seafood; general sustenance cargo; and garments, footwear, and other retail merchandise. This segment also operates an expedited service from China to Long Beach, California, and various islands in the South Pacific, as well as Okinawa, Japan; and provides container stevedoring, refrigerated cargo services, inland transportation, container equipment maintenance, and other terminal services Hawaiian islands of Oahu, Hawaii, Maui, and Kauai, as well as in the Alaska locations of Anchorage, Kodiak, and Dutch Harbor. In addition, it offers ship management services. The Logistics segment provides multimodal transportation brokerage services, including domestic and international rail intermodal, long-haul and regional highway trucking, specialized hauling, flat-bed and project, less-than-truckload, and expedited freight services; less-than-container load forwarding services; warehousing and distribution services; and supply chain management services. The company was formerly known as Alexander & Baldwin Holdings, Inc. and changed its name to Matson, Inc. in June 2012. Matson, Inc. was founded in 1882 and is headquartered in Honolulu, Hawaii.
CSX Corp.	CSX	CSX Corporation, together with its subsidiaries, provides rail-based freight transportation services. The company offers rail services, as well as transports intermodal containers and trailers. It transports chemicals, automotive, agricultural and food products, minerals, fertilizers, forest products, and metals and equipment; and coal, coke, and iron ore to electricity-generating power plants, steel manufacturers, and industrial plants. The company also exports coal to deep-water port facilities. In addition, it offers intermodal transportation services through a network of approximately 30 terminals transporting manufactured consumer goods in containers in the eastern United States; drayage services, including the pickup and delivery of intermodal shipments; and trucking dispatch services. Further, the company serves the automotive industry with distribution centers and storage locations, as well as connects non-rail served customers through transferring products from rail to trucks, which includes plastics and ethanol. Additionally, it acquires, develops, sells, leases, and manages real estate properties. The company operates approximately 20,500 route mile rail network, which serves various population centers in 23 states east of the Mississippi River, the District of Columbia, and the Canadian provinces of Ontario and Quebec, as well as owns and leases approximately 3,900 locomotives. It also serves production and distribution facilities through track connections. CSX Corporation was founded in 1978 and is based in Jacksonville, Florida.

Table No. BV-2

Business Description of Sample Companies

Company	Ticker	Business Description
Kansas City South'n	KSU	Kansas City Southern, a transportation holding company, provides domestic and international rail transportation services in North America. The company serves a ten-state region in the midwest and southeast regions of the United States and has the shortest north/south rail route between Kansas City, Missouri, and ports along the Gulf of Mexico in Alabama, Louisiana, Mississippi, and Texas. It operates a commercial corridor of the Mexican railroad system and has its direct rail passageway between Mexico City and Laredo, Texas. The company provides rail access to the United States and Mexico border crossing at Nuevo Laredo, Tamaulipas; and controls and operates the southern half of the rail bridge at Laredo, Texas, as well as the northern half of this bridge. Kansas City Southern also provides rail access to the port of Lazaro Cardenas on the Pacific Ocean; and owns a 157-mile rail line extending from Laredo, Texas to the port city of Corpus Christi, Texas. Its rail network comprises approximately 6,700 route miles. The company serves the chemical and petroleum, industrial and consumer products, agriculture and minerals, energy, intermodal, and automotive markets. Kansas City Southern was founded in 1887 and is headquartered in Kansas City, Missouri.
Union Pacific	UNP	Union Pacific Corporation, through its subsidiary, Union Pacific Railroad Company, engages in the railroad business in the United States. It offers transportation services for agricultural products, including grains, commodities produced from grains, fertilizers, and food and beverage products; coal and sand, as well as petroleum, liquid petroleum gases, and renewables; and construction products, industrial chemicals, plastics, forest products, specialized products, metals and ores, and soda ash, as well as intermodal and finished vehicles. As of December 31, 2018, its rail network included 32,236 route miles linking Pacific Coast and Gulf Coast ports with the Midwest and Eastern United States gateways. Union Pacific Corporation was founded in 1862 and is headquartered in Omaha, Nebraska.
ArcBest Corp.	ARCB	ArcBest Corporation provides freight transportation services and integrated logistics solutions worldwide. It operates through three segments: Asset-Based, ArcBest, and FleetNet. The Asset-Based segment transports general commodities, such as food, textiles, apparel, furniture, appliances, chemicals, nonbulk petroleum products, rubber, plastics, metal and metal products, wood, glass, automotive parts, machinery, and miscellaneous manufactured products through less-than-truckload services. It also offers motor carrier freight transportation services to customers in Mexico through arrangements with trucking companies. The ArcBest segment provides expedite freight transportation services to commercial and government customers; premium logistics services, such as deployment of specialized equipment to meet linehaul requirements; and international freight transportation with air, ocean, and ground services. It also offers third-party transportation brokerage services by sourcing various capacity solutions, including dry van over the road and intermodal, temperature-controlled and refrigerated, flatbed, intermodal or container shipping, and specialized equipment; full-container and less-than-container load ocean transportation services; warehousing and distribution services; managed transportation services; and moving services to 'do-it-yourself' consumer and corporate account employee relocations, as well as provides final mile, time critical, product launch, warehousing, retail logistics, supply chain optimization, and trade show shipping services. The FleetNet segment provides roadside assistance and maintenance management services for commercial vehicles through third-party service providers. The company was formerly known as Arkansas Best Corporation and changed its name to ArcBest Corporation in May 2014. ArcBest Corporation was founded in 1923 and is headquartered in Fort Smith, Arkansas.
Covenant Transport Inc	CVTI	Covenant Transportation Group, Inc., together with its subsidiaries, provides truckload transportation and brokerage services primarily in the continental United States. It offers expedited and dedicated services. The company also provides ancillary services, including freight brokerage and logistics services, warehousing, and accounts receivabl factoring; and over-the-road truckload services, as well as transportation management, shuttle, and switching services. It serves transportation companies, such as freight forwarders, less-than-truckload carriers, and third-party logistics providers; and traditional truckload customers, including manufacturers, retailers, and food and beverage shippers. As of December 31, 2018, the company operated 3,154 tractors and 6,950 trailers. Covenant Transportation Group, Inc. was founded in 1986 and is headquartered in Chattanooga, Tennessee.

Table No. BV-2

Business Description of Sample Companies

Company	Ticker	Business Description
Heartland Express	HTLD	Heartland Express, Inc., together with its subsidiaries, operates as a short-to-medium haul truckload carrier in the United States and Canada. The company primarily provides nationwide asset-based dry van truckload service for shippers from Washington to Florida and New England to California; and temperature-controlled truckload services. It primarily transports appliances, automotive parts, consumer products, paper products, packaged foodstuffs, and retail goods. The company principally serves retailers and manufacturers. Heartland Express, Inc. was founded in 1978 and is headquartered in North Liberty, Iowa.
Hub Group	HUBG	Hub Group, Inc., an asset-light freight transportation management company, provides intermodal, trucking, truck brokerage, and other logistics services in North America. Its intermodal services include arranging for the movement of its customers' freight in containers and trailers over long distances. The company contracts with railroads to provid transportation for the long-haul portion of the shipment between origin or destination and rail terminals for pickup and delivery; and negotiates drayage rates for the transportation between origin and destination points. It also offers truck brokerage services; and warehouse and transportation logistics services, including retailer-driven collaborative consolidation programs, as well as a range of transportation management services and technology solutions, such as shipment optimization, load consolidation, mode selection, carrier management, load planning and execution, and Web-based shipment visibility under the Unyson Logistics and CaseStack names. In addition, the company provides multi-modal transportation services, such as small parcel, heavyweight, expedited, less-than-truckload, truckload, intermodal, railcar, and international shipping. As of December 31, 2018, it owned approximately 37,000 53-foot containers, as well as access to approximately 1,200 rail-owned containers for use on the Union Pacific and the Norfolk Southern railroads. Hub Group, Inc. was founded in 1971 and is headquartered in Oak Brook, Illinois.
Hunt (J.B.)	JBHT	J.B. Hunt Transport Services, Inc., together with its subsidiaries, provides surface transportation and delivery services in the continental United States, Canada, and Mexico. It operates in four segments: Intermodal (JBI), Dedicated Contract Services (DCS), Integrated Capacity Solutions (ICS), and Truckload (JBT). The JBI segment offers intermodal freight solutions, including origin and destination pickup, and delivery services. It operates 88,739 pieces of company-owned trailing equipment; owns and maintains its own chassis fleet of 81,442 units; and manages a fleet of 5,017 company-owned tractors, 633 independent contractor trucks, and 6,208 company drivers. The DCS segment designs, develops, and executes supply-chain solutions that support various transportation networks. As of December 31, 2018, it operated 9,652 company-owned trucks, 412 customer-owned trucks, and 51 independent contractor trucks, as well as 20,344 owned pieces of trailing equipment and 6,366 customer-owned trailers. The ICS segment offers traditional freight brokerage and transportation logistics solutions; and flatbed, refrigerated, expedited, and less-than-truckload solutions, as well as various dry-van and intermodal solutions. It also provides single-source logistics management for customers that desire to outsource their transportation functions. This segment operates 44 remote sales offices or branches. The JBT segment offers full-load and dry-van freight services by utilizing tractors operating over roads and highways. As of December 31, 2018, it operated 1,139 company-owned tractors. The company also transports or arranges for the transportation of freight, including general merchandise specialty consumer items, appliances, forest and paper products, food and beverages, building materials, soaps and cosmetics, automotive parts, agricultural products, electronics, and chemicals. J.B. Hunt Transport Services, Inc. was incorporated in 1961 and is headquartered in Lowell, Arkansas.

Table No. BV-2

Business Description of Sample Companies

Company	Ticker	Business Description
Landstar Sys.	LSTR	Landstar System, Inc. provides integrated transportation management solutions in the United States, Canada, Mexico, and internationally. It operates through two segments, Transportation Logistics and Insurance. The Transportation Logistics segment offers a range of transportation services, including truckload and less-than-truckload transportation, rail intermodal, air cargo, ocean cargo, expedited ground and air delivery of time-critical freight, heavy-haul/specialized, U.S.-Canada and U.S.-Mexico cross-border, intra-Mexico, intra-Canada, project cargo, and customs brokerage, as well as offers transportation services to other transportation companies, such as third party logistics and less-than-truckload service providers. It provides truck services through dry and specialty vans of various sizes, unsided/platform trailers, temperature-controlled vans, and containers; rail intermodal services through contracts with domestic and Canadian railroads; and air and ocean services through contracts with domestic and international airlines and ocean lines. This segment serves the automotive products, building products, metals, chemicals, foodstuffs, heavy machinery, retail, electronics, and military equipment industries. The Insurance segment reinsures certain risks of the company's independent contractors. The company markets its services through independent commission sales agents and third party capacity providers. Landstar System, Inc. was founded in 1968 and is headquartered in Jacksonville, Florida.
Old Dominion Freight	ODFL	Old Dominion Freight Line, Inc. operates as a less-than-truckload (LTL) motor carrier in the United States and North America. It provides regional, inter-regional, and national LTL services, including expedited transportation. The company also offers various value-added services, such as container drayage, truckload brokerage, and supply chain consulting. As of December 31, 2018, it owned 9,254 tractors, as well as operated 235 service and 39 maintenance centers. Old Dominion Freight Line, Inc. was founded in 1934 and is based in Thomasville, North Carolina.
P.A.M. Transport Svcs	PTSI	P.A.M. Transportation Services, Inc., through its subsidiaries, operates as a truckload transportation and logistics company in the United States, Mexico, and Canada. The company is involved in the transportation of general commodities. Its freight primarily consists of automotive parts; expedited goods; consumer goods, including general retail store merchandise; and manufactured goods, such as heating and air conditioning units. The company also offers brokerage and logistics services. As of December 31, 2018, it operated a fleet of 2,031 trucks, which includes 597 independent contractor trucks; and 6,397 trailers. P.A.M. Transportation Services, Inc. was founded in 1980 and is headquartered in Tontitown, Arkansas.
Saia Inc	SAIA	Saia, Inc., through its subsidiaries, operates as a transportation company in North America. The company provides regional and interregional less-than-truckload services for shipments between 100 and 10,000 pounds; and other value-added services, including non-asset truckload, expedited, and logistics services. As of December 31, 2018, it operated a network of 166 owned and leased facilities; and owned approximately 4,834 tractors and 15,483 trailers. The company was formerly known as SCS Transportation, Inc. and changed its name to Saia, Inc. in July 2006. Saia, Inc. was founded in 1924 and is headquartered in Johns Creek, Georgia.
Schneider National Inc	SNDR	Schneider National, Inc., a transportation and logistics services company, provides truckload, intermodal, and logistics solutions in North America. Its Truckload segment provides standard long-haul and regional shipping services through dry van equipment; and bulk, temperature-controlled, first to final mile delivery, and customized solutions for time-sensitive loads. This segment engages in shipping furniture, mattresses, and other household goods. The company's intermodal segment offers door-to-door container on flat car services, including rail and over-the-road transportation through containers, chassis, and trucks. Its logistics segment provides non-asset freight brokerage, supply chain, and import/export services; value-added services to manage and move its customers' freight; and trans-loading and warehousing services. Schneider National, Inc. also leases equipment, such as trucks to owner-operators; and provides insurance for the company and owner-operators. The company was founded in 1935 and is headquartered in Green Bay, Wisconsin.

Table No. BV-2

Business Description of Sample Companies

Company	Ticker	Business Description
U.S. Xpress Enterprises 'A'	USX	U.S. Xpress Enterprises, Inc. operates as an asset-based truckload carrier providing services primarily in the United States. It operates through two segments, Truckload and Brokerage. The Truckload segment offers asset-based truckload services, including the over-the-road and contract services. The Brokerage segment provides non-asset-based freight brokerage services. The company offers customers a portfolio of services using its truckload fleet and third-party carriers through its non-asset-based truck brokerage network. As of December 31, 2018, its fleet consisted of approximately 6,900 tractors and 16,000 trailers, including 1,650 tractors provided by independent contractors. The company was founded in 1985 and is headquartered in Chattanooga, Tennessee.
Werner Enterprises	WERN	Werner Enterprises, Inc., a transportation and logistics company, engages in transporting truckload shipments of general commodities in interstate and intrastate commerce in the United States, Mexico, Canada, and China. It operates in two segments, Truckload Transportation Services and Werner Logistics. The Truckload Transportation Services segment operates medium-to-long-haul van fleet, which transports various consumer nondurable products and other commodities in truckload quantities using dry van trailers; the expedited fleet that offers time-sensitive truckload services using driver teams; regional short-haul fleet, which provides comparable truckload van service in the United States; and temperature controlled fleet that offers truckload services for temperature sensitive products using temperature-controlled trailers. It transports retail store merchandise, consumer products, grocery products, and manufactured products. The Werner Logistics segment provides non-asset-based transportation and logistics services, including truck brokerage; logistics management services and solutions; rail transportation through alliances with rail and drayage providers; management of shipments from origin to destination using a combination of air, ocean, truck, and rail transportation modes; and home and business deliveries of heavy items using liftgate straight truck. As o December 31, 2018, the company had a fleet of 7,820 trucks, which included 7,240 company-operated, as well as 580 owned and operated by independent contractors; 25,255 company-owned trailers that comprised dry vans, flatbeds, and temperature-controlled and other specialized trailers; and 40 intermodal drayage trucks. Werner Enterprises, Inc. was founded in 1956 and is headquartered in Omaha, Nebraska.

Sources and Notes:

Sample Company Business Description from Capital IQ as of July 11, 2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel A: Kirby Corp.

($MM)

MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$3,262	$3,262	$3,184	$2,474	$2,344	$2,245	$2,163	[a]
Shares Outstanding (in millions) - Common	60	60	60	54	54	55	57	[b]
Price per Share - Common	$80	$80	$85	$66	$67	$78	$115	[c]
Market Value of Common Equity	$4,768	$4,768	$5,073	$3,551	$3,589	$4,286	$6,557	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$4,768	$4,768	$5,073	$3,551	$3,589	$4,286	$6,557	[f]= [d]
Market to Book Value of Common Equity	1.46	1.46	1.59	1.44	1.53	1.91	3.03	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[h]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[i] = [h].
MARKET VALUE OF DEBT								
Current Assets	$1,118	$1,118	$1,035	$604	$621	$677	$661	[j]
Current Liabilities	$583	$583	$556	$342	$344	$388	$471	[k]
Current Portion of Long-Term Debt	$29	$0	$0	$0	$0	$0	$0	[l]
Net Working Capital	$564	$536	$479	$262	$276	$289	$191	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$0	$0	$0	$0	$0	$0	$0	[n]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	$0	[o] = See Sources and Notes.
Long-Term Debt	$1,807	$1,807	$1,443	$592	$799	$808	$649	[p]
Book Value of Long-Term Debt	$1,835	$1,807	$1,443	$592	$799	$808	$649	[q] = [l] + [o] + [p].
Unadjusted Market Value of Long Term Debt	$1,412	$1,412	$984	$715	$765	$705	$710	
Carrying Amount	$1,410	$1,410	$992	$723	$775	$717	$749	
Adjustment to Book Value of Long-Term Debt	$1	$1	($8)	($7)	($10)	($11)	($39)	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$1,837	$1,808	$1,434	$584	$789	$797	$611	[s] = [q] + [r].
Market Value of Debt	$1,837	$1,808	$1,434	$584	$789	$797	$611	[t] = [s].
MARKET VALUE OF FIRM								
	$6,605	$6,576	$6,507	$4,135	$4,377	$5,083	$7,168	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	72.19%	72.51%	77.96%	85.88%	81.98%	84.32%	91.48%	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	-	-	-	-	-	-	-	[w] = [i] / [u].
Debt - Market Value Ratio	27.81%	27.49%	22.04%	14.12%	18.02%	15.68%	8.52%	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$5,098	$5,069	$4,627	$3,065	$3,142	$3,053	$2,812	[y] = [a]+ [h] + [q]
Book Equity %	64%	64%	69%	81%	75%	74%	77%	[z] = [a] / [y]
Book Debt %	36%	36%	31%	19%	25%	26%	23%	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	0%	0%	0%	0%	[ab] = [h] / [y]

Sources and Notes:

Bloomberg as of June 30, 2019

Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.

The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel B: Matson Inc.

($MM)

	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$763	$763	$700	$476	$434	$387	$342	[a]
Shares Outstanding (in millions) - Common	43	43	43	43	43	44	43	[b]
Price per Share - Common	$37	$37	$38	$30	$33	$42	$25	[c]
Market Value of Common Equity	$1,600	$1,600	$1,628	$1,274	$1,417	$1,821	$1,077	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$1,600	$1,600	$1,628	$1,274	$1,417	$1,821	$1,077	[f]= [d]
Market to Book Value of Common Equity	2.10	2.10	2.33	2.68	3.26	4.71	3.15	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[h]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[i] = [h].
MARKET VALUE OF DEBT								
Current Assets	$307	$307	$284	$282	$254	$323	$478	[j]
Current Liabilities	$411	$411	$316	$276	$290	$307	$222	[k]
Current Portion of Long-Term Debt	$100	$100	$36	$31	$22	$24	$17	[l]
Net Working Capital	($5)	($5)	$4	$37	($14)	$41	$274	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$0	$0	$0	$0	$0	$0	$0	[n]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	$0	[o] = See Sources and Notes.
Long-Term Debt	$1,020	$1,020	$896	$723	$441	$492	$363	[p]
Book Value of Long-Term Debt	$1,119	$1,119	$933	$754	$463	$517	$380	[q] = [l] + [o] + [p].
Unadjusted Market Value of Long Term Debt	$585	$585	$651	$685	$444	$396	$293	
Carrying Amount	$621	$621	$652	$684	$430	$374	$286	
Adjustment to Book Value of Long-Term Debt	($37)	($37)	($1)	$1	$14	$22	$7	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$1,082	$1,082	$932	$755	$477	$539	$387	[s] = [q] + [r].
Market Value of Debt	$1,082	$1,082	$932	$755	$477	$539	$387	[t] = [s].
MARKET VALUE OF FIRM	$2,682	$2,682	$2,559	$2,030	$1,894	$2,360	$1,464	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	59.65%	59.65%	63.59%	62.79%	74.83%	77.17%	73.59%	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	-	-	-	-	-	-	-	[w] = [i] / [u].
Debt - Market Value Ratio	40.35%	40.35%	36.41%	37.21%	25.17%	22.83%	26.41%	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$1,882	$1,882	$1,632	$1,230	$897	$904	$722	[y] = [a]+ [h] + [q]
Book Equity %	41%	41%	43%	39%	48%	43%	47%	[z] = [a] / [y]
Book Debt %	59%	59%	57%	61%	52%	57%	53%	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	0%	0%	0%	0%	[ab] = [h] / [y]

Sources and Notes:

Bloomberg as of June 30, 2019

Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.

The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel C: CSX Corp.

($MM)

	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$12,428	$12,428	$14,009	$11,587	$11,612	$11,563	$10,882	[a]
Shares Outstanding (in millions) - Common	809	809	859	913	946	984	1,000	[b]
Price per Share - Common	$78	$78	$65	$53	$26	$34	$31	[c]
Market Value of Common Equity	$62,763	$62,763	$55,923	$48,639	$24,820	$33,748	$30,545	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$62,763	$62,763	$55,923	$48,639	$24,820	$33,748	$30,545	[f]= [d]
Market to Book Value of Common Equity	5.05	5.05	3.99	4.20	2.14	2.92	2.81	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[h]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[i] = [h].
MARKET VALUE OF DEBT								
Current Assets	$3,479	$3,479	$2,881	$2,630	$2,228	$2,669	$2,372	[j]
Current Liabilities	$1,926	$1,926	$1,732	$1,672	$2,282	$1,778	$2,797	[k]
Current Portion of Long-Term Debt	$71	$71	$19	$19	$632	$18	$899	[l]
Net Working Capital	$1,624	$1,624	$1,168	$977	$578	$909	$474	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$0	$0	$0	$0	$0	$0	$0	[n]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	$0	[o] = See Sources and Notes.
Long-Term Debt	$16,250	$16,250	$13,769	$11,806	$9,905	$10,107	$8,410	[p]
Book Value of Long-Term Debt	$16,321	$16,321	$13,788	$11,825	$10,537	$10,125	$9,309	[q] = [l] + [o] + [p].
Unadjusted Market Value of Long Term Debt	$14,914	$14,914	$13,220	$12,096	$11,340	$11,042	$10,354	
Carrying Amount	$14,757	$14,757	$11,809	$11,293	$10,535	$9,742	$9,555	
Adjustment to Book Value of Long-Term Debt	$157	$157	$1,411	$803	$805	$1,300	$799	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$16,478	$16,478	$15,199	$12,628	$11,342	$11,425	$10,108	[s] = [q] + [r].
Market Value of Debt	$16,478	$16,478	$15,199	$12,628	$11,342	$11,425	$10,108	[t] = [s].
MARKET VALUE OF FIRM	$79,241	$79,241	$71,122	$61,267	$36,162	$45,173	$40,653	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	79.21%	79.21%	78.63%	79.39%	68.64%	74.71%	75.14%	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	-	-	-	-	-	-	-	[w] = [i] / [u].
Debt - Market Value Ratio	20.79%	20.79%	21.37%	20.61%	31.36%	25.29%	24.86%	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$28,749	$28,749	$27,797	$23,412	$22,149	$21,688	$20,191	[y] = [a]+ [h] + [q]
Book Equity %	43%	43%	50%	49%	52%	53%	54%	[z] = [a] / [y]
Book Debt %	57%	57%	50%	51%	48%	47%	46%	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	0%	0%	0%	0%	[ab] = [h] / [y]

Sources and Notes:

Bloomberg as of June 30, 2019

Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.

The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel D: Kansas City South'n

($MM)

	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$4,822	$4,822	$4,672	$4,187	$4,015	$3,882	$3,529	[a]
Shares Outstanding (in millions) - Common	101	101	102	107	108	110	110	[b]
Price per Share - Common	$118	$118	$108	$102	$88	$94	$106	[c]
Market Value of Common Equity	$11,897	$11,897	$10,999	$10,892	$9,545	$10,350	$11,711	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$11,897	$11,897	$10,999	$10,892	$9,545	$10,350	$11,711	[f]= [d]
Market to Book Value of Common Equity	2.47	2.47	2.35	2.60	2.38	2.67	3.32	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$6	$6	$6	$6	$6	$6	$6	[h]
Market Value of Preferred Equity	$6	$6	$6	$6	$6	$6	$6	[i] = [h].
MARKET VALUE OF DEBT								
Current Assets	$654	$654	$528	$711	$724	$524	$708	[j]
Current Liabilities	$481	$481	$441	$821	$681	$701	$729	[k]
Current Portion of Long-Term Debt	$59	$59	$11	$42	$276	$25	$25	[l]
Net Working Capital	$233	$233	$98	($68)	$319	($153)	$4	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$0	$0	$0	$303	$0	$292	$321	[n]
Adjusted Short-Term Debt	$0	$0	$0	$68	$0	$153	$0	[o] = See Sources and Notes.
Long-Term Debt	$2,783	$2,783	$2,682	$2,244	$2,282	$1,829	$1,852	[p]
Book Value of Long-Term Debt	$2,842	$2,842	$2,693	$2,354	$2,557	$2,006	$1,877	[q] = [l] + [o] + [p].
Unadjusted Market Value of Long Term Debt	$2,661	$2,661	$2,378	$2,304	$2,288	$1,884	$2,083	
Carrying Amount	$2,689	$2,689	$2,274	$2,297	$2,321	$1,866	$2,189	
Adjustment to Book Value of Long-Term Debt	($28)	($28)	$104	$7	($34)	$18	($106)	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$2,814	$2,814	$2,797	$2,360	$2,524	$2,025	$1,771	[s] = [q] + [r].
Market Value of Debt	$2,814	$2,814	$2,797	$2,360	$2,524	$2,025	$1,771	[t] = [s].
MARKET VALUE OF FIRM	$14,716	$14,716	$13,802	$13,259	$12,074	$12,380	$13,488	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	80.84%	80.84%	79.69%	82.15%	79.05%	83.60%	86.82%	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	0.04%	0.04%	0.04%	0.05%	0.05%	0.05%	0.05%	[w] = [i] / [u].
Debt - Market Value Ratio	19.12%	19.12%	20.26%	17.80%	20.90%	16.35%	13.13%	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$7,670	$7,670	$7,371	$6,546	$6,578	$5,894	$5,412	[y] = [a]+ [h] + [q]
Book Equity %	63%	63%	63%	64%	61%	66%	65%	[z] = [a] / [y]
Book Debt %	37%	37%	37%	36%	39%	34%	35%	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	0%	0%	0%	0%	[ab] = [h] / [y]

Sources and Notes:

Bloomberg as of June 30, 2019

Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.

The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel E: Union Pacific

($MM)

	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$17,742	$17,742	$19,909	$19,615	$20,422	$20,990	$21,440	[a]
Shares Outstanding (in millions) - Common	708	708	739	801	834	869	899	[b]
Price per Share - Common	$168	$168	$144	$109	$87	$99	$101	[c]
Market Value of Common Equity	$118,824	$118,824	$106,133	$87,509	$72,593	$86,500	$90,354	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$118,824	$118,824	$106,133	$87,509	$72,593	$86,500	$90,354	[f]= [d]
Market to Book Value of Common Equity	6.70	6.70	5.33	4.46	3.55	4.12	4.21	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[h]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[i] = [h].
MARKET VALUE OF DEBT								
Current Assets	$3,953	$3,953	$4,494	$3,869	$4,566	$4,983	$4,503	[j]
Current Liabilities	$5,262	$5,262	$4,372	$3,406	$3,095	$3,413	$3,777	[k]
Current Portion of Long-Term Debt	$2,120	$2,120	$1,456	$531	$409	$431	$458	[l]
Net Working Capital	$811	$811	$1,578	$994	$1,880	$2,001	$1,184	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$0	$0	$0	$0	$0	$0	$0	[n]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	$0	[o] = See Sources and Notes.
Long-Term Debt	$25,072	$25,072	$21,357	$15,229	$14,777	$12,908	$10,385	[p]
Book Value of Long-Term Debt	$27,192	$27,192	$22,813	$15,760	$15,186	$13,339	$10,843	[q] = [l] + [o] + [p].
Unadjusted Market Value of Long Term Debt	$23,208	$23,208	$17,831	$15,900	$15,200	$13,000	$10,200	
Carrying Amount	$22,391	$22,391	$16,944	$15,000	$14,200	$11,500	$9,600	
Adjustment to Book Value of Long-Term Debt	$817	$817	$887	$900	$1,000	$1,500	$600	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$28,009	$28,009	$23,700	$16,660	$16,186	$14,839	$11,443	[s] = [q] + [r].
Market Value of Debt	$28,009	$28,009	$23,700	$16,660	$16,186	$14,839	$11,443	[t] = [s].
MARKET VALUE OF FIRM	$146,833	$146,833	$129,833	$104,169	$88,779	$101,339	$101,797	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	80.92%	80.92%	81.75%	84.01%	81.77%	85.36%	88.76%	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	-	-	-	-	-	-	-	[w] = [i] / [u].
Debt - Market Value Ratio	19.08%	19.08%	18.25%	15.99%	18.23%	14.64%	11.24%	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$44,934	$44,934	$42,722	$35,375	$35,608	$34,329	$32,283	[y] = [a]+ [h] + [q]
Book Equity %	39%	39%	47%	55%	57%	61%	66%	[z] = [a] / [y]
Book Debt %	61%	61%	53%	45%	43%	39%	34%	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	0%	0%	0%	0%	[ab] = [h] / [y]

Sources and Notes:

Bloomberg as of June 30, 2019

Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.

The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel F: ArcBest Corp.

($MM)

MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$722	$722	$669	$602	$582	$579	$532	[a]
Shares Outstanding (in millions) - Common	26	26	26	26	26	26	26	[b]
Price per Share - Common	$27	$27	$47	$20	$16	$33	$43	[c]
Market Value of Common Equity	$680	$680	$1,214	$517	$420	$866	$1,114	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$680	$680	$1,214	$517	$420	$866	$1,114	[f]= [d]
Market to Book Value of Common Equity	0.94	0.94	1.82	0.86	0.72	1.49	2.09	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[h]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[i] = [h].
MARKET VALUE OF DEBT								
Current Assets	$607	$607	$590	$502	$548	$562	$477	[j]
Current Liabilities	$432	$432	$450	$405	$385	$364	$361	[k]
Current Portion of Long-Term Debt	$66	$66	$52	$63	$55	$24	$36	[l]
Net Working Capital	$241	$241	$192	$159	$218	$221	$153	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$0	$0	$0	$0	$0	$0	$17	[n]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	$0	[o] = See Sources and Notes.
Long-Term Debt	$282	$282	$198	$195	$170	$137	$83	[p]
Book Value of Long-Term Debt	$349	$349	$250	$257	$225	$161	$119	[q] = [l] + [o] + [p].
Unadjusted Market Value of Long Term Debt	$238	$238	$207	$173	$141	$127	$106	
Carrying Amount	$238	$238	$207	$173	$142	$127	$106	
Adjustment to Book Value of Long-Term Debt	$0	$0	$0	($1)	($0)	($0)	$0	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$349	$349	$250	$257	$225	$161	$119	[s] = [q] + [r].
Market Value of Debt	$349	$349	$250	$257	$225	$161	$119	[t] = [s].
MARKET VALUE OF FIRM								
	$1,028	$1,028	$1,464	$773	$645	$1,027	$1,233	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	66.11%	66.11%	82.95%	66.79%	65.10%	84.34%	90.34%	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	-	-	-	-	-	-	-	[w] = [i] / [u].
Debt - Market Value Ratio	33.89%	33.89%	17.05%	33.21%	34.90%	15.66%	9.66%	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$1,070	$1,070	$918	$859	$808	$740	$652	[y] = [a]+ [h] + [q]
Book Equity %	67%	67%	73%	70%	72%	78%	82%	[z] = [a] / [y]
Book Debt %	33%	33%	27%	30%	28%	22%	18%	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	0%	0%	0%	0%	[ab] = [h] / [y]

Sources and Notes:

Bloomberg as of June 30, 2019

Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.

The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel G: Covenant Transport Inc

($MM)

	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$348	$348	$314	$237	$220	$196	$103	[a]
Shares Outstanding (in millions) - Common	18	18	18	18	18	18	15	[b]
Price per Share - Common	$15	$15	$32	$18	$20	$28	$12	[c]
Market Value of Common Equity	$269	$269	$593	$336	$369	$505	$183	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$269	$269	$593	$336	$369	$505	$183	[f]= [d]
Market to Book Value of Common Equity	0.77	0.77	1.89	1.41	1.68	2.58	1.78	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[h]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[i] = [h].
MARKET VALUE OF DEBT								
Current Assets	$226	$226	$266	$134	$108	$136	$137	[j]
Current Liabilities	$133	$133	$94	$84	$93	$98	$108	[k]
Current Portion of Long-Term Debt	$39	$39	$37	$27	$33	$25	$46	[l]
Net Working Capital	$131	$131	$210	$77	$48	$63	$76	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$2	$2	$0	$4	$0	$0	$2	[n]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	$0	[o] = See Sources and Notes.
Long-Term Debt	$256	$256	$231	$180	$173	$138	$185	[p]
Book Value of Long-Term Debt	$295	$295	$269	$207	$206	$164	$232	[q] = [l] + [o] + [p].
Unadjusted Market Value of Long Term Debt	$202	$202	$186	$188	$207	$173	$183	
Carrying Amount	$202	$202	$186	$188	$207	$173	$183	
Adjustment to Book Value of Long-Term Debt	$0	$0	$0	$0	$0	$0	$0	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$295	$295	$269	$207	$206	$164	$232	[s] = [q] + [r].
Market Value of Debt	$295	$295	$269	$207	$206	$164	$232	[t] = [s].
MARKET VALUE OF FIRM	$563	$563	$861	$543	$576	$669	$414	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	47.71%	47.71%	68.82%	61.80%	64.17%	75.53%	44.14%	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	-	-	-	-	-	-	-	[w] = [i] / [u].
Debt - Market Value Ratio	52.29%	52.29%	31.18%	38.20%	35.83%	24.47%	55.86%	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$642	$642	$582	$445	$426	$360	$335	[y] = [a]+ [h] + [q]
Book Equity %	54%	54%	54%	53%	52%	55%	31%	[z] = [a] / [y]
Book Debt %	46%	46%	46%	47%	48%	45%	69%	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	0%	0%	0%	0%	[ab] = [h] / [y]

Sources and Notes:

Bloomberg as of June 30, 2019

Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.

The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel H: Heartland Express

($MM)

	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$632	$632	$582	$531	$483	$515	$435	[a]
Shares Outstanding (in millions) - Common	82	82	82	83	83	88	88	[b]
Price per Share - Common	$18	$18	$19	$21	$18	$21	$22	[c]
Market Value of Common Equity	$1,498	$1,498	$1,570	$1,731	$1,459	$1,809	$1,894	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$1,498	$1,498	$1,570	$1,731	$1,459	$1,809	$1,894	[f]= [d]
Market to Book Value of Common Equity	2.37	2.37	2.70	3.26	3.02	3.51	4.35	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[h]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[i] = [h].
MARKET VALUE OF DEBT								
Current Assets	$253	$253	$196	$252	$163	$197	$151	[j]
Current Liabilities	$74	$74	$68	$62	$83	$78	$104	[k]
Current Portion of Long-Term Debt	$0	$0	$0	$0	$0	$0	$0	[l]
Net Working Capital	$179	$179	$128	$190	$80	$119	$47	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$0	$0	$0	$0	$0	$0	$0	[n]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	$0	[o] = See Sources and Notes.
Long-Term Debt	$0	$0	$0	$0	$0	$0	$43	[p]
Book Value of Long-Term Debt	$0	$0	$0	$0	$0	$0	$43	[q] = [l] + [o] + [p].
Unadjusted Market Value of Long Term Debt	$0	$0	$0	$0	$0	$25	$75	
Carrying Amount	$0	$0	$0	$0	$0	$25	$75	
Adjustment to Book Value of Long-Term Debt	$0	$0	$0	$0	$0	$0	$0	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$0	$0	$0	$0	$0	$0	$43	[s] = [q] + [r].
Market Value of Debt	$0	$0	$0	$0	$0	$0	$43	[t] = [s].
MARKET VALUE OF FIRM	$1,498	$1,498	$1,570	$1,731	$1,459	$1,809	$1,937	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	97.78%	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	-	-	-	-	-	-	-	[w] = [i] / [u].
Debt - Market Value Ratio	-	-	-	-	-	-	2.22%	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$632	$632	$582	$531	$483	$515	$478	[y] = [a]+ [h] + [q]
Book Equity %	100%	100%	100%	100%	100%	100%	91%	[z] = [a] / [y]
Book Debt %	0%	0%	0%	0%	0%	0%	9%	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	0%	0%	0%	0%	[ab] = [h] / [y]

Sources and Notes:

Bloomberg as of June 30, 2019

Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.

The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel I: Hub Group

($MM)

	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$1,007	$1,007	$811	$650	$603	$617	$594	[a]
Shares Outstanding (in millions) - Common	35	35	34	34	34	37	37	[b]
Price per Share - Common	$41	$41	$51	$37	$39	$42	$49	[c]
Market Value of Common Equity	$1,423	$1,423	$1,766	$1,275	$1,344	$1,558	$1,834	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$1,423	$1,423	$1,766	$1,275	$1,344	$1,558	$1,834	[f]= [d]
Market to Book Value of Common Equity	1.41	1.41	2.18	1.96	2.23	2.52	3.09	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[h]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[i] = [h].
MARKET VALUE OF DEBT								
Current Assets	$575	$575	$667	$619	$586	$617	$535	[j]
Current Liabilities	$487	$487	$565	$402	$376	$376	$342	[k]
Current Portion of Long-Term Debt	$111	$111	$90	$50	$38	$26	$9	[l]
Net Working Capital	$200	$200	$192	$267	$248	$267	$202	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$0	$0	$0	$0	$0	$0	$0	[n]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	$0	[o] = See Sources and Notes.
Long-Term Debt	$244	$244	$186	$115	$107	$91	$42	[p]
Book Value of Long-Term Debt	$355	$355	$275	$166	$145	$117	$51	[q] = [l] + [o] + [p].
Unadjusted Market Value of Long Term Debt	$234	$234	$223	$126	$114	$88	$25	
Carrying Amount	$234	$234	$223	$126	$114	$88	$25	
Adjustment to Book Value of Long-Term Debt	$0	$0	$0	$0	$0	$0	$0	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$355	$355	$275	$166	$145	$117	$51	[s] = [q] + [r].
Market Value of Debt	$355	$355	$275	$166	$145	$117	$51	[t] = [s].
MARKET VALUE OF FIRM	$1,778	$1,778	$2,041	$1,440	$1,489	$1,675	$1,885	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	80.03%	80.03%	86.52%	88.50%	90.26%	93.02%	97.31%	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	-	-	-	-	-	-	-	[w] = [i] / [u].
Debt - Market Value Ratio	19.97%	19.97%	13.48%	11.50%	9.74%	6.98%	2.69%	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$1,362	$1,362	$1,086	$815	$748	$734	$644	[y] = [a]+ [h] + [q]
Book Equity %	74%	74%	75%	80%	81%	84%	92%	[z] = [a] / [y]
Book Debt %	26%	26%	25%	20%	19%	16%	8%	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	0%	0%	0%	0%	[ab] = [h] / [y]

Sources and Notes:

Bloomberg as of June 30, 2019

Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.

The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel J: Hunt (J.B.)

($MM)

	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$2,204	$2,204	$2,033	$1,408	$1,379	$1,339	$1,081	[a]
Shares Outstanding (in millions) - Common	109	109	109	109	113	116	117	[b]
Price per Share - Common	$89	$89	$127	$89	$80	$85	$76	[c]
Market Value of Common Equity	$9,714	$9,714	$13,873	$9,747	$8,980	$9,934	$8,803	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$9,714	$9,714	$13,873	$9,747	$8,980	$9,934	$8,803	[f]= [d]
Market to Book Value of Common Equity	4.41	4.41	6.82	6.92	6.51	7.42	8.14	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[h]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[i] = [h].
MARKET VALUE OF DEBT								
Current Assets	$1,438	$1,438	$1,307	$908	$827	$787	$739	[j]
Current Liabilities	$998	$998	$1,159	$608	$553	$777	$515	[k]
Current Portion of Long-Term Debt	$39	$39	$249	$0	$0	$250	$0	[l]
Net Working Capital	$478	$478	$398	$300	$274	$260	$225	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$0	$0	$0	$0	$0	$0	$0	[n]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	$0	[o] = See Sources and Notes.
Long-Term Debt	$1,363	$1,363	$756	$943	$958	$643	$874	[p]
Book Value of Long-Term Debt	$1,401	$1,401	$1,005	$943	$958	$893	$874	[q] = [l] + [o] + [p].
Unadjusted Market Value of Long Term Debt	$565	$565	$506	$402	$408	$704	$575	
Carrying Amount	$556	$556	$490	$387	$400	$683	$558	
Adjustment to Book Value of Long-Term Debt	$9	$9	$16	$15	$8	$22	$17	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$1,410	$1,410	$1,021	$958	$965	$915	$891	[s] = [q] + [r].
Market Value of Debt	$1,410	$1,410	$1,021	$958	$965	$915	$891	[t] = [s].
MARKET VALUE OF FIRM	$11,124	$11,124	$14,894	$10,705	$9,945	$10,849	$9,694	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	87.32%	87.32%	93.14%	91.05%	90.29%	91.57%	90.81%	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	-	-	-	-	-	-	-	[w] = [i] / [u].
Debt - Market Value Ratio	12.68%	12.68%	6.86%	8.95%	9.71%	8.43%	9.19%	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$3,605	$3,605	$3,038	$2,351	$2,337	$2,232	$1,955	[y] = [a]+ [h] + [q]
Book Equity %	61%	61%	67%	60%	59%	60%	55%	[z] = [a] / [y]
Book Debt %	39%	39%	33%	40%	41%	40%	45%	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	0%	0%	0%	0%	[ab] = [h] / [y]

Sources and Notes:

Bloomberg as of June 30, 2019

Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.

The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel K: Landstar Sys.

($MM)

	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$728	$728	$658	$574	$497	$470	$460	[a]
Shares Outstanding (in millions) - Common	40	40	41	42	42	44	45	[b]
Price per Share - Common	$104	$104	$113	$86	$66	$67	$64	[c]
Market Value of Common Equity	$4,159	$4,159	$4,648	$3,606	$2,795	$2,932	$2,851	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$4,159	$4,159	$4,648	$3,606	$2,795	$2,932	$2,851	[f]= [d]
Market to Book Value of Common Equity	5.71	5.71	7.07	6.29	5.62	6.24	6.20	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[h]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[i] = [h].
MARKET VALUE OF DEBT								
Current Assets	$944	$944	$928	$749	$656	$657	$673	[j]
Current Liabilities	$473	$473	$509	$369	$335	$346	$372	[k]
Current Portion of Long-Term Debt	$41	$41	$39	$43	$42	$34	$29	[l]
Net Working Capital	$512	$512	$458	$423	$364	$345	$330	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$42	$42	$45	$29	$30	$32	$27	[n]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	$0	[o] = See Sources and Notes.
Long-Term Debt	$75	$75	$65	$83	$77	$59	$63	[p]
Book Value of Long-Term Debt	$116	$116	$104	$126	$119	$93	$93	[q] = [l] + [o] + [p].
Unadjusted Market Value of Long Term Debt	$85	$85	$83	$93	$82	$76	$74	
Carrying Amount	$85	$85	$83	$93	$82	$76	$74	
Adjustment to Book Value of Long-Term Debt	$0	$0	$0	$0	$0	$0	$0	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$116	$116	$104	$126	$119	$93	$93	[s] = [q] + [r].
Market Value of Debt	$116	$116	$104	$126	$119	$93	$93	[t] = [s].
MARKET VALUE OF FIRM	$4,275	$4,275	$4,752	$3,732	$2,914	$3,025	$2,944	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	97.28%	97.28%	97.81%	96.63%	95.92%	96.92%	96.85%	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	-	-	-	-	-	-	-	[w] = [i] / [u].
Debt - Market Value Ratio	2.72%	2.72%	2.19%	3.37%	4.08%	3.08%	3.15%	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$845	$845	$762	$700	$616	$563	$553	[y] = [a]+ [h] + [q]
Book Equity %	86%	86%	86%	82%	81%	83%	83%	[z] = [a] / [y]
Book Debt %	14%	14%	14%	18%	19%	17%	17%	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	0%	0%	0%	0%	[ab] = [h] / [y]

Sources and Notes:

Bloomberg as of June 30, 2019

Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.

The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel L: Old Dominion Freight

($MM)

	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$2,770	$2,770	$2,482	$1,993	$1,742	$1,600	$1,352	[a]
Shares Outstanding (in millions) - Common	81	81	82	82	83	86	86	[b]
Price per Share - Common	$143	$143	$158	$94	$59	$70	$63	[c]
Market Value of Common Equity	$11,584	$11,584	$12,947	$7,734	$4,929	$5,986	$5,458	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$11,584	$11,584	$12,947	$7,734	$4,929	$5,986	$5,458	[f]= [d]
Market to Book Value of Common Equity	4.18	4.18	5.22	3.88	2.83	3.74	4.04	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[h]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[i] = [h].
MARKET VALUE OF DEBT								
Current Assets	$784	$784	$648	$445	$372	$422	$382	[j]
Current Liabilities	$358	$358	$366	$344	$291	$299	$298	[k]
Current Portion of Long-Term Debt	$10	$10	$0	$50	$0	$28	$36	[l]
Net Working Capital	$436	$436	$281	$150	$81	$151	$121	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$0	$0	$0	$0	$0	$0	$0	[n]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	$0	[o] = See Sources and Notes.
Long-Term Debt	$104	$104	$45	$45	$218	$118	$164	[p]
Book Value of Long-Term Debt	$114	$114	$45	$95	$218	$146	$200	[q] = [l] + [o] + [p].
Unadjusted Market Value of Long Term Debt	$46	$46	$97	$108	$139	$166	$202	
Carrying Amount	$45	$45	$95	$105	$114	$156	$191	
Adjustment to Book Value of Long-Term Debt	$1	$1	$2	$3	$25	$10	$11	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$115	$115	$47	$98	$244	$156	$211	[s] = [q] + [r].
Market Value of Debt	$115	$115	$47	$98	$244	$156	$211	[t] = [s].
MARKET VALUE OF FIRM	$11,698	$11,698	$12,995	$7,832	$5,172	$6,142	$5,669	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	99.02%	99.02%	99.64%	98.74%	95.29%	97.46%	96.29%	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	-	-	-	-	-	-	-	[w] = [i] / [u].
Debt - Market Value Ratio	0.98%	0.98%	0.36%	1.26%	4.71%	2.54%	3.71%	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$2,884	$2,884	$2,527	$2,088	$1,960	$1,746	$1,552	[y] = [a]+ [h] + [q]
Book Equity %	96%	96%	98%	95%	89%	92%	87%	[z] = [a] / [y]
Book Debt %	4%	4%	2%	5%	11%	8%	13%	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	0%	0%	0%	0%	[ab] = [h] / [y]

Sources and Notes:

Bloomberg as of June 30, 2019

Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.

The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel M: P.A.M. Transport Svcs

($MM)

	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$146	$146	$130	$96	$91	$113	$123	[a]
Shares Outstanding (in millions) - Common	6	6	6	6	6	7	8	[b]
Price per Share - Common	$59	$59	$43	$19	$17	$58	$27	[c]
Market Value of Common Equity	$347	$347	$263	$124	$112	$433	$216	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$347	$347	$263	$124	$112	$433	$216	[f]= [d]
Market to Book Value of Common Equity	2.37	2.37	2.03	1.28	1.23	3.84	1.76	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[h]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[i] = [h].
MARKET VALUE OF DEBT								
Current Assets	$116	$116	$117	$96	$107	$122	$98	[j]
Current Liabilities	$107	$107	$125	$87	$95	$103	$78	[k]
Current Portion of Long-Term Debt	$59	$59	$72	$50	$42	$40	$34	[l]
Net Working Capital	$67	$67	$64	$59	$54	$59	$53	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$0	$0	$0	$0	$0	$0	$0	[n]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	$0	[o] = See Sources and Notes.
Long-Term Debt	$147	$147	$128	$102	$115	$63	$59	[p]
Book Value of Long-Term Debt	$205	$205	$200	$151	$157	$103	$93	[q] = [l] + [o] + [p].
Unadjusted Market Value of Long Term Debt	$210	$210	$171	$164	$129	$95	$110	
Carrying Amount	$211	$211	$173	$165	$129	$95	$110	
Adjustment to Book Value of Long-Term Debt	($1)	($1)	($1)	($2)	($0)	$0	($0)	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$205	$205	$198	$150	$157	$103	$93	[s] = [q] + [r].
Market Value of Debt	$205	$205	$198	$150	$157	$103	$93	[t] = [s].
MARKET VALUE OF FIRM	$552	$552	$461	$273	$268	$536	$309	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	62.91%	62.91%	57.00%	45.19%	41.59%	80.78%	69.98%	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	-	-	-	-	-	-	-	[w] = [i] / [u].
Debt - Market Value Ratio	37.09%	37.09%	43.00%	54.81%	58.41%	19.22%	30.02%	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$352	$352	$329	$248	$248	$216	$216	[y] = [a]+ [h] + [q]
Book Equity %	42%	42%	39%	39%	37%	52%	57%	[z] = [a] / [y]
Book Debt %	58%	58%	61%	61%	63%	48%	43%	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	0%	0%	0%	0%	[ab] = [h] / [y]

Sources and Notes:

Bloomberg as of June 30, 2019

Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.

The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel N: Saia Inc

($MM)

	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$718	$718	$640	$515	$454	$401	$330	[a]
Shares Outstanding (in millions) - Common	26	26	26	25	25	25	25	[b]
Price per Share - Common	$61	$61	$82	$49	$25	$40	$44	[c]
Market Value of Common Equity	$1,587	$1,587	$2,119	$1,258	$634	$1,007	$1,084	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$1,587	$1,587	$2,119	$1,258	$634	$1,007	$1,084	[f]= [d]
Market to Book Value of Common Equity	2.21	2.21	3.31	2.44	1.40	2.51	3.28	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[h]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[i] = [h].
MARKET VALUE OF DEBT								
Current Assets	$241	$241	$233	$198	$172	$194	$195	[j]
Current Liabilities	$211	$211	$206	$168	$145	$149	$153	[k]
Current Portion of Long-Term Debt	$35	$35	$17	$17	$17	$11	$7	[l]
Net Working Capital	$65	$65	$44	$47	$44	$56	$48	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$0	$0	$0	$0	$0	$0	$0	[n]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	$0	[o] = See Sources and Notes.
Long-Term Debt	$189	$189	$138	$132	$123	$97	$89	[p]
Book Value of Long-Term Debt	$224	$224	$155	$148	$139	$109	$96	[q] = [l] + [o] + [p].
Unadjusted Market Value of Long Term Debt	$102	$102	$89	$78	$59	$39	$30	
Carrying Amount	$103	$103	$90	$74	$55	$38	$29	
Adjustment to Book Value of Long-Term Debt	($1)	($1)	($1)	$4	$4	$1	$1	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$224	$224	$154	$152	$143	$109	$97	[s] = [q] + [r].
Market Value of Debt	$224	$224	$154	$152	$143	$109	$97	[t] = [s].
MARKET VALUE OF FIRM	$1,810	$1,810	$2,274	$1,410	$777	$1,116	$1,181	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	87.65%	87.65%	93.21%	89.21%	81.54%	90.20%	91.80%	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	-	-	-	-	-	-	-	[w] = [i] / [u].
Debt - Market Value Ratio	12.35%	12.35%	6.79%	10.79%	18.46%	9.80%	8.20%	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$942	$942	$795	$663	$594	$510	$426	[y] = [a]+ [h] + [q]
Book Equity %	76%	76%	81%	78%	77%	79%	78%	[z] = [a] / [y]
Book Debt %	24%	24%	19%	22%	23%	21%	22%	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	0%	0%	0%	0%	[ab] = [h] / [y]

Sources and Notes:

Bloomberg as of June 30, 2019

Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.

The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel O: Schneider National Inc

($MM)

	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$2,160	$2,160	$1,993	$1,586	n/a	n/a	n/a	[a]
Shares Outstanding (in millions) - Common	177	177	177	177	n/a	n/a	n/a	[b]
Price per Share - Common	$18	$18	$29	$21	n/a	n/a	n/a	[c]
Market Value of Common Equity	$3,167	$3,167	$5,052	$3,784	n/a	n/a	n/a	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$3,167	$3,167	$5,052	$3,784	n/a	n/a	n/a	[f]= [d]
Market to Book Value of Common Equity	1.47	1.47	2.54	2.38	n/a	n/a	n/a	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$0	$0	$0	$0	n/a	n/a	n/a	[h]
Market Value of Preferred Equity	$0	$0	$0	$0	n/a	n/a	n/a	[i] = [h]
MARKET VALUE OF DEBT								
Current Assets	$1,365	$1,365	$1,261	$1,047	n/a	n/a	n/a	[j]
Current Liabilities	$650	$650	$524	$468	n/a	n/a	n/a	[k]
Current Portion of Long-Term Debt	$105	$105	$10	$21	n/a	n/a	n/a	[l]
Net Working Capital	$820	$820	$747	$600	n/a	n/a	n/a	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$0	$0	$0	$0	n/a	n/a	n/a	[n]
Adjusted Short-Term Debt	$0	$0	$0	$0	n/a	n/a	n/a	[o] = See Sources and Notes.
Long-Term Debt	$393	$393	$415	$428	$0	$0	$0	[p]
Book Value of Long-Term Debt	$498	$498	$425	$449	n/a	n/a	n/a	[q] = [l] + [o] + [p]
Unadjusted Market Value of Long Term Debt	$398	$398	$432	$684	$0	$0	$0	
Carrying Amount	$405	$405	$430	$684	$0	$0	$0	
Adjustment to Book Value of Long-Term Debt	($7)	($7)	$3	($0)	$0	$0	$0	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$492	$492	$427	$448	n/a	n/a	n/a	[s] = [q] + [r].
Market Value of Debt	$492	$492	$427	$448	n/a	n/a	n/a	[t] = [s].
MARKET VALUE OF FIRM	$3,659	$3,659	$5,480	$4,232	n/a	n/a	n/a	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	86.56%	86.56%	92.20%	89.41%	n/a	n/a	n/a	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	-	-	-	-	n/a	n/a	n/a	[w] = [i] / [u].
Debt - Market Value Ratio	13.44%	13.44%	7.80%	10.59%	n/a	n/a	n/a	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$2,658	$2,658	$2,417	$2,035	n/a	n/a	n/a	[y] = [a]+ [h] + [q]
Book Equity %	81%	81%	82%	78%	n/a	n/a	n/a	[z] = [a] / [y]
Book Debt %	19%	19%	18%	22%	n/a	n/a	n/a	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	0%	n/a	n/a	n/a	[ab] = [h] / [y]

Sources and Notes:
Bloomberg as of June 30, 2019
Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.
The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel P: U.S. Xpress Enterprises 'A'

($MM)

	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$240	$240	$211	n/a	n/a	n/a	n/a	[a]
Shares Outstanding (in millions) - Common	49	49	48	n/a	n/a	n/a	n/a	[b]
Price per Share - Common	$5	$5	$15	n/a	n/a	n/a	n/a	[c]
Market Value of Common Equity	$254	$254	$731	n/a	n/a	n/a	n/a	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$254	$254	$731	n/a	n/a	n/a	n/a	[f]= [d]
Market to Book Value of Common Equity	1.06	1.06	3.47	n/a	n/a	n/a	n/a	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$0	$0	$0	n/a	n/a	n/a	n/a	[h]
Market Value of Preferred Equity	$0	$0	$0	n/a	n/a	n/a	n/a	[i] = [h].
MARKET VALUE OF DEBT								
Current Assets	$255	$255	$278	n/a	n/a	n/a	n/a	[j]
Current Liabilities	$296	$296	$262	n/a	n/a	n/a	n/a	[k]
Current Portion of Long-Term Debt	$152	$152	$110	n/a	n/a	n/a	n/a	[l]
Net Working Capital	$110	$110	$126	n/a	n/a	n/a	n/a	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$5	$5	$0	n/a	n/a	n/a	n/a	[n]
Adjusted Short-Term Debt	$0	$0	$0	n/a	n/a	n/a	n/a	[o] = See Sources and Notes.
Long-Term Debt	$443	$443	$281	n/a	n/a	n/a	n/a	[p]
Book Value of Long-Term Debt	$595	$595	$391	n/a	n/a	n/a	n/a	[q] = [l] + [o] + [p].
Unadjusted Market Value of Long Term Debt	$0	$0	$0	n/a	n/a	n/a	n/a	
Carrying Amount	$0	$0	$0	n/a	n/a	n/a	n/a	
Adjustment to Book Value of Long-Term Debt	$0	$0	$0	n/a	n/a	n/a	n/a	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$595	$595	$391	n/a	n/a	n/a	n/a	[s] = [q] + [r].
Market Value of Debt	$595	$595	$391	n/a	n/a	n/a	n/a	[t] = [s].
MARKET VALUE OF FIRM	$849	$849	$1,121	n/a	n/a	n/a	n/a	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	29.94%	29.94%	65.15%	n/a	n/a	n/a	n/a	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	-	-	-	n/a	n/a	n/a	n/a	[w] = [i] / [u].
Debt - Market Value Ratio	70.06%	70.06%	34.85%	n/a	n/a	n/a	n/a	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$835	$835	$601	n/a	n/a	n/a	n/a	[y] = [a]+ [h] + [q]
Book Equity %	29%	29%	35%	n/a	n/a	n/a	n/a	[z] = [a] / [y]
Book Debt %	71%	71%	65%	n/a	n/a	n/a	n/a	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	n/a	n/a	n/a	n/a	[ab] = [h] / [y]

Sources and Notes:
Bloomberg as of June 30, 2019
Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.
The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-3

Market Value of the Shipping Sample

Panel Q: Werner Enterprises

($MM)

	DCF Capital Structure	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015	2nd Quarter, 2014	Notes
MARKET VALUE OF COMMON EQUITY	DCF Capital Structure	06/30/19	06/30/18	06/30/17	06/30/16	06/30/15	06/30/14	
Book Value, Common Shareholder's Equity	$1,275	$1,275	$1,222	$1,032	$963	$878	$787	[a]
Shares Outstanding (in millions) - Common	70	70	72	72	72	72	72	[b]
Price per Share - Common	$30	$30	$39	$29	$23	$27	$26	[c]
Market Value of Common Equity	$2,105	$2,105	$2,787	$2,108	$1,671	$1,969	$1,903	[d] = [b] x [c].
Market Value of GP Equity	n/a	n/a	n/a	n/a	n/a	n/a	n/a	[e]
Total Market Value of Equity	$2,105	$2,105	$2,787	$2,108	$1,671	$1,969	$1,903	[f]= [d]
Market to Book Value of Common Equity	1.65	1.65	2.28	2.04	1.74	2.24	2.42	[g] = [f] / [a].
MARKET VALUE OF PREFERRED EQUITY								
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[h]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	$0	[i] = [h].
MARKET VALUE OF DEBT								
Current Assets	$455	$455	$414	$347	$349	$416	$391	[j]
Current Liabilities	$323	$323	$228	$199	$212	$204	$195	[k]
Current Portion of Long-Term Debt	$78	$78	$0	$0	$0	$0	$0	[l]
Net Working Capital	$211	$211	$186	$148	$137	$212	$196	[m] = [j] - ([k] - [l]).
Notes Payable (Short-Term Debt)	$0	$0	$0	$0	$0	$0	$0	[n]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	$0	[o] = See Sources and Notes.
Long-Term Debt	$55	$55	$95	$75	$145	$75	$40	[p]
Book Value of Long-Term Debt	$133	$133	$95	$75	$145	$75	$40	[q] = [l] + [o] + [p].
Unadjusted Market Value of Long Term Debt	$125	$125	$75	$180	$75	$75	$40	
Carrying Amount	$125	$125	$75	$180	$75	$75	$40	
Adjustment to Book Value of Long-Term Debt	$0	$0	$0	$0	$0	$0	$0	[r] = See Sources and Notes.
Market Value of Long-Term Debt	$133	$133	$95	$75	$145	$75	$40	[s] = [q] + [r].
Market Value of Debt	$133	$133	$95	$75	$145	$75	$40	[t] = [s].
MARKET VALUE OF FIRM	$2,239	$2,239	$2,882	$2,183	$1,816	$2,044	$1,943	[u] = [f] + [i] + [t].
DEBT AND EQUITY TO MARKET VALUE RATIOS								
Common Equity - Market Value Ratio	94.05%	94.05%	96.70%	96.56%	92.02%	96.33%	97.94%	[v] = [f] / [u].
Preferred Equity - Market Value Ratio	-	-	-	-	-	-	-	[w] = [i] / [u].
Debt - Market Value Ratio	5.95%	5.95%	3.30%	3.44%	7.98%	3.67%	2.06%	[x] = [t] / [u].
DEBT AND EQUITY TO BOOK VALUE RATIOS								
Book Value of Firm	$1,409	$1,409	$1,317	$1,107	$1,108	$953	$827	[y] = [a]+ [h] + [q]
Book Equity %	91%	91%	93%	93%	87%	92%	95%	[z] = [a] / [y]
Book Debt %	9%	9%	7%	7%	13%	8%	5%	[aa] = [q] / [y]
Book Pref %	0%	0%	0%	0%	0%	0%	0%	[ab] = [h] / [y]

Sources and Notes:

Bloomberg as of June 30, 2019

Capital structure from 2nd Quarter, 2019 calculated using respective balance sheet information and 15-day average prices ending at period end.

The DCF Capital structure is calculated using 2nd Quarter, 2019 balance sheet information and a 15-trading day average closing price ending on 6/30/2019.

Table No. BV-4a

Market Value Capital Structure Summary

Company	DCF Capital Structure			5-Year Average Capital Structure		
	Common Equity - Value Ratio [1]	Preferred Equity - Value Ratio [2]	Debt - Value Ratio [3]	Common Equity - Value Ratio [4]	Preferred Equity - Value Ratio [5]	Debt - Value Ratio [6]
Kirby Corp.	72.2%	0.0%	27.8%	82.4%	0.0%	17.6%
Matson Inc.	59.7%	0.0%	40.3%	69.0%	0.0%	31.0%
CSX Corp.	79.2%	0.0%	20.8%	75.7%	0.0%	24.3%
Kansas City South'n	80.8%	0.0%	19.1%	81.7%	0.0%	18.3%
Union Pacific	80.9%	0.0%	19.1%	83.5%	0.0%	16.5%
ArcBest Corp.	66.1%	0.0%	33.9%	75.5%	0.0%	24.5%
Covenant Transport Inc	47.7%	0.0%	52.3%	63.2%	0.0%	36.8%
Heartland Express	100.0%	0.0%	-	99.8%	0.0%	0.2%
Hub Group	80.0%	0.0%	20.0%	89.4%	0.0%	10.6%
Hunt (J.B.)	87.3%	0.0%	12.7%	91.0%	0.0%	9.0%
Landstar Sys.	97.3%	0.0%	2.7%	96.9%	0.0%	3.1%
Old Dominion Freight	99.0%	0.0%	1.0%	97.8%	0.0%	2.2%
P.A.M. Transport Svcs	62.9%	0.0%	37.1%	58.2%	0.0%	41.8%
Saia Inc	87.7%	0.0%	12.3%	88.8%	0.0%	11.2%
Schneider National Inc	86.6%	0.0%	13.4%	90.0%	0.0%	10.0%
U.S. Xpress Enterprises 'A'	29.9%	0.0%	70.1%	53.4%	0.0%	46.6%
Werner Enterprises	94.0%	0.0%	6.0%	95.5%	0.0%	4.5%
Average	77.1%	0.0%	24.3%	81.9%	0.0%	18.1%
Sub-Sample Average	74.6%	0.0%	25.4%	78.5%	0.0%	21.5%

Sources and Notes:

[1], [4]: Supporting Schedule #1 to Table No. BV-4a.

[2], [5]: Supporting Schedule #2 to Table No. BV-4a.

[3], [6]: Supporting Schedule #3 to Table No. BV-4a.

Values in this table may not add up exactly to 100% because of rounding.

Table No. BV-4b

Book Value Capital Structure Summary

Company	DCF Capital Structure			5-Year Average Capital Structure		
	Common Equity - Value Ratio [1]	Preferred Equity - Value Ratio [2]	Debt - Value Ratio [3]	Common Equity - Value Ratio [4]	Preferred Equity - Value Ratio [5]	Debt - Value Ratio [6]
Kirby Corp.	64.0%	0.0%	36.0%	73.7%	0.0%	26.3%
Matson Inc.	40.5%	0.0%	59.5%	43.4%	0.0%	56.6%
CSX Corp.	43.2%	0.0%	56.8%	50.8%	0.0%	49.2%
Kansas City South'n	62.9%	0.1%	37.1%	63.7%	0.1%	36.3%
Union Pacific	39.5%	0.0%	60.5%	54.7%	0.0%	45.3%
ArcBest Corp.	67.4%	0.0%	32.6%	73.6%	0.0%	26.4%
Covenant Transport Inc	54.1%	0.0%	45.9%	51.2%	0.0%	48.8%
Heartland Express	100.0%	0.0%	0.0%	99.1%	0.0%	0.9%
Hub Group	73.9%	0.0%	26.1%	80.4%	0.0%	19.6%
Hunt (J.B.)	61.1%	0.0%	38.9%	60.8%	0.0%	39.2%
Landstar Sys.	86.2%	0.0%	13.8%	83.4%	0.0%	16.6%
Old Dominion Freight	96.0%	0.0%	4.0%	93.1%	0.0%	6.9%
P.A.M. Transport Svcs	41.6%	0.0%	58.4%	43.3%	0.0%	56.7%
Saia Inc	76.2%	0.0%	23.8%	78.0%	0.0%	22.0%
Schneider National Inc	81.3%	0.0%	18.7%	80.4%	0.0%	19.6%
U.S. Xpress Enterprises 'A'	28.8%	0.0%	71.2%	32.9%	0.0%	67.1%
Werner Enterprises	90.5%	0.0%	9.5%	91.6%	0.0%	8.4%
Average	65.1%	0.0%	34.9%	67.9%	0.0%	32.1%
Sub-Sample Average	50.0%	0.0%	50.0%	57.2%	0.0%	42.7%

Sources and Notes:

[1], [4]: Supporting Schedule #1 to Table No. BV-4b.

[2], [5]: Supporting Schedule #2 to Table No. BV-4b.

[3], [6]: Supporting Schedule #3 to Table No. BV-4b.

Values in this table may not add up exactly to 100% because of rounding.

Supporting Schedule #1 to Table No. BV-4a

Calculation of the Average Common Equity - Market Value Ratio

Company	DCF Capital Structure [1]	2nd Quarter, 2019 [2]	2nd Quarter, 2018 [3]	2nd Quarter, 2017 [4]	2nd Quarter, 2016 [5]	2nd Quarter, 2015 [6]	2nd Quarter, 2014 [7]	5-Year Average [8]
Kirby Corp.	72.2%	72.5%	78.0%	85.9%	82.0%	84.3%	91.5%	82.4%
Matson Inc.	59.7%	59.7%	63.6%	62.8%	74.8%	77.2%	73.6%	69.0%
CSX Corp.	79.2%	79.2%	78.6%	79.4%	68.6%	74.7%	75.1%	75.7%
Kansas City South'n	80.8%	80.8%	79.7%	82.2%	79.0%	83.6%	86.8%	81.7%
Union Pacific	80.9%	80.9%	81.7%	84.0%	81.8%	85.4%	88.8%	83.5%
ArcBest Corp.	66.1%	66.1%	82.9%	66.8%	65.1%	84.3%	90.3%	75.5%
Covenant Transport Inc	47.7%	47.7%	68.8%	61.8%	64.2%	75.5%	44.1%	63.2%
Heartland Express	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	97.8%	99.8%
Hub Group	80.0%	80.0%	86.5%	88.5%	90.3%	93.0%	97.3%	89.4%
Hunt (J.B.)	87.3%	87.3%	93.1%	91.0%	90.3%	91.6%	90.8%	91.0%
Landstar Sys.	97.3%	97.3%	97.8%	96.6%	95.9%	96.9%	96.8%	96.9%
Old Dominion Freight	99.0%	99.0%	99.6%	98.7%	95.3%	97.5%	96.3%	97.8%
P.A.M. Transport Svcs	62.9%	62.9%	57.0%	45.2%	41.6%	80.8%	70.0%	58.2%
Saia Inc	87.7%	87.7%	93.2%	89.2%	81.5%	90.2%	91.8%	88.8%
Schneider National Inc	86.6%	86.6%	92.2%	89.4%	n/a	n/a	n/a	90.0%
U.S. Xpress Enterprises 'A'	29.9%	29.9%	65.2%	n/a	n/a	n/a	n/a	53.4%
Werner Enterprises	94.0%	94.0%	96.7%	96.6%	92.0%	96.3%	97.9%	95.5%

Sources and Notes:

[1] - [7]: Table No. BV-3; Panels A - Q, [v].

[8]: Average of [2] - [7] with 1/2 weighting to 2Q2019 and 2Q2014 for the purposes of calculating average capital structure during the period.

[1]: Reflects the current capital structure.

Supporting Schedule #2 to Table No. BV-4a

Calculation of the Average Preferred Equity - Market Value Ratio

Company	DCF Capital Structure [1]	2nd Quarter, 2019 [2]	2nd Quarter, 2018 [3]	2nd Quarter, 2017 [4]	2nd Quarter, 2016 [5]	2nd Quarter, 2015 [6]	2nd Quarter, 2014 [7]	5-Year Average [8]
Kirby Corp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Matson Inc.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CSX Corp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Kansas City South'n	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Union Pacific	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
ArcBest Corp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Covenant Transport Inc	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Heartland Express	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hub Group	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hunt (J.B.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Landstar Sys.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Old Dominion Freight	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
P.A.M. Transport Svcs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Saia Inc	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Schneider National Inc	0.0%	0.0%	0.0%	0.0%	n/a	n/a	n/a	0.0%
U.S. Xpress Enterprises 'A'	0.0%	0.0%	0.0%	n/a	n/a	n/a	n/a	0.0%
Werner Enterprises	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Sources and Notes:

[1] - [7]: Table No. BV-3; Panels A - Q, [w].

[8]: Average of [2] - [7] with 1/2 weighting to 2Q2019 and 2Q2014 for the purposes of calculating average capital structure during the period.

[1]: Reflects the current capital structure.

Supporting Schedule #3 to Table No. BV-4a

Calculation of the Average Debt - Market Value Ratio

Company	DCF Capital Structure [1]	2nd Quarter, 2019 [2]	2nd Quarter, 2018 [3]	2nd Quarter, 2017 [4]	2nd Quarter, 2016 [5]	2nd Quarter, 2015 [6]	2nd Quarter, 2014 [7]	5-Year Average [8]
Kirby Corp.	27.8%	27.5%	22.0%	14.1%	18.0%	15.7%	8.5%	17.6%
Matson Inc.	40.3%	40.3%	36.4%	37.2%	25.2%	22.8%	26.4%	31.0%
CSX Corp.	20.8%	20.8%	21.4%	20.6%	31.4%	25.3%	24.9%	24.3%
Kansas City South'n	19.1%	19.1%	20.3%	17.8%	20.9%	16.4%	13.1%	18.3%
Union Pacific	19.1%	19.1%	18.3%	16.0%	18.2%	14.6%	11.2%	16.5%
ArcBest Corp.	33.9%	33.9%	17.1%	33.2%	34.9%	15.7%	9.7%	24.5%
Covenant Transport Inc	52.3%	52.3%	31.2%	38.2%	35.8%	24.5%	55.9%	36.8%
Heartland Express	-	-	-	-	-	-	2.2%	0.2%
Hub Group	20.0%	20.0%	13.5%	11.5%	9.7%	7.0%	2.7%	10.6%
Hunt (J.B.)	12.7%	12.7%	6.9%	9.0%	9.7%	8.4%	9.2%	9.0%
Landstar Sys.	2.7%	2.7%	2.2%	3.4%	4.1%	3.1%	3.2%	3.1%
Old Dominion Freight	1.0%	1.0%	0.4%	1.3%	4.7%	2.5%	3.7%	2.2%
P.A.M. Transport Svcs	37.1%	37.1%	43.0%	54.8%	58.4%	19.2%	30.0%	41.8%
Saia Inc	12.3%	12.3%	6.8%	10.8%	18.5%	9.8%	8.2%	11.2%
Schneider National Inc	13.4%	13.4%	7.8%	10.6%	n/a	n/a	n/a	10.0%
U.S. Xpress Enterprises 'A'	70.1%	70.1%	34.8%	n/a	n/a	n/a	n/a	46.6%
Werner Enterprises	6.0%	6.0%	3.3%	3.4%	8.0%	3.7%	2.1%	4.5%

Sources and Notes:

[1] - [7]: Table No. BV-3; Panels A - Q, [x].

[8]: Average of [2] - [7] with 1/2 weighting to 2Q2019 and 2Q2014 for the purposes of calculating average capital structure during the period.

[1]: Reflects the current capital structure.

Supporting Schedule #1 to Table No. BV-4b

Calculation of the Average Common Equity - Book Value Ratio

Company	DCF Capital Structure [1]	2nd Quarter, 2019 [2]	2nd Quarter, 2018 [3]	2nd Quarter, 2017 [4]	2nd Quarter, 2016 [5]	2nd Quarter, 2015 [6]	2nd Quarter, 2014 [7]	5-Year Average [8]
Kirby Corp.	64.0%	64.4%	68.8%	80.7%	74.6%	73.5%	76.9%	73.7%
Matson Inc.	40.5%	40.5%	42.9%	38.7%	48.4%	42.8%	47.4%	43.4%
CSX Corp.	43.2%	43.2%	50.4%	49.5%	52.4%	53.3%	53.9%	50.8%
Kansas City South'n	62.9%	62.9%	63.4%	64.0%	61.0%	65.9%	65.2%	63.7%
Union Pacific	39.5%	39.5%	46.6%	55.4%	57.4%	61.1%	66.4%	54.7%
ArcBest Corp.	67.4%	67.4%	72.8%	70.1%	72.1%	78.3%	81.7%	73.6%
Covenant Transport Inc	54.1%	54.1%	53.9%	53.4%	51.6%	54.5%	30.8%	51.2%
Heartland Express	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	91.0%	99.1%
Hub Group	73.9%	73.9%	74.7%	79.7%	80.6%	84.1%	92.1%	80.4%
Hunt (J.B.)	61.1%	61.1%	66.9%	59.9%	59.0%	60.0%	55.3%	60.8%
Landstar Sys.	86.2%	86.2%	86.4%	82.0%	80.7%	83.4%	83.2%	83.4%
Old Dominion Freight	96.0%	96.0%	98.2%	95.5%	88.9%	91.6%	87.1%	93.1%
P.A.M. Transport Svcs	41.6%	41.6%	39.4%	38.9%	36.6%	52.3%	57.0%	43.3%
Saia Inc	76.2%	76.2%	80.5%	77.6%	76.5%	78.7%	77.5%	78.0%
Schneider National Inc	81.3%	81.3%	82.4%	78.0%	n/a	n/a	n/a	80.4%
U.S. Xpress Enterprises 'A'	28.8%	28.8%	35.0%	n/a	n/a	n/a	n/a	32.9%
Werner Enterprises	90.5%	90.5%	92.8%	93.2%	86.9%	92.1%	95.2%	91.6%

Sources and Notes:

[1] - [7]: Table No. BV-3; Panels A - Q, [z].

[8]: Average of [2] - [7] with 1/2 weighting to 2Q2019 and 2Q2014 for the purposes of calculating average capital structure during the period.

[1]: Reflects the current capital structure.

Supporting Schedule #2 to Table No. BV-4b

Calculation of the Average Preferred Equity - Book Value Ratio

Company	DCF Capital Structure [1]	2nd Quarter, 2019 [2]	2nd Quarter, 2018 [3]	2nd Quarter, 2017 [4]	2nd Quarter, 2016 [5]	2nd Quarter, 2015 [6]	2nd Quarter, 2014 [7]	5-Year Average [8]
Kirby Corp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Matson Inc.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CSX Corp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Kansas City South'n	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Union Pacific	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
ArcBest Corp.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Covenant Transport Inc	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Heartland Express	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hub Group	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hunt (J.B.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Landstar Sys.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Old Dominion Freight	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
P.A.M. Transport Svcs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Saia Inc	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Schneider National Inc	0.0%	0.0%	0.0%	0.0%	n/a	n/a	n/a	0.0%
U.S. Xpress Enterprises 'A'	0.0%	0.0%	0.0%	n/a	n/a	n/a	n/a	0.0%
Werner Enterprises	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Sources and Notes:

[1] - [7]: Table No. BV-3; Panels A - Q, [ab].

[8]: Average of [2] - [7] with 1/2 weighting to 2Q2019 and 2Q2014 for the purposes of calculating average capital structure during the period.

[1]: Reflects the current capital structure.

Supporting Schedule #3 to Table No. BV-4b

Calculation of the Average Debt - Market Value Ratio

Company	DCF Capital Structure [1]	2nd Quarter, 2019 [2]	2nd Quarter, 2018 [3]	2nd Quarter, 2017 [4]	2nd Quarter, 2016 [5]	2nd Quarter, 2015 [6]	2nd Quarter, 2014 [7]	5-Year Average [8]
Kirby Corp.	36.0%	35.6%	31.2%	19.3%	25.4%	26.5%	23.1%	26.3%
Matson Inc.	59.5%	59.5%	57.1%	61.3%	51.6%	57.2%	52.6%	56.6%
CSX Corp.	56.8%	56.8%	49.6%	50.5%	47.6%	46.7%	46.1%	49.2%
Kansas City South'n	37.1%	37.1%	36.5%	36.0%	38.9%	34.0%	34.7%	36.3%
Union Pacific	60.5%	60.5%	53.4%	44.6%	42.6%	38.9%	33.6%	45.3%
ArcBest Corp.	32.6%	32.6%	27.2%	29.9%	27.9%	21.7%	18.3%	26.4%
Covenant Transport Inc	45.9%	45.9%	46.1%	46.6%	48.4%	45.5%	69.2%	48.8%
Heartland Express	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.0%	0.9%
Hub Group	26.1%	26.1%	25.3%	20.3%	19.4%	15.9%	7.9%	19.6%
Hunt (J.B.)	38.9%	38.9%	33.1%	40.1%	41.0%	40.0%	44.7%	39.2%
Landstar Sys.	13.8%	13.8%	13.6%	18.0%	19.3%	16.6%	16.8%	16.6%
Old Dominion Freight	4.0%	4.0%	1.8%	4.5%	11.1%	8.4%	12.9%	6.9%
P.A.M. Transport Svcs	58.4%	58.4%	60.6%	61.1%	63.4%	47.7%	43.0%	56.7%
Saia Inc	23.8%	23.8%	19.5%	22.4%	23.5%	21.3%	22.5%	22.0%
Schneider National Inc	18.7%	18.7%	17.6%	22.0%	n/a	n/a	n/a	19.6%
U.S. Xpress Enterprises 'A'	71.2%	71.2%	65.0%	n/a	n/a	n/a	n/a	67.1%
Werner Enterprises	9.5%	9.5%	7.2%	6.8%	13.1%	7.9%	4.8%	8.4%

Sources and Notes:

[1] - [7]: Table No. BV-3; Panels A - Q, [aa].

[8]: Average of [2] - [7] with 1/2 weighting to 2Q2019 and 2Q2014 for the purposes of calculating average capital structure during the period.

[1]: Reflects the current capital structure.

Table No. BV-5

Estimated Growth Rates

Company	ThomsonOne IBES Estimate		Value Line			Combined Growth Rate
	Long-Term Growth Rate	Number of Estimates	EPS Year 2019 Estimate	EPS Year 2022-2024 Estimate	Annualized Growth Rate	
	[1]	[2]	[3]	[4]	[5]	[6]
Kirby Corp.	16.7%	1	$3.45	$5.70	13.4%	15.0%
Matson Inc.	15.0%	1	$2.35	$3.65	11.6%	13.3%
CSX Corp.	11.3%	5	$4.40	$5.95	7.8%	10.7%
Kansas City South'n	13.6%	2	$6.90	$10.30	10.5%	12.6%
Union Pacific	13.1%	4	$9.00	$13.95	11.6%	12.8%
ArcBest Corp.	4.6%	1	$3.65	$5.00	8.2%	6.4%
Covenant Transport Inc	n/a	n/a	$0.00	$0.00	n/a	n/a
Heartland Express	27.1%	1	$1.00	$1.50	10.7%	18.9%
Hub Group	n/a	n/a	$3.30	$4.60	8.7%	8.7%
Hunt (J.B.)	11.6%	5	$5.75	$7.70	7.6%	11.0%
Landstar Sys.	3.7%	1	$0.00	$0.00	n/a	3.7%
Old Dominion Freight	8.2%	3	$7.90	$8.80	2.7%	6.8%
P.A.M. Transport Svcs	n/a	n/a	$0.00	$0.00	n/a	n/a
Saia Inc	13.9%	1	$0.00	$0.00	n/a	13.9%
Schneider National Inc	8.0%	2	$0.00	$0.00	n/a	8.0%
U.S. Xpress Enterprises 'A'	17.8%	1	$0.00	$0.00	n/a	17.8%
Werner Enterprises	4.6%	1	$2.65	$3.75	9.1%	6.8%
Average	12.1%				9.3%	11.1%
Sub-Sample Average	12.9%				11.0%	12.9%

Sources and Notes:

[1] - [2]: Updated from Thomson Reuters as of June 30, 2019.

[3] - [4]: From Value Line Investment Analyzer as of June 30, 2019.

[5]: ([4]/[3])^(1/4) - 1, where 4 is the number of years between 2023, the middle year of Value Line's 3-5 year forecast, and Value Line's 2018 EPS estimate.

[6]: Weighted average growth rate. If information is missing from one source, then the combined growth rate is based solely on the other source.

Table No. BV-6

DCF Cost of Equity of the Shipping Sample

Panel A: Simple DCF Method

Company	Stock Price [1]	Most Recent Dividend [2]	Quarterly Dividend Yield (t+1) [3]	Combined Long-Term Growth Rate [4]	Quarterly Growth Rate [5]	DCF Cost of Equity [6]
Kirby Corp.	$79.64	n/a	n/a	15.0%	3.6%	n/a
Matson Inc.	$37.36	$0.21	0.58%	13.3%	3.2%	15.9%
CSX Corp.	$77.56	$0.24	0.32%	10.7%	2.6%	12.1%
Kansas City South'n	$118.28	$0.36	0.31%	12.6%	3.0%	13.9%
Union Pacific	$167.72	$0.88	0.54%	12.8%	3.0%	15.2%
ArcBest Corp.	$26.65	$0.08	0.30%	6.4%	1.6%	7.7%
Covenant Transport Inc	$14.58	n/a	n/a	n/a	n/a	n/a
Heartland Express	$18.29	$0.02	0.11%	18.9%	4.4%	19.4%
Hub Group	$40.91	n/a	n/a	8.7%	2.1%	n/a
Hunt (J.B.)	$89.33	$0.26	0.30%	11.0%	2.6%	12.3%
Landstar Sys.	$103.55	$0.17	0.16%	3.7%	0.9%	4.4%
Old Dominion Freight	$142.88	$0.17	0.12%	6.8%	1.7%	7.3%
P.A.M. Transport Svcs	$58.65	n/a	n/a	n/a	n/a	n/a
Saia Inc	$61.28	n/a	n/a	13.9%	3.3%	n/a
Schneider National Inc	$17.88	$0.06	0.34%	8.0%	1.9%	9.4%
U.S. Xpress Enterprises 'A'	$5.23	n/a	n/a	17.8%	4.2%	n/a
Werner Enterprises	$30.12	$0.09	0.30%	6.8%	1.7%	8.1%
Average		$0.23	0.3%			11.4%
Sub-Sample Average		$0.42	0.4%			14.3%

Sources and Notes:
[1]: Supporting Schedule #1 to Table No. BV-6.
[2]: Supporting Schedule #2 to Table No. BV-6.
[3]: ([2] / [1]) x (1 + [5]).
[4]: Table No. BV-5, [6].
[5]: {(1 + [4]) ^ (1/4)} - 1.
[6]: {([3] + [5] + 1) ^ 4} - 1.

Table No. BV-6

DCF Cost of Equity of the Shipping Sample

Panel B: Multi-Stage DCF (Using Blue Chip Economic Indicators, March 2019 GDP Growth Forecast as the Perpetual Rate)

Company	Stock Price	Most Recent Dividend	Combined Long-Term Growth Rate	Growth Rate: Year 6	Growth Rate: Year 7	Growth Rate: Year 8	Growth Rate: Year 9	Growth Rate: Year 10	GDP Long-Term Growth Rate	DCF Cost of Equity
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Kirby Corp.	$79.64	n/a	15.04%	13.20%	11.36%	9.52%	7.68%	5.84%	4.00%	n/a
Matson Inc.	$37.36	$0.21	13.32%	11.77%	10.21%	8.66%	7.11%	5.55%	4.00%	8.2%
CSX Corp.	$77.56	$0.24	10.71%	9.59%	8.47%	7.36%	6.24%	5.12%	4.00%	6.0%
Kansas City South'n	$118.28	$0.36	12.56%	11.14%	9.71%	8.28%	6.85%	5.43%	4.00%	6.2%
Union Pacific	$167.72	$0.88	12.77%	11.31%	9.85%	8.38%	6.92%	5.46%	4.00%	7.8%
ArcBest Corp.	$26.65	$0.08	6.41%	6.01%	5.61%	5.20%	4.80%	4.40%	4.00%	5.5%
Covenant Transport Inc	$14.58	n/a	n/a	n/a	n/a	n/a	n/a	n/a	4.00%	n/a
Heartland Express	$18.29	$0.02	18.89%	16.41%	13.93%	11.44%	8.96%	6.48%	4.00%	5.2%
Hub Group	$40.91	n/a	8.66%	7.88%	7.11%	6.33%	5.55%	4.78%	4.00%	n/a
Hunt (J.B.)	$89.33	$0.26	10.96%	9.80%	8.64%	7.48%	6.32%	5.16%	4.00%	5.9%
Landstar Sys.	$103.55	$0.17	3.75%	3.79%	3.83%	3.87%	3.92%	3.96%	4.00%	4.7%
Old Dominion Freight	$142.88	$0.17	6.80%	6.33%	5.87%	5.40%	4.93%	4.47%	4.00%	4.6%
P.A.M. Transport Svcs	$58.65	n/a	n/a	n/a	n/a	n/a	n/a	n/a	4.00%	n/a
Saia Inc	$61.28	n/a	13.86%	12.22%	10.57%	8.93%	7.29%	5.64%	4.00%	n/a
Schneider National Inc	$17.88	$0.06	7.99%	7.33%	6.66%	6.00%	5.33%	4.67%	4.00%	5.8%
U.S. Xpress Enterprises 'A'	$5.23	n/a	17.80%	15.50%	13.20%	10.90%	8.60%	6.30%	4.00%	n/a
Werner Enterprises	$30.12	$0.09	6.83%	6.36%	5.89%	5.42%	4.94%	4.47%	4.00%	5.5%
Average										6.0%
Sub-Sample Average										7.1%

Sources and Notes:

[1]: Supporting Schedule #1 to Table No. BV-6.

[2]: Supporting Schedule #2 to Table No. BV-6.

[3]: Table No. BV-5, [6].

[4]: [3] - {([3] - [9])/ 6}.

[5]: [4] - {([3] - [9])/ 6}.

[6]: [5] - {([3] - [9])/ 6}.

[7]: [6] - {([3] - [9])/ 6}.

[8]: [7] - {([3] - [9])/ 6}.

[9]: Blue Chip Economic Indicators, March 2019. This number is assumed to be the perpetual growth rate.

[10]: Supporting Schedule #3 to Table No. BV-6.

Supporting Schedule #1 to Table No. BV-6

Common Stock Prices from June 10, 2019 to June 28, 2019

Company	6/28/2019	6/27/2019	6/26/2019	6/25/2019	6/24/2019	6/21/2019	6/20/2019	6/19/2019	6/18/2019	6/17/2019	6/14/2019	6/13/2019	6/12/2019	6/11/2019	6/10/2019	Average
Kirby Corp.	$79.00	$77.90	$77.14	$75.85	$76.94	$80.18	$82.31	$81.93	$81.35	$79.22	$79.32	$80.53	$79.36	$81.45	$82.15	$79.64
Matson Inc.	$38.85	$38.67	$37.53	$36.97	$36.34	$37.04	$37.68	$37.59	$38.29	$37.58	$36.60	$37.48	$36.63	$36.38	$36.78	$37.36
CSX Corp.	$77.37	$76.45	$76.18	$76.09	$77.52	$78.67	$79.05	$77.39	$77.74	$76.70	$77.17	$77.64	$78.23	$78.60	$78.67	$77.56
Kansas City South'n	$121.82	$120.77	$118.53	$117.86	$117.88	$119.50	$118.04	$117.36	$116.45	$114.44	$116.91	$116.98	$118.47	$119.19	$120.01	$118.28
Union Pacific	$169.11	$166.01	$165.83	$166.36	$167.25	$168.87	$167.43	$165.93	$165.54	$164.74	$166.99	$167.15	$171.23	$171.01	$172.39	$167.72
ArcBest Corp.	$28.11	$26.91	$26.23	$25.34	$26.31	$26.82	$26.76	$26.35	$26.79	$26.38	$26.84	$27.38	$26.71	$26.54	$26.23	$26.65
Covenant Transport Inc	$14.71	$14.04	$13.31	$13.29	$13.47	$13.71	$14.25	$14.61	$14.97	$15.05	$15.32	$15.67	$15.21	$15.39	$15.73	$14.58
Heartland Express	$18.07	$18.14	$17.88	$17.59	$17.38	$17.61	$18.24	$18.13	$18.27	$18.65	$19.08	$19.10	$18.76	$18.73	$18.65	$18.29
Hub Group	$41.98	$41.24	$40.14	$39.33	$39.43	$40.70	$41.94	$41.28	$41.11	$40.75	$41.75	$42.07	$41.19	$40.19	$40.54	$40.91
Hunt (J.B.)	$91.41	$89.69	$88.35	$87.81	$87.33	$88.91	$90.87	$89.50	$89.88	$90.07	$90.85	$90.06	$88.71	$87.91	$88.64	$89.33
Landstar Sys.	$107.99	$105.27	$102.82	$102.48	$102.94	$104.44	$105.41	$104.19	$103.13	$101.24	$104.25	$104.83	$102.62	$101.65	$99.98	$103.55
Old Dominion Freight	$149.26	$147.26	$143.51	$142.06	$142.52	$145.97	$145.58	$142.03	$140.83	$138.88	$142.04	$141.49	$142.00	$140.74	$139.07	$142.88
P.A.M. Transport Svcs	$62.00	$58.60	$58.00	$57.50	$57.53	$57.50	$58.56	$58.50	$58.41	$62.00	$59.57	$59.57	$58.37	$57.14	$56.49	$58.65
Saia Inc	$64.67	$62.68	$60.15	$59.20	$59.75	$61.38	$62.82	$61.27	$61.68	$60.79	$62.20	$61.80	$60.72	$59.63	$60.48	$61.28
Schneider National Inc	$18.24	$17.99	$17.57	$17.12	$17.37	$18.04	$18.17	$17.90	$17.89	$17.61	$18.11	$18.43	$18.21	$17.96	$17.66	$17.88
U.S. Xpress Enterprises 'A'	$5.14	$5.04	$4.97	$4.96	$4.94	$5.14	$5.13	$5.17	$5.47	$5.30	$5.45	$5.58	$5.41	$5.39	$5.43	$5.23
Werner Enterprises	$31.08	$30.85	$29.93	$29.49	$29.41	$30.16	$30.44	$30.18	$30.26	$30.09	$30.54	$30.45	$29.96	$29.48	$29.55	$30.12

Sources and Notes:

Bloomberg as of June 30, 2019.

Daily prices for the 15-trading day period ending June 30, 2019.

Supporting Schedule #2 to Table No. BV-6

Most Recent Dividends

Company	Ex Dividend Date	Most Recent Dividend
Kirby Corp.	7/26/1990	n/a
Matson Inc.	5/8/2019	$0.21
CSX Corp.	5/30/2019	$0.24
Kansas City South'n	6/7/2019	$0.36
Union Pacific	5/30/2019	$0.88
ArcBest Corp.	5/13/2019	$0.08
Covenant Transport Inc	1/0/1900	n/a
Heartland Express	6/20/2019	$0.02
Hub Group	1/0/1900	n/a
Hunt (J.B.)	5/2/2019	$0.26
Landstar Sys.	5/8/2019	$0.17
Old Dominion Freight	6/4/2019	$0.17
P.A.M. Transport Svcs	12/13/2012	n/a
Saia Inc	1/0/1900	n/a
Schneider National Inc	6/13/2019	$0.06
U.S. Xpress Enterprises 'A'	1/0/1900	n/a
Werner Enterprises	6/28/2019	$0.09

Sources and Notes:
Bloomberg as of June 30, 2019.

Supporting Schedule #3 to Table No. BV-6

DCF Cost of Equity of the Shipping Sample

Multi-Stage DCF (using Blue Chip Economic Indicators, March 2019 GDP Growth Forecast as the Perpetual Growth Rate)

Year	Company	Kirby Corp.	Matson Inc.	CSX Corp.	Kansas City South'n	Union Pacific	ArcBest Corp.	Covenant Transport Inc	Heartland Express	Hub Group	Hunt (J.B.)	Landstar Sys.	Old Dominion Freight	Transport Svcs	Saia Inc	Schneider National Inc	U.S. Xpress Enterprises 'A'	Werner Enterprises
	Current Dividend	n/a	$0.21	$0.24	$0.36	$0.88	$0.08	n/a	$0.02	n/a	$0.26	$0.17	$0.17	n/a	n/a	$0.06	n/a	$0.09
	Current Stock Price	($79.64)	($37.36)	($77.56)	($118.28)	($167.72)	($26.65)	($14.58)	($18.29)	($40.91)	($89.33)	($103.55)	($142.88)	($58.65)	($61.28)	($17.88)	($5.23)	($30.12)
YEAR 2019	Dividend Q3 Estimate	n/a	$0.22	$0.25	$0.37	$0.91	$0.08	n/a	$0.02	n/a	$0.27	$0.17	$0.17	n/a	n/a	$0.06	n/a	$0.09
YEAR 2019	Dividend Q4 Estimate	n/a	$0.22	$0.25	$0.38	$0.93	$0.08	n/a	$0.02	n/a	$0.27	$0.17	$0.18	n/a	n/a	$0.06	n/a	$0.09
YEAR 2020	Dividend Q1 Estimate	n/a	$0.23	$0.26	$0.39	$0.96	$0.08	n/a	$0.02	n/a	$0.28	$0.17	$0.18	n/a	n/a	$0.06	n/a	$0.09
YEAR 2020	Dividend Q2 Estimate	n/a	$0.24	$0.27	$0.41	$0.99	$0.09	n/a	$0.02	n/a	$0.29	$0.17	$0.18	n/a	n/a	$0.06	n/a	$0.10
YEAR 2020	Dividend Q3 Estimate	n/a	$0.25	$0.27	$0.42	$1.02	$0.09	n/a	$0.02	n/a	$0.30	$0.17	$0.18	n/a	n/a	$0.07	n/a	$0.10
YEAR 2020	Dividend Q4 Estimate	n/a	$0.25	$0.28	$0.43	$1.05	$0.09	n/a	$0.03	n/a	$0.30	$0.17	$0.19	n/a	n/a	$0.07	n/a	$0.10
YEAR 2021	Dividend Q1 Estimate	n/a	$0.26	$0.29	$0.44	$1.09	$0.09	n/a	$0.03	n/a	$0.31	$0.18	$0.19	n/a	n/a	$0.07	n/a	$0.10
YEAR 2021	Dividend Q2 Estimate	n/a	$0.27	$0.29	$0.46	$1.12	$0.09	n/a	$0.03	n/a	$0.32	$0.18	$0.19	n/a	n/a	$0.07	n/a	$0.10
YEAR 2021	Dividend Q3 Estimate	n/a	$0.28	$0.30	$0.47	$1.15	$0.09	n/a	$0.03	n/a	$0.33	$0.18	$0.20	n/a	n/a	$0.07	n/a	$0.10
YEAR 2021	Dividend Q4 Estimate	n/a	$0.29	$0.31	$0.48	$1.19	$0.09	n/a	$0.03	n/a	$0.34	$0.18	$0.20	n/a	n/a	$0.07	n/a	$0.11
YEAR 2022	Dividend Q1 Estimate	n/a	$0.30	$0.32	$0.50	$1.22	$0.09	n/a	$0.03	n/a	$0.35	$0.18	$0.20	n/a	n/a	$0.07	n/a	$0.11
YEAR 2022	Dividend Q2 Estimate	n/a	$0.31	$0.33	$0.51	$1.26	$0.10	n/a	$0.03	n/a	$0.36	$0.18	$0.21	n/a	n/a	$0.08	n/a	$0.11
YEAR 2022	Dividend Q3 Estimate	n/a	$0.32	$0.33	$0.53	$1.30	$0.10	n/a	$0.04	n/a	$0.36	$0.19	$0.21	n/a	n/a	$0.08	n/a	$0.11
YEAR 2022	Dividend Q4 Estimate	n/a	$0.33	$0.34	$0.54	$1.34	$0.10	n/a	$0.04	n/a	$0.37	$0.19	$0.21	n/a	n/a	$0.08	n/a	$0.11
YEAR 2023	Dividend Q1 Estimate	n/a	$0.34	$0.35	$0.56	$1.38	$0.10	n/a	$0.04	n/a	$0.38	$0.19	$0.22	n/a	n/a	$0.08	n/a	$0.12
YEAR 2023	Dividend Q2 Estimate	n/a	$0.35	$0.36	$0.58	$1.42	$0.10	n/a	$0.04	n/a	$0.39	$0.19	$0.22	n/a	n/a	$0.08	n/a	$0.12
YEAR 2023	Dividend Q3 Estimate	n/a	$0.36	$0.37	$0.60	$1.47	$0.10	n/a	$0.04	n/a	$0.40	$0.19	$0.22	n/a	n/a	$0.08	n/a	$0.12
YEAR 2023	Dividend Q4 Estimate	n/a	$0.37	$0.38	$0.61	$1.51	$0.11	n/a	$0.04	n/a	$0.42	$0.19	$0.23	n/a	n/a	$0.08	n/a	$0.12
YEAR 2024	Dividend Q1 Estimate	n/a	$0.38	$0.39	$0.63	$1.56	$0.11	n/a	$0.05	n/a	$0.43	$0.20	$0.23	n/a	n/a	$0.09	n/a	$0.12
YEAR 2024	Dividend Q2 Estimate	n/a	$0.39	$0.40	$0.65	$1.60	$0.11	n/a	$0.05	n/a	$0.44	$0.20	$0.24	n/a	n/a	$0.09	n/a	$0.13
YEAR 2024	Dividend Q3 Estimate	n/a	$0.40	$0.41	$0.67	$1.65	$0.11	n/a	$0.05	n/a	$0.45	$0.20	$0.24	n/a	n/a	$0.09	n/a	$0.13
YEAR 2024	Dividend Q4 Estimate	n/a	$0.41	$0.42	$0.69	$1.69	$0.11	n/a	$0.05	n/a	$0.46	$0.20	$0.24	n/a	n/a	$0.09	n/a	$0.13
YEAR 2025	Dividend Q1 Estimate	n/a	$0.43	$0.43	$0.70	$1.74	$0.11	n/a	$0.05	n/a	$0.47	$0.20	$0.25	n/a	n/a	$0.09	n/a	$0.13
YEAR 2025	Dividend Q2 Estimate	n/a	$0.44	$0.44	$0.72	$1.79	$0.12	n/a	$0.06	n/a	$0.48	$0.21	$0.25	n/a	n/a	$0.09	n/a	$0.13
YEAR 2025	Dividend Q3 Estimate	n/a	$0.45	$0.45	$0.74	$1.83	$0.12	n/a	$0.06	n/a	$0.49	$0.21	$0.25	n/a	n/a	$0.10	n/a	$0.14

Supporting Schedule #3 to Table No. BV-6

DCF Cost of Equity of the Shipping Sample

Multi-Stage DCF (using Blue Chip Economic Indicators, March 2019 GDP Growth Forecast as the Perpetual Growth Rate)

Year	Company	Kirby Corp.	Matson Inc.	CSX Corp.	Kansas City South'n	Union Pacific	ArcBest Corp.	Covenant Transport Inc	Heartland Express	Hub Group	Hunt (J.B.)	Landstar Sys.	Old Dominion Freight	Transport Svcs	Saia Inc	Schneider National Inc	U.S. Xpress Enterprises 'A'	Werner Enterprises
YEAR 2025	Dividend Q4 Estimate	n/a	$0.46	$0.46	$0.76	$1.87	$0.12	n/a	$0.06	n/a	$0.50	$0.21	$0.26	n/a	n/a	$0.10	n/a	$0.14
YEAR 2026	Dividend Q1 Estimate	n/a	$0.47	$0.47	$0.78	$1.92	$0.12	n/a	$0.06	n/a	$0.51	$0.21	$0.26	n/a	n/a	$0.10	n/a	$0.14
YEAR 2026	Dividend Q2 Estimate	n/a	$0.48	$0.47	$0.79	$1.96	$0.12	n/a	$0.06	n/a	$0.52	$0.21	$0.27	n/a	n/a	$0.10	n/a	$0.14
YEAR 2026	Dividend Q3 Estimate	n/a	$0.49	$0.48	$0.81	$2.00	$0.12	n/a	$0.06	n/a	$0.53	$0.22	$0.27	n/a	n/a	$0.10	n/a	$0.14
YEAR 2026	Dividend Q4 Estimate	n/a	$0.50	$0.49	$0.83	$2.04	$0.13	n/a	$0.07	n/a	$0.54	$0.22	$0.27	n/a	n/a	$0.10	n/a	$0.14
YEAR 2027	Dividend Q1 Estimate	n/a	$0.51	$0.50	$0.84	$2.08	$0.13	n/a	$0.07	n/a	$0.55	$0.22	$0.28	n/a	n/a	$0.11	n/a	$0.15
YEAR 2027	Dividend Q2 Estimate	n/a	$0.53	$0.51	$0.86	$2.13	$0.13	n/a	$0.07	n/a	$0.56	$0.22	$0.28	n/a	n/a	$0.11	n/a	$0.15
YEAR 2027	Dividend Q3 Estimate	n/a	$0.53	$0.52	$0.87	$2.16	$0.13	n/a	$0.07	n/a	$0.57	$0.22	$0.28	n/a	n/a	$0.11	n/a	$0.15
YEAR 2027	Dividend Q4 Estimate	n/a	$0.54	$0.53	$0.89	$2.20	$0.13	n/a	$0.07	n/a	$0.58	$0.23	$0.29	n/a	n/a	$0.11	n/a	$0.15
YEAR 2028	Dividend Q1 Estimate	n/a	$0.55	$0.53	$0.90	$2.24	$0.13	n/a	$0.07	n/a	$0.59	$0.23	$0.29	n/a	n/a	$0.11	n/a	$0.15
YEAR 2028	Dividend Q2 Estimate	n/a	$0.56	$0.54	$0.92	$2.27	$0.13	n/a	$0.08	n/a	$0.60	$0.23	$0.29	n/a	n/a	$0.11	n/a	$0.16
YEAR 2028	Dividend Q3 Estimate	n/a	$0.57	$0.55	$0.93	$2.30	$0.14	n/a	$0.08	n/a	$0.60	$0.23	$0.30	n/a	n/a	$0.11	n/a	$0.16
YEAR 2028	Dividend Q4 Estimate	n/a	$0.58	$0.55	$0.94	$2.34	$0.14	n/a	$0.08	n/a	$0.61	$0.24	$0.30	n/a	n/a	$0.12	n/a	$0.16
YEAR 2029	Dividend Q1 Estimate	n/a	$0.59	$0.56	$0.95	$2.37	$0.14	n/a	$0.08	n/a	$0.62	$0.24	$0.30	n/a	n/a	$0.12	n/a	$0.16
YEAR 2029	Dividend Q2 Estimate	n/a	$0.59	$0.57	$0.97	$2.40	$0.14	n/a	$0.08	n/a	$0.63	$0.24	$0.31	n/a	n/a	$0.12	n/a	$0.16
YEAR 2029 Q3	Year 10 Stock Price	n/a	$60.82	$119.92	$184.81	$270.15	$40.31	n/a	$28.34	n/a	$138.05	$154.96	$214.77	n/a	n/a	$27.30	n/a	$45.65
	Trial COE: Quarterly Rate	1.8%	2.0%	1.5%	1.5%	1.9%	1.3%	1.9%	1.3%	1.8%	1.5%	1.1%	1.1%	2.1%	1.9%	1.4%	2.3%	1.4%
	Trial COE: Annual Rate	7.4%	8.2%	6.0%	6.2%	7.8%	5.5%	7.9%	5.2%	7.4%	5.9%	4.7%	4.6%	8.8%	7.6%	5.8%	9.4%	5.5%
	Cost of Equity	n/a	8.2%	6.0%	6.2%	7.8%	5.5%	n/a	5.2%	n/a	5.9%	4.7%	4.6%	n/a	n/a	5.8%	n/a	5.5%
	(Trial COE - COE) x 100	n/a	0.00	0.00	0.00	0.00	0.00	n/a	0.00	n/a	0.00	0.00	0.00	n/a	n/a	0.00	n/a	0.00

Sources and Notes:

All Growth Rate Estimates: Table No. BV-6; Panel B.

Stock Prices and Dividends are from Bloomberg as of June 30, 2019.

1. See Supporting Schedule #1 to Table No. BV-6 for the average closing stock price obtained from Bloomberg.
2. See Supporting Schedule #2 to Table No. BV-6 for the for the quarterly dividend obtained from Bloomberg.
3. See Table No. BV-6 Panel B for the Growth Rate used to calculate the Year 10 Stock Price.

Year 10 Stock Price = {(the Dividend Year 2029 Q4 Estimate) x ((1 + the Perpetual Growth Rate) ^ (1/4) x (1 + Quarterly Rate))} / {(Quarterly Rate) - ((1 + the Perpetual Growth Rate) ^ (1/4) -1)}.

Table No. BV-7

Overall After-Tax DCF Cost of Capital of the Shipping Sample

Panel A: Simple DCF Method

Company	2nd Quarter, 2019 Bond Rating [1]	2nd Quarter, 2019 Preferred Equity Rating [2]	DCF Cost of Equity [3]	DCF Common Equity to Market Value Ratio [4]	Cost of Preferred Equity [5]	DCF Preferred Equity to Market Value Ratio [6]	DCF Cost of Debt [7]	DCF Debt to Market Value Ratio [8]	Young Brothers Income Tax Rate [9]	Overall After-Tax Cost of Capital [10]
Kirby Corp.	BBB	-	n/a	72.2%	-	0.0%	4.2%	27.8%	26.1%	n/a
Matson Inc.	BBB	-	15.9%	59.7%	-	0.0%	4.2%	40.3%	26.1%	10.7%
CSX Corp.	BBB	-	12.1%	79.2%	-	0.0%	4.2%	20.8%	26.1%	10.2%
Kansas City South'n	BBB	-	13.9%	80.8%	-	0.0%	4.2%	19.1%	26.1%	11.9%
Union Pacific	A	-	15.2%	80.9%	-	0.0%	3.8%	19.1%	26.1%	12.8%
ArcBest Corp.	BBB	-	7.7%	66.1%	-	0.0%	4.2%	33.9%	26.1%	6.1%
Covenant Transport Inc	BBB	-	n/a	47.7%	-	0.0%	4.2%	52.3%	26.1%	n/a
Heartland Express	BBB	-	19.4%	100.0%	-	0.0%	4.2%	-	26.1%	n/a
Hub Group	BBB	-	n/a	80.0%	-	0.0%	4.2%	20.0%	26.1%	n/a
Hunt (J.B.)	BBB	-	12.3%	87.3%	-	0.0%	4.2%	12.7%	26.1%	11.1%
Landstar Sys.	BBB	-	~~4.4%~~	97.3%	-	0.0%	4.2%	2.7%	26.1%	~~4.4%~~
Old Dominion Freight	BBB	-	7.3%	99.0%	-	0.0%	4.2%	1.0%	26.1%	7.3%
P.A.M. Transport Svcs	BBB	-	n/a	62.9%	-	0.0%	4.2%	37.1%	26.1%	n/a
Saia Inc	BBB	-	n/a	87.7%	-	0.0%	4.2%	12.3%	26.1%	n/a
Schneider National Inc	BBB	-	9.4%	86.6%	-	0.0%	4.2%	13.4%	26.1%	8.6%
U.S. Xpress Enterprises 'A'	BBB	-	n/a	29.9%	-	0.0%	4.2%	70.1%	26.1%	n/a
Werner Enterprises	BBB	-	8.1%	94.0%	-	0.0%	4.2%	6.0%	26.1%	7.8%
Simple Full Sample Average			12.1%	75.9%	n/a	0.0%	4.1%	25.7%	26.1%	9.6%
Simple Sub-Sample Average			14.3%	74.6%	n/a	0.0%	4.1%	25.4%	26.1%	11.4%

Sources and Notes:

[1]: S&P Credit Ratings from Research Insight.

[2]: Preferred ratings were assumed equal to debt ratings.

[3]: Table No. BV-6; Panel A, [6].

[4]: Table No. BV-4a, [1].

[5]: Supporting Schedule #2 to Table No. BV-11, Panel C.

[6]: Table No. BV-4a, [2].

[7]: Supporting Schedule #2 to Table No. BV-11, Panel B.

[8]: Table No. BV-4a, [3].

[9]: Composite Federal and State Corporate Tax Rate.

[10]: ([3] x [4]) + ([5] x [6]) + {[7] x [8] x (1 - [9])}.

*Strikethrough indicates the estimate is excluded because it does not exceed the company's cost of debt estimate by at least 100bps

Table No. BV-7

Overall After-Tax DCF Cost of Capital of the Shipping Sample

Panel B: Multi-Stage DCF (Using Blue Chip Economic Indicators, March 2019 GDP Growth Forecast as the Perpetual Rate)

Company	2nd Quarter, 2019 Bond Rating [1]	2nd Quarter, 2019 Preferred Equity Rating [2]	DCF Cost of Equity [3]	DCF Common Equity to Market Value Ratio [4]	Cost of Preferred Equity [5]	DCF Preferred Equity to Market Value Ratio [6]	DCF Cost of Debt [7]	DCF Debt to Market Value Ratio [8]	Young Brothers Income Tax Rate [9]	Overall After-Tax Cost of Capital [10]
Kirby Corp.	BBB	-	n/a	72.2%	-	0.0%	4.2%	27.8%	26.1%	n/a
Matson Inc.	BBB	-	8.2%	59.7%	-	0.0%	4.2%	40.3%	26.1%	6.1%
CSX Corp.	BBB	-	6.0%	79.2%	-	0.0%	4.2%	20.8%	26.1%	5.4%
Kansas City South'n	BBB	-	6.2%	80.8%	-	0.0%	4.2%	19.1%	26.1%	5.6%
Union Pacific	A	-	7.8%	80.9%	-	0.0%	3.8%	19.1%	26.1%	6.9%
ArcBest Corp.	BBB	-	5.5%	66.1%	-	0.0%	4.2%	33.9%	26.1%	4.7%
Covenant Transport Inc	BBB	-	n/a	47.7%	-	0.0%	4.2%	52.3%	26.1%	n/a
Heartland Express	BBB	-	5.2%	100.0%	-	0.0%	4.2%	-	26.1%	n/a
Hub Group	BBB	-	n/a	80.0%	-	0.0%	4.2%	20.0%	26.1%	n/a
Hunt (J.B.)	BBB	-	5.9%	87.3%	-	0.0%	4.2%	12.7%	26.1%	5.6%
Landstar Sys.	BBB	-	~~4.7%~~	97.3%	-	0.0%	4.2%	2.7%	26.1%	~~4.6%~~
Old Dominion Freight	BBB	-	~~4.6%~~	99.0%	-	0.0%	4.2%	1.0%	26.1%	~~4.6%~~
P.A.M. Transport Svcs	BBB	-	n/a	62.9%	-	0.0%	4.2%	37.1%	26.1%	n/a
Saia Inc	BBB	-	n/a	87.7%	-	0.0%	4.2%	12.3%	26.1%	n/a
Schneider National Inc	BBB	-	5.8%	86.6%	-	0.0%	4.2%	13.4%	26.1%	5.5%
U.S. Xpress Enterprises 'A'	BBB	-	n/a	29.9%	-	0.0%	4.2%	70.1%	26.1%	n/a
Werner Enterprises	BBB	-	5.5%	94.0%	-	0.0%	4.2%	6.0%	26.1%	5.4%
Multi Full Sample Average			6.2%	74.3%	n/a	0.0%	4.1%	27.5%	26.1%	5.6%
Multi Sub-Sample Average			7.1%	74.6%	n/a	0.0%	4.1%	25.4%	26.1%	6.0%

Sources and Notes:

[1]: S&P Credit Ratings from Research Insight.

[2]: Preferred ratings were assumed equal to debt ratings.

[3]: Table No. BV-6; Panel B, [10].

[4]: Table No. BV-4a, [1].

[5]: Supporting Schedule #2 to Table No. BV-11, Panel C.

[6]: Table No. BV-4a, [2].

[7]: Supporting Schedule #2 to Table No. BV-11, Panel B.

[8]: Table No. BV-4a, [3].

[9]: Composite Federal and State Corporate Tax Rate.

[10]: ([3] x [4]) + ([5] x [6]) + {[7] x [8] x (1 - [9])}.

*Strikethrough indicates the estimate is excluded because it does not exceed the company's cost of debt estimate by at least 100bps

Table No. BV-8

DCF Cost of Equity at Young Brothers' Regulatory Capital Structure

	Overall After-Tax Cost of Capital [1]	Young Brothers Regulatory % Debt [2]	Representative Cost of Debt [3]	Young Brothers Income Tax Rate [4]	Young Brothers Regulatory % Equity [5]	Estimated Return on Equity [6]
Full Sample						
Simple DCF	9.6%	40.0%	6.5%	26.1%	60.0%	12.8%
Multi-Stage DCF	5.6%	40.0%	6.5%	26.1%	60.0%	6.2%
Sub-Sample						
Simple DCF	11.4%	40.0%	6.5%	26.1%	60.0%	15.8%
Multi-Stage DCF	6.0%	40.0%	6.5%	26.1%	60.0%	6.8%

Sources and Notes:

[1]: Table No. BV-7; Panels A-B, [10].

[2]: Young Brothers Regulatory Capital Structure.

[3]: Based on an BBB rating. Yield from Bloomberg as of June 30, 2019.

[4]: Composite Federal and State Corporate Tax Rate.

[5]: Young Brothers Regulatory Capital Structure.

[6]: {[1] - ([2] x [3] x (1 - [4]))} / [5].

Table No. BV-9

Risk Free Rate

[1]	Blue Chip Economic Indicators 10 year Forecast	2.60%
	U.S. Government Bond Yields	
[2]	20-Year	5.04%
[3]	10-Year	4.56%
[4]	Maturity Premium	0.50%
[5]	Blue Chip Economic Indicators 10 year Forecast Adjusted to 20-year Horizon	3.10%

Sources and Notes:

[1]: Blue Chip Economic Indicators, March 2019.

[2]-[3]: Supporting Schedule # 1 to Table No. BV-9. Averages of monthly bond yields from January 1990 through February 2019.

[4]: [2] - [3].

[5]: [1] + [4].

Supporting Schedule # 1 to Table No. BV-9

U.S. Government Bond Yields as reported by Bloomberg (%)

Date	10-Year	20-Year
1/31/1990	8.21	8.24
2/28/1990	8.47	8.49
3/31/1990	8.59	8.58
4/30/1990	8.79	8.77
5/31/1990	8.76	8.74
6/30/1990	8.48	8.47
7/31/1990	8.47	8.48
8/31/1990	8.75	8.81
9/30/1990	8.89	8.96
10/31/1990	8.72	8.79
11/30/1990	8.39	8.47
12/31/1990	8.08	8.16
1/31/1991	8.09	8.19
2/28/1991	7.85	7.95
3/31/1991	8.11	8.20
4/30/1991	8.04	8.13
5/31/1991	8.07	8.17
6/30/1991	8.28	8.38
7/31/1991	8.27	8.37
8/31/1991	7.90	8.03
9/30/1991	7.65	7.80
10/31/1991	7.53	7.73
11/30/1991	7.42	7.67
12/31/1991	7.09	7.39
1/31/1992	7.03	7.30
2/29/1992	7.34	7.59

Supporting Schedule # 1 to Table No. BV-9

U.S. Government Bond Yields as reported by Bloomberg (%)

Date	10-Year	20-Year
3/31/1992	7.54	7.76
4/30/1992	7.48	7.72
5/31/1992	7.39	7.65
6/30/1992	7.26	7.56
7/31/1992	6.84	7.24
8/31/1992	6.59	7.00
9/30/1992	6.42	6.88
10/31/1992	6.59	7.07
11/30/1992	6.87	7.24
12/31/1992	6.77	7.10
1/31/1993	6.60	6.98
2/28/1993	6.26	6.67
3/31/1993	5.98	6.40
4/30/1993	5.97	6.41
5/31/1993	6.04	6.48
6/30/1993	5.96	6.39
7/31/1993	5.81	6.23
8/31/1993	5.68	6.00
9/30/1993	5.36	5.68
10/31/1993	5.33	6.07
11/30/1993	5.72	6.38
12/31/1993	5.77	6.40
1/31/1994	5.75	6.39
2/28/1994	5.97	6.57
3/31/1994	6.48	7.00
4/30/1994	6.97	7.40

Supporting Schedule # 1 to Table No. BV-9

U.S. Government Bond Yields as reported by Bloomberg (%)

Date	10-Year	20-Year
5/31/1994	7.18	7.54
6/30/1994	7.10	7.51
7/31/1994	7.30	7.67
8/31/1994	7.24	7.62
9/30/1994	7.46	7.87
10/31/1994	7.74	8.08
11/30/1994	7.96	8.20
12/31/1994	7.81	7.99
1/31/1995	7.78	7.97
2/28/1995	7.47	7.73
3/31/1995	7.20	7.57
4/30/1995	7.06	7.45
5/31/1995	6.63	7.01
6/30/1995	6.17	6.59
7/31/1995	6.28	6.74
8/31/1995	6.49	6.92
9/30/1995	6.20	6.65
10/31/1995	6.04	6.45
11/30/1995	5.93	6.33
12/31/1995	5.71	6.12
1/31/1996	5.65	6.11
2/29/1996	5.81	6.30
3/31/1996	6.27	6.74
4/30/1996	6.51	6.98
5/31/1996	6.74	7.11
6/30/1996	6.91	7.22

Supporting Schedule # 1 to Table No. BV-9

U.S. Government Bond Yields as reported by Bloomberg (%)

Date	10-Year	20-Year
7/31/1996	6.87	7.14
8/31/1996	6.64	6.97
9/30/1996	6.83	7.17
10/31/1996	6.53	6.90
11/30/1996	6.20	6.58
12/31/1996	6.30	6.65
1/31/1997	6.58	6.91
2/28/1997	6.42	6.77
3/31/1997	6.69	7.05
4/30/1997	6.89	7.20
5/31/1997	6.71	7.02
6/30/1997	6.49	6.84
7/31/1997	6.22	6.56
8/31/1997	6.30	6.65
9/30/1997	6.21	6.56
10/31/1997	6.03	6.38
11/30/1997	5.88	6.20
12/31/1997	5.81	6.07
1/31/1998	5.54	5.88
2/28/1998	5.57	5.96
3/31/1998	5.65	6.01
4/30/1998	5.64	6.00
5/31/1998	5.65	6.01
6/30/1998	5.50	5.80
7/31/1998	5.46	5.78
8/31/1998	5.34	5.66

Supporting Schedule # 1 to Table No. BV-9

U.S. Government Bond Yields as reported by Bloomberg (%)

Date	10-Year	20-Year
9/30/1998	4.81	5.38
10/31/1998	4.53	5.30
11/30/1998	4.83	5.48
12/31/1998	4.65	5.36
1/31/1999	4.72	5.45
2/28/1999	5.00	5.66
3/31/1999	5.23	5.87
4/30/1999	5.18	5.82
5/31/1999	5.54	6.08
6/30/1999	5.90	6.36
7/31/1999	5.79	6.28
8/31/1999	5.94	6.43
9/30/1999	5.92	6.50
10/31/1999	6.11	6.66
11/30/1999	6.03	6.48
12/31/1999	6.28	6.69
1/31/2000	6.66	6.86
2/29/2000	6.52	6.54
3/31/2000	6.26	6.38
4/30/2000	5.99	6.18
5/31/2000	6.44	6.55
6/30/2000	6.10	6.28
7/31/2000	6.05	6.20
8/31/2000	5.83	6.02
9/30/2000	5.80	6.09
10/31/2000	5.74	6.04

Supporting Schedule # 1 to Table No. BV-9

U.S. Government Bond Yields as reported by Bloomberg (%)

Date	10-Year	20-Year
11/30/2000	5.72	5.98
12/31/2000	5.24	5.64
1/31/2001	5.16	5.65
2/28/2001	5.10	5.62
3/31/2001	4.89	5.49
4/30/2001	5.14	5.78
5/31/2001	5.39	5.92
6/30/2001	5.28	5.82
7/31/2001	5.24	5.75
8/31/2001	4.97	5.58
9/30/2001	4.73	5.53
10/31/2001	4.57	5.34
11/30/2001	4.65	5.33
12/31/2001	5.09	5.76
1/31/2002	5.04	5.69
2/28/2002	4.91	5.61
3/31/2002	5.28	5.93
4/30/2002	5.21	5.85
5/31/2002	5.16	5.81
6/30/2002	4.93	5.65
7/31/2002	4.65	5.51
8/31/2002	4.26	5.19
9/30/2002	3.87	4.87
10/31/2002	3.94	5.00
11/30/2002	4.05	5.04
12/31/2002	4.03	5.01

Supporting Schedule # 1 to Table No. BV-9

U.S. Government Bond Yields as reported by Bloomberg (%)

Date	10-Year	20-Year
1/31/2003	4.05	5.02
2/28/2003	3.90	4.87
3/31/2003	3.81	4.82
4/30/2003	3.96	4.91
5/31/2003	3.57	4.52
6/30/2003	3.33	4.34
7/31/2003	3.98	4.92
8/31/2003	4.45	5.39
9/30/2003	4.27	5.21
10/31/2003	4.29	5.21
11/30/2003	4.30	5.17
12/31/2003	4.27	5.11
1/31/2004	4.15	5.01
2/29/2004	4.08	4.94
3/31/2004	3.83	4.72
4/30/2004	4.35	5.16
5/31/2004	4.72	5.46
6/30/2004	4.73	5.45
7/31/2004	4.50	5.24
8/31/2004	4.28	5.07
9/30/2004	4.13	4.89
10/31/2004	4.10	4.85
11/30/2004	4.19	4.89
12/31/2004	4.23	4.88
1/31/2005	4.22	4.77
2/28/2005	4.17	4.61

Supporting Schedule # 1 to Table No. BV-9

U.S. Government Bond Yields as reported by Bloomberg (%)

Date	10-Year	20-Year
3/31/2005	4.50	4.89
4/30/2005	4.34	4.75
5/31/2005	4.14	4.56
6/30/2005	4.00	4.35
7/31/2005	4.18	4.48
8/31/2005	4.26	4.53
9/30/2005	4.20	4.51
10/31/2005	4.46	4.74
11/30/2005	4.54	4.83
12/31/2005	4.47	4.73
1/31/2006	4.42	4.65
2/28/2006	4.57	4.73
3/31/2006	4.72	4.91
4/30/2006	4.99	5.22
5/31/2006	5.11	5.35
6/30/2006	5.11	5.29
7/31/2006	5.09	5.25
8/31/2006	4.88	5.08
9/30/2006	4.72	4.93
10/31/2006	4.73	4.94
11/30/2006	4.60	4.78
12/31/2006	4.56	4.78
1/31/2007	4.76	4.95

Supporting Schedule # 1 to Table No. BV-9

U.S. Government Bond Yields as reported by Bloomberg (%)

Date	10-Year	20-Year
2/28/2007	4.72	4.93
3/31/2007	4.56	4.81
4/30/2007	4.69	4.95
5/31/2007	4.75	4.98
6/30/2007	5.10	5.29
7/31/2007	5.00	5.19
8/31/2007	4.67	5.00
9/30/2007	4.52	4.84
10/31/2007	4.53	4.83
11/30/2007	4.15	4.56
12/31/2007	4.10	4.57
1/31/2008	3.74	4.35
2/29/2008	3.74	4.49
3/31/2008	3.51	4.36
4/30/2008	3.67	4.44
5/31/2008	3.88	4.60
6/30/2008	4.10	4.74
7/31/2008	4.01	4.62
8/31/2008	3.89	4.53
9/30/2008	3.69	4.32
10/31/2008	3.81	4.45
11/30/2008	3.53	4.27
12/31/2008	2.42	3.18
1/31/2009	2.52	3.46
2/28/2009	2.87	3.83
3/31/2009	2.82	3.78

Supporting Schedule # 1 to Table No. BV-9

U.S. Government Bond Yields as reported by Bloomberg (%)

Date	10-Year	20-Year
4/30/2009	2.93	3.84
5/31/2009	3.29	4.22
6/30/2009	3.72	4.51
7/31/2009	3.56	4.38
8/31/2009	3.59	4.33
9/30/2009	3.40	4.14
10/31/2009	3.39	4.16
11/30/2009	3.40	4.24
12/31/2009	3.59	4.40
1/31/2010	3.73	4.50
2/28/2010	3.69	4.48
3/31/2010	3.73	4.49
4/30/2010	3.85	4.53
5/31/2010	3.42	4.11
6/30/2010	3.20	3.95
7/31/2010	3.01	3.80
8/31/2010	2.70	3.52
9/30/2010	2.65	3.47
10/31/2010	2.54	3.52
11/30/2010	2.76	3.82
12/31/2010	3.29	4.17
1/31/2011	3.39	4.28
2/28/2011	3.58	4.42
3/31/2011	3.41	4.27
4/30/2011	3.45	4.28
5/31/2011	3.17	4.01

Supporting Schedule # 1 to Table No. BV-9

U.S. Government Bond Yields as reported by Bloomberg (%)

Date	10-Year	20-Year
6/30/2011	3.00	3.91
7/31/2011	3.00	3.95
8/31/2011	2.30	3.24
9/30/2011	1.98	2.83
10/31/2011	2.15	2.87
11/30/2011	2.01	2.72
12/31/2011	1.98	2.67
1/31/2012	1.97	2.70
2/29/2012	1.97	2.75
3/31/2012	2.17	2.94
4/30/2012	2.05	2.82
5/31/2012	1.80	2.53
6/30/2012	1.62	2.31
7/31/2012	1.53	2.22
8/31/2012	1.68	2.40
9/30/2012	1.72	2.49
10/31/2012	1.75	2.51
11/30/2012	1.65	2.39
12/31/2012	1.72	2.47
1/31/2013	1.91	2.68
2/28/2013	1.98	2.78
3/31/2013	1.96	2.78
4/30/2013	1.76	2.55
5/31/2013	1.93	2.73
6/30/2013	2.30	3.07
7/31/2013	2.58	3.31

Supporting Schedule # 1 to Table No. BV-9

U.S. Government Bond Yields as reported by Bloomberg (%)

Date	10-Year	20-Year
8/31/2013	2.74	3.49
9/30/2013	2.81	3.53
10/31/2013	2.62	3.38
11/30/2013	2.72	3.50
12/31/2013	2.90	3.63
1/31/2014	2.86	3.52
2/28/2014	2.71	3.38
3/31/2014	2.72	3.35
4/30/2014	2.71	3.27
5/31/2014	2.56	3.12
6/30/2014	2.60	3.15
7/31/2014	2.54	3.07
8/31/2014	2.42	2.94
9/30/2014	2.53	3.01
10/31/2014	2.30	2.77
11/30/2014	2.33	2.76
12/31/2014	2.21	2.55
1/31/2015	1.88	2.20
2/28/2015	1.98	2.34
3/31/2015	2.04	2.41
4/30/2015	1.94	2.33
5/31/2015	2.20	2.69
6/30/2015	2.36	2.85
7/31/2015	2.32	2.77
8/31/2015	2.17	2.55
9/30/2015	2.17	2.62

Supporting Schedule # 1 to Table No. BV-9

U.S. Government Bond Yields as reported by Bloomberg (%)

Date	10-Year	20-Year
10/31/2015	2.07	2.50
11/30/2015	2.26	2.69
12/31/2015	2.24	2.61
1/31/2016	2.09	2.49
2/29/2016	1.78	2.20
3/31/2016	1.89	2.28
4/30/2016	1.81	2.21
5/31/2016	1.81	2.22
6/30/2016	1.64	2.02
7/31/2016	1.50	1.82
8/31/2016	1.56	1.89
9/30/2016	1.63	2.02
10/31/2016	1.76	2.17
11/30/2016	2.14	2.54
12/31/2016	2.49	2.84
1/31/2017	2.43	2.75
2/28/2017	2.42	2.76
3/31/2017	2.48	2.83
4/30/2017	2.30	2.67
5/31/2017	2.30	2.70
6/30/2017	2.19	2.54
7/31/2017	2.32	2.65
8/31/2017	2.21	2.55
9/30/2017	2.20	2.53
10/31/2017	2.36	2.65
11/30/2017	2.35	2.60

Supporting Schedule # 1 to Table No. BV-9

U.S. Government Bond Yields as reported by Bloomberg (%)

Date	10-Year	20-Year
12/31/2017	2.40	2.60
1/31/2018	2.58	2.73
2/28/2018	2.86	3.02
3/31/2018	2.84	2.97
4/30/2018	2.87	2.96
5/31/2018	2.98	3.05
6/30/2018	2.91	2.98
7/31/2018	2.89	2.94
8/31/2018	2.89	2.97
9/30/2018	3.00	3.08
10/31/2018	3.15	3.27
11/30/2018	3.12	3.27
12/31/2018	2.83	2.98
1/31/2019	2.71	2.89
2/28/2019	2.68	2.87
3/31/2019	2.57	2.80
4/30/2019	2.53	2.76
5/31/2019	2.40	2.63
6/30/2019	2.07	2.36

Table No. BV-10

Risk Positioning Cost of Equity of the Shipping Sample

Panel A: Long-Term Risk Free Rate of 3.35%, Long-Term Market Risk Premium of 6.91%

Company	Long-Term Risk-Free Rate [1]	Valueline/Bloomberg Beta [2]	Long-Term Market Risk Premium [3]	CAPM Cost of Equity [4]	ECAPM (1.5%) Cost of Equity [5]
Company		ValueLine/Bloomberg Beta		capmlt	ecapmlt2
Kirby Corp.	3.35%	1.15	6.91%	11.3%	11.1%
Matson Inc.	3.35%	1.10	6.91%	11.0%	10.8%
CSX Corp.	3.35%	1.20	6.91%	11.6%	11.3%
Kansas City South'n	3.35%	1.10	6.91%	11.0%	10.8%
Union Pacific	3.35%	1.15	6.91%	11.3%	11.1%
ArcBest Corp.	3.35%	1.65	6.91%	14.8%	13.8%
Covenant Transport Inc	3.35%	1.40	6.91%	13.0%	12.4%
Heartland Express	3.35%	0.90	6.91%	9.6%	9.7%
Hub Group	3.35%	1.15	6.91%	11.3%	11.1%
Hunt (J.B.)	3.35%	1.00	6.91%	10.3%	10.3%
Landstar Sys.	3.35%	0.95	6.91%	9.9%	10.0%
Old Dominion Freight	3.35%	1.15	6.91%	11.3%	11.1%
P.A.M. Transport Svcs	3.35%	1.15	6.91%	11.3%	11.1%
Saia Inc	3.35%	1.10	6.91%	11.0%	10.8%
Schneider National Inc	3.35%	1.15	6.91%	11.3%	11.1%
U.S. Xpress Enterprises 'A'	3.35%	1.53	6.91%	13.9%	13.1%
Werner Enterprises	3.35%	1.00	6.91%	10.3%	10.3%
Average				11.4%	11.2%
Sub-Sample				11.2%	11.0%

Sources and Notes:
[1]: Villadsen Direct Evidence.
[2]: Bloomberg as of June 30, 2019.
[3]: Villadsen Direct Evidence.
[4]: [1] + ([2] x [3]).
[5]: ([1] + 1.5%) + [2] x ([3] - 1.5%).

Table No. BV-10

Risk Positioning Cost of Equity of the Shipping Sample

Panel B: Long-Term Risk Free Rate of 3.10%, Long-Term Market Risk Premium of 7.91%

Company	Long-Term Risk-Free Rate [1]	Valueline/Bloomberg Beta [2]	Long-Term Market Risk Premium [3]	CAPM Cost of Equity [4]	ECAPM (1.5%) Cost of Equity [5]
Company		ValueLine/Bloomberg Beta		capmlt	ecapmlt2
Kirby Corp.	3.10%	1.15	7.91%	12.2%	12.0%
Matson Inc.	3.10%	1.10	7.91%	11.8%	11.7%
CSX Corp.	3.10%	1.20	7.91%	12.6%	12.3%
Kansas City South'n	3.10%	1.10	7.91%	11.8%	11.7%
Union Pacific	3.10%	1.15	7.91%	12.2%	12.0%
ArcBest Corp.	3.10%	1.65	7.91%	16.2%	15.2%
Covenant Transport Inc	3.10%	1.40	7.91%	14.2%	13.6%
Heartland Express	3.10%	0.90	7.91%	10.2%	10.4%
Hub Group	3.10%	1.15	7.91%	12.2%	12.0%
Hunt (J.B.)	3.10%	1.00	7.91%	11.0%	11.0%
Landstar Sys.	3.10%	0.95	7.91%	10.6%	10.7%
Old Dominion Freight	3.10%	1.15	7.91%	12.2%	12.0%
P.A.M. Transport Svcs	3.10%	1.15	7.91%	12.2%	12.0%
Saia Inc	3.10%	1.10	7.91%	11.8%	11.7%
Schneider National Inc	3.10%	1.15	7.91%	12.2%	12.0%
U.S. Xpress Enterprises 'A'	3.10%	1.53	7.91%	15.2%	14.4%
Werner Enterprises	3.10%	1.00	7.91%	11.0%	11.0%
Average				12.3%	12.1%
Sub-Sample				12.1%	11.9%

Sources and Notes:
[1]: Villadsen Direct Evidence.
[2]: Bloomberg as of June 30, 2019.
[3]: Villadsen Direct Evidence.
[4]: [1] + ([2] x [3]).
[5]: ([1] + 1.5%) + [2] x ([3] - 1.5%).

Supporting Schedule # 1 to Table No. BV-10

ValueLine/Bloomberg Beta Adjusted Betas

Company	ValueLine/Bloomberg Beta [1]
Kirby Corp.	1.15
Matson Inc.	1.10
CSX Corp.	1.20
Kansas City South'n	1.10
Union Pacific	1.15
ArcBest Corp.	1.65
Covenant Transport Inc	1.40
Heartland Express	0.90
Hub Group	1.15
Hunt (J.B.)	1.00
Landstar Sys.	0.95
Old Dominion Freight	1.15
P.A.M. Transport Svcs	1.15
Saia Inc	1.10
Schneider National Inc	1.15
U.S. Xpress Enterprises 'A'	1.53
Werner Enterprises	1.00
Average	1.17
Sub-Sample Average	1.14

Sources and Notes:
Schneider National Inc and U.S. Xpress Enterprises 'A' uses Bloomberg 5 Year betas as of 3/15/2019, all other companies uses Value Line betas as of 3/15/2019.

Supporting Schedule # 2 to Table No. BV-10
Beta Comparison

Company	Bloomberg [1]	ValueLine [2]
Kirby Corp.	1.18	1.15
Matson Inc.	1.12	1.10
CSX Corp.	1.16	1.20
Kansas City South'n	0.99	1.10
Union Pacific	1.05	1.15
ArcBest Corp.	1.45	1.65
Covenant Transport Inc	1.16	1.40
Heartland Express	0.88	0.90
Hub Group	1.09	1.15
Hunt (J.B.)	0.96	1.00
Landstar Sys.	0.91	0.95
Old Dominion Freight	1.14	1.15
P.A.M. Transport Svcs	1.20	1.15
Saia Inc	1.09	1.10
Schneider National Inc	1.09	1.15
U.S. Xpress Enterprises 'A'	1.53	n/a
Werner Enterprises	1.01	1.00

Sources and Notes:
[1]: Bloomberg 5 Year Equity Beta as of July 11, 2019.
[2]:From Value Line Investment Analyzer as of June 27, 2019.

Table No. BV-11

Overall After-Tax Cost of Capital of the Shipping Sample

Panel A: Long-Term Risk Free Rate of 3.35%, Long-Term Market Risk Premium of 6.91%

Company	CAPM Cost of Equity [1]	ECAPM (1.5%) Cost of Equity [2]	5-Year Average Common Equity to Market Value Ratio [3]	Cost of Preferred Equity [4]	5-Year Average Preferred Equity to Market Value Ratio [5]	Cost of Debt [6]	5-Year Average Debt to Market Value Ratio [7]	Young Brothers Income Tax Rate [8]	Overall After-Tax Cost of Capital (CAPM) [9]	Overall After-Tax Cost of Capital (ECAPM 1.5%) [10]
Company	capmlt	ecapmlt2	capm_equity_ratio	average	capm_pref_ratio	average	capm_debt_ratio		CAPM	ECAPM2
Kirby Corp.	11.3%	11.1%	82.4%	-	0.0%	4.1%	17.6%	26.1%	9.8%	9.7%
Matson Inc.	11.0%	10.8%	69.0%	-	0.0%	4.2%	31.0%	26.1%	8.5%	8.4%
CSX Corp.	11.6%	11.3%	75.7%	-	0.0%	4.2%	24.3%	26.1%	9.6%	9.3%
Kansas City South'n	11.0%	10.8%	81.7%	-	0.0%	4.2%	18.3%	26.1%	9.5%	9.4%
Union Pacific	11.3%	11.1%	83.5%	-	0.0%	3.8%	16.5%	26.1%	9.9%	9.7%
ArcBest Corp.	14.8%	13.8%	75.5%	-	0.0%	4.2%	24.5%	26.1%	11.9%	11.2%
Covenant Transport Inc	13.0%	12.4%	63.2%	-	0.0%	4.2%	36.8%	26.1%	9.4%	9.0%
Heartland Express	9.6%	9.7%	99.8%	-	0.0%	4.2%	0.2%	26.1%	9.6%	9.7%
Hub Group	11.3%	11.1%	89.4%	-	0.0%	4.2%	10.6%	26.1%	10.4%	10.2%
Hunt (J.B.)	10.3%	10.3%	91.0%	-	0.0%	4.2%	9.0%	26.1%	9.6%	9.6%
Landstar Sys.	9.9%	10.0%	96.9%	-	0.0%	4.2%	3.1%	26.1%	9.7%	9.8%
Old Dominion Freight	11.3%	11.1%	97.8%	-	0.0%	4.2%	2.2%	26.1%	11.1%	10.9%
P.A.M. Transport Svcs	11.3%	11.1%	58.2%	-	0.0%	4.2%	41.8%	26.1%	7.9%	7.7%
Saia Inc	11.0%	10.8%	88.8%	-	0.0%	4.2%	11.2%	26.1%	10.1%	9.9%
Schneider National Inc	11.3%	11.1%	90.0%	-	0.0%	4.2%	10.0%	26.1%	10.5%	10.3%
U.S. Xpress Enterprises 'A'	13.9%	13.1%	53.4%	-	0.0%	4.2%	46.6%	26.1%	8.9%	8.4%
Werner Enterprises	10.3%	10.3%	95.5%	-	0.0%	4.2%	4.5%	26.1%	9.9%	9.9%
Full Sample Average	11.4%	11.2%	81.9%	n/a	0.0%	4.1%	18.1%	26.1%	9.8%	9.6%
Sub-Sample Average	11.2%	11.0%	78.5%	n/a	0.0%	4.1%	21.5%	26.1%	9.5%	9.3%
	$E$13:$E$29	$F$13:$F$29	$G$13:$G$29	$H$13:$H$29	$I$13:$I$29	$J$13:$J$29	$K$13:$K$29	$L$13:$L$29	$M$13:$M$29	$N$13:$N$29

Sources and Notes:

[1]: Table No. BV-10; Panel A, [4].
[2]: Table No. BV-10; Panel A, [5].
[3]: Table No. BV-4a, [4].
[4]: Supporting Schedule #2 to Table No. BV-11, Panel C.
[5]: Table No. BV-4a, [5].
[6]: Supporting Schedule #2 to Table No. BV-11, Panel B.
[7]: Table No. BV-4a, [6].
[8]: Composite Federal and State Corporate Tax Rate.
[9]: ([1] x [3]) + ([4] x [5]) + {[6] x [7] x (1 - [8])}.
[10]: ([2] x [3]) + ([4] x [5]) + {[6] x [7] x (1 - [8])}.

Table No. BV-11

Overall After-Tax Cost of Capital of the Shipping Sample

Panel B: Long-Term Risk Free Rate of 3.10%, Long-Term Market Risk Premium of 7.91%

Company	CAPM Cost of Equity [1]	ECAPM (1.5%) Cost of Equity [2]	5-Year Average Common Equity to Market Value Ratio [3]	Cost of Preferred Equity [4]	5-Year Average Preferred Equity to Market Value Ratio [5]	Cost of Debt [6]	5-Year Average Debt to Market Value Ratio [7]	Young Brothers Income Tax Rate [8]	Overall After-Tax Cost of Capital (CAPM) [9]	Overall After-Tax Cost of Capital (ECAPM 1.5%) [10]
Company	capmlt	ecapmlt2	capm_equity_ratio	average	capm_pref_ratio	average	capm_debt_ratio		CAPM	ECAPM2
Kirby Corp.	12.2%	12.0%	82.4%	-	0.0%	4.1%	17.6%	26.1%	10.6%	10.4%
Matson Inc.	11.8%	11.7%	69.0%	-	0.0%	4.2%	31.0%	26.1%	9.1%	9.0%
CSX Corp.	12.6%	12.3%	75.7%	-	0.0%	4.2%	24.3%	26.1%	10.3%	10.1%
Kansas City South'n	11.8%	11.7%	81.7%	-	0.0%	4.2%	18.3%	26.1%	10.2%	10.1%
Union Pacific	12.2%	12.0%	83.5%	-	0.0%	3.8%	16.5%	26.1%	10.6%	10.5%
ArcBest Corp.	16.2%	15.2%	75.5%	-	0.0%	4.2%	24.5%	26.1%	12.9%	12.2%
Covenant Transport Inc	14.2%	13.6%	63.2%	-	0.0%	4.2%	36.8%	26.1%	10.1%	9.7%
Heartland Express	10.2%	10.4%	99.8%	-	0.0%	4.2%	0.2%	26.1%	10.2%	10.4%
Hub Group	12.2%	12.0%	89.4%	-	0.0%	4.2%	10.6%	26.1%	11.2%	11.0%
Hunt (J.B.)	11.0%	11.0%	91.0%	-	0.0%	4.2%	9.0%	26.1%	10.3%	10.3%
Landstar Sys.	10.6%	10.7%	96.9%	-	0.0%	4.2%	3.1%	26.1%	10.4%	10.5%
Old Dominion Freight	12.2%	12.0%	97.8%	-	0.0%	4.2%	2.2%	26.1%	12.0%	11.8%
P.A.M. Transport Svcs	12.2%	12.0%	58.2%	-	0.0%	4.2%	41.8%	26.1%	8.4%	8.3%
Saia Inc	11.8%	11.7%	88.8%	-	0.0%	4.2%	11.2%	26.1%	10.8%	10.7%
Schneider National Inc	12.2%	12.0%	90.0%	-	0.0%	4.2%	10.0%	26.1%	11.3%	11.1%
U.S. Xpress Enterprises 'A'	15.2%	14.4%	53.4%	-	0.0%	4.2%	46.6%	26.1%	9.5%	9.1%
Werner Enterprises	11.0%	11.0%	95.5%	-	0.0%	4.2%	4.5%	26.1%	10.7%	10.7%
Full Sample Average	12.3%	12.1%	81.9%	n/a	0.0%	4.1%	18.1%	26.1%	10.5%	10.3%
Sub-Sample Average	12.1%	11.9%	78.5%	n/a	0.0%	4.1%	21.5%	26.1%	10.2%	10.0%
	$E$60:$E$76	$F$60:$F$76	$G$60:$G$76	$H$60:$H$76	$I$60:$I$76	$J$60:$J$76	$K$60:$K$76	$L$60:$L$76	$M$60:$M$76	$N$60:$N$76

Sources and Notes:

[1]: Table No. BV-10; Panel A, [4].
[2]: Table No. BV-10; Panel A, [5].
[3]: Table No. BV-4a, [4].
[4]: , Panel C.
[5]: Table No. BV-4a, [5].
[6]: , Panel B.
[7]: Table No. BV-4a, [6].
[8]: Composite Federal and State Corporate Tax Rate.
[9]: ([1] x [3]) + ([4] x [5]) + {[6] x [7] x (1 - [8])}.
[10]: ([2] x [3]) + ([4] x [5]) + {[6] x [7] x (1 - [8])}.

Supporting Schedule #1 to Table No. BV-11

Panel A: Rating to Yield Conversion

Rating	Bond Yield	Preferred Yield
AA	3.6%	3.6%
A	3.8%	3.8%
BBB	4.2%	4.2%

Sources and Notes:

Bond Yields from Bloomberg as of June 30, 2019.

Preferred Yields from Matching Bloomberg bond yields as of June 30, 2019.

AA estimated as A - 0.5 * (BBB - A).

Supporting Schedule #1 to Table No. BV-11

Panel B: Bond Rating Summary

Company	June 30, 2019 [1]	2nd Quarter, 2019 [2]	2nd Quarter, 2018 [3]	2nd Quarter, 2017 [4]	2nd Quarter, 2016 [5]	2nd Quarter, 2015 [6]
Kirby Corp.	BBB	BBB	BBB	BBB+	BBB+	A-
Matson Inc.	BBB	BBB	BBB	BBB	BBB	BBB
CSX Corp.	BBB+	BBB+	BBB+	BBB+	BBB+	BBB+
Kansas City South'n	BBB	BBB	BBB-	BBB-	BBB-	BBB-
Union Pacific	A-	A-	A-	A	A	A
ArcBest Corp.	BBB	BBB	BBB	BBB	BBB	BBB
Covenant Transport Inc	BBB	BBB	BBB	BBB	BBB	BBB
Heartland Express	BBB	BBB	BBB	BBB	BBB	BBB
Hub Group	BBB	BBB	BBB	BBB	BBB	BBB
Hunt (J.B.)	BBB+	BBB+	BBB+	BBB+	BBB+	BBB+
Landstar Sys.	BBB	BBB	BBB	BBB	BBB	BBB
Old Dominion Freight	BBB	BBB	BBB	BBB	BBB	BBB
P.A.M. Transport Svcs	BBB	BBB	BBB	BBB	BBB	BBB
Saia Inc	BBB	BBB	BBB	BBB	BBB	BBB
Schneider National Inc	BBB	BBB	BBB	BBB	BBB	BBB
U.S. Xpress Enterprises 'A'	BBB	BBB	BBB	BBB	BBB	BBB
Werner Enterprises	BBB	BBB	BBB	BBB	BBB	BBB

Sources and Notes:

[1] - [6]: S&P Credit Ratings from Research Insight.

Supporting Schedule #1 to Table No. BV-11

Panel C: Preferred Equity Rating Summary

Company	June 30, 2019	2nd Quarter, 2019	2nd Quarter, 2018	2nd Quarter, 2017	2nd Quarter, 2016	2nd Quarter, 2015
	[1]	[2]	[3]	[4]	[5]	[6]
Kirby Corp.	-	-	-	-	-	-
Matson Inc.	-	-	-	-	-	-
CSX Corp.	-	-	-	-	-	-
Kansas City South'n	-	-	-	-	-	-
Union Pacific	-	-	-	-	-	-
ArcBest Corp.	-	-	-	-	-	-
Covenant Transport Inc	-	-	-	-	-	-
Heartland Express	-	-	-	-	-	-
Hub Group	-	-	-	-	-	-
Hunt (J.B.)	-	-	-	-	-	-
Landstar Sys.	-	-	-	-	-	-
Old Dominion Freight	-	-	-	-	-	-
P.A.M. Transport Svcs	-	-	-	-	-	-
Saia Inc	-	-	-	-	-	-
Schneider National Inc	-	-	-	-	-	-
U.S. Xpress Enterprises 'A'	-	-	-	-	-	-
Werner Enterprises	-	-	-	-	-	-

Sources and Notes:
[1] - [6]: Preferred equity ratings are assumed equal to the company's bond ratings reported in Supporting Schedule #1 to Table No. BV-11, Panel B if the company has preferred equity.

Supporting Schedule #2 to Table No. BV-11

Panel A: 15-Day Average U.S. Utility Bond Yields and Preferred Yields

Date	AA Rated Utility	A Rated Utility [1]	BBB Rated Utility [2]	A Preferred [3]	BBB Preferred [4]
6/28/2019	3.5%	3.7%	4.0%	3.7%	4.0%
6/27/2019	3.5%	3.7%	4.1%	3.7%	4.1%
6/26/2019	3.5%	3.7%	4.1%	3.7%	4.1%
6/25/2019	3.5%	3.7%	4.1%	3.7%	4.1%
6/24/2019	3.5%	3.7%	4.1%	3.7%	4.1%
6/21/2019	3.6%	3.7%	4.1%	3.7%	4.1%
6/20/2019	3.5%	3.7%	4.1%	3.7%	4.1%
6/19/2019	3.5%	3.7%	4.1%	3.7%	4.1%
6/18/2019	3.6%	3.8%	4.2%	3.8%	4.2%
6/17/2019	3.6%	3.8%	4.2%	3.8%	4.2%
6/14/2019	3.6%	3.8%	4.2%	3.8%	4.2%
6/13/2019	3.6%	3.8%	4.2%	3.8%	4.2%
6/12/2019	3.6%	3.8%	4.2%	3.8%	4.2%
6/11/2019	3.7%	3.9%	4.3%	3.9%	4.3%
6/10/2019	3.7%	3.9%	4.3%	3.9%	4.3%
Average	3.6%	3.8%	4.2%	3.8%	4.2%

Sources and Notes:

[1] - [2]: Bloomberg as of June 30, 2019.

[3] - [4]: From Matching Bloomberg bond yields as of June 30, 2019.

Supporting Schedule #2 to Table No. BV-11

Panel B: Bond Yield Summary

Company	June 30, 2019 [1]	2nd Quarter, 2019 [2]	2nd Quarter, 2018 [3]	2nd Quarter, 2017 [4]	2nd Quarter, 2016 [5]	2nd Quarter, 2015 [6]	5-Year Average [7]
	06/30/19	6/30/2019	06/30/18	06/30/17	06/30/16	06/30/15	average
Kirby Corp.	4.2%	4.2%	4.2%	4.2%	4.2%	3.8%	4.1%
Matson Inc.	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
CSX Corp.	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Kansas City South'n	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Union Pacific	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%
ArcBest Corp.	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Covenant Transport Inc	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Heartland Express	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Hub Group	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Hunt (J.B.)	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Landstar Sys.	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Old Dominion Freight	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
P.A.M. Transport Svcs	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Saia Inc	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Schneider National Inc	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
U.S. Xpress Enterprises 'A'	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Werner Enterprises	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%

Sources and Notes:

[1] - [6]: Ratings based on Supporting Schedule #1 to Table No. BV-11, Panel B. Bond yields from Bloomberg as of June 30, 2019.

[7]: Average of [2] through [6].

AA estimated as A - 0.5 * (BBB - A).

Supporting Schedule #2 to Table No. BV-11

Panel C: Preferred Equity Yield Summary

Company	June 30, 2019 [1]	2nd Quarter, 2019 [2]	2nd Quarter, 2018 [3]	2nd Quarter, 2017 [4]	2nd Quarter, 2016 [5]	2nd Quarter, 2015 [6]	5-Year Average [7]
Kirby Corp.	-	-	-	-	-	-	-
Matson Inc.	-	-	-	-	-	-	-
CSX Corp.	-	-	-	-	-	-	-
Kansas City South'n	-	-	-	-	-	-	-
Union Pacific	-	-	-	-	-	-	-
ArcBest Corp.	-	-	-	-	-	-	-
Covenant Transport Inc	-	-	-	-	-	-	-
Heartland Express	-	-	-	-	-	-	-
Hub Group	-	-	-	-	-	-	-
Hunt (J.B.)	-	-	-	-	-	-	-
Landstar Sys.	-	-	-	-	-	-	-
Old Dominion Freight	-	-	-	-	-	-	-
P.A.M. Transport Svcs	-	-	-	-	-	-	-
Saia Inc	-	-	-	-	-	-	-
Schneider National Inc	-	-	-	-	-	-	-
U.S. Xpress Enterprises 'A'	-	-	-	-	-	-	-
Werner Enterprises	-	-	-	-	-	-	-

Sources and Notes:

[1] - [6]: See Supporting Schedule #1 to Table No. BV-11, Panel C. Preferred equity yields are from Matching Bloomberg bond yields as of June 30, 2019.

[7]: Average of [2] through [6].

AA estimated as A - 0.5 * (BBB - A).

Table No. BV-12

Risk Positioning Cost of Equity at Young Brothers' Regulatory Capital Structure

	Overall After-Tax Cost of Capital (Scenario 1) [1]	Overall After-Tax Cost of Capital (Scenario 2) [2]	Young Brothers Regulatory % Debt [3]	Representative Cost of Debt [4]	Young Brothers Income Tax Rate [5]	Young Brothers Regulatory % Equity [6]	Estimated Return on Equity (Scenario 1) [7]	Estimated Return on Equity (Scenario 2) [8]
Full Sample								
CAPM	9.8%	10.5%	40.0%	6.5%	26.1%	60.0%	13.1%	14.3%
ECAPM (1.50%)	9.6%	10.3%	40.0%	6.5%	26.1%	60.0%	12.8%	14.0%
Sub-Sample								
CAPM	9.5%	10.2%	40.0%	6.5%	26.1%	60.0%	12.6%	13.7%
ECAPM (1.50%)	9.3%	10.0%	40.0%	6.5%	26.1%	60.0%	12.3%	13.5%

Sources and Notes:

Scenario 1: Long-Term Risk Free Rate of 3.35%, Long-Term Market Risk Premium of 6.91%.

Scenario 2: Long-Term Risk Free Rate of 3.10%, Long-Term Market Risk Premium of 7.91%.

[1]: Table No. BV-11; Panel A, [9] - [10].

[2]: Table No. BV-11; Panel B, [9] - [10].

[3]: Young Brothers Regulatory Capital Structure.

[4]: Based on a BBB rating. Yield from Bloomberg as of June 30, 2019.

[5]: Composite Federal and State Corporate Tax Rate.

[6]: Young Brothers Regulatory Capital Structure.

[7]: {[1] - ([3] x [4] x (1 - [5]))}/ [6].

[8]: {[2] - ([3] x [4] x (1 - [5]))}/ [6].

Table No. BV-13

Hamada Procedure to Obtain Unlevered Asset Beta

Company	ValueLine/Bloomberg Beta Adjusted Beta [1]	Debt Beta [2]	5-Year Average Common Equity to Market Value Ratio [3]	5-Year Average Preferred Equity to Market Value Ratio [4]	5-Year Average Debt to Market Value Ratio [5]	Young Brothers Income Tax Rate [6]	Asset Beta: Without Taxes [7]	Asset Beta: With Taxes [8]
Kirby Corp.	1.15	0.09	82.4%	0.0%	17.6%	26.1%	0.96	1.01
Matson Inc.	1.10	0.10	69.0%	0.0%	31.0%	26.1%	0.79	0.85
CSX Corp.	1.20	0.10	75.7%	0.0%	24.3%	26.1%	0.93	0.99
Kansas City South'n	1.10	0.10	81.7%	0.0%	18.3%	26.1%	0.92	0.96
Union Pacific	1.15	0.05	83.5%	0.0%	16.5%	26.1%	0.97	1.01
ArcBest Corp.	1.65	0.10	75.5%	0.0%	24.5%	26.1%	1.27	1.35
Covenant Transport Inc	1.40	0.10	63.2%	0.0%	36.8%	26.1%	0.92	1.01
Heartland Express	0.90	0.10	99.8%	0.0%	0.2%	26.1%	0.90	0.90
Hub Group	1.15	0.10	89.4%	0.0%	10.6%	26.1%	1.04	1.07
Hunt (J.B.)	1.00	0.10	91.0%	0.0%	9.0%	26.1%	0.92	0.94
Landstar Sys.	0.95	0.10	96.9%	0.0%	3.1%	26.1%	0.92	0.93
Old Dominion Freight	1.15	0.10	97.8%	0.0%	2.2%	26.1%	1.13	1.13
P.A.M. Transport Svcs	1.15	0.10	58.2%	0.0%	41.8%	26.1%	0.71	0.79
Saia Inc	1.10	0.10	88.8%	0.0%	11.2%	26.1%	0.99	1.01
Schneider National Inc	1.15	0.10	90.0%	0.0%	10.0%	26.1%	1.04	1.07
U.S. Xpress Enterprises 'A'	1.53	0.10	53.4%	0.0%	46.6%	26.1%	0.86	0.97
Werner Enterprises	1.00	0.10	95.5%	0.0%	4.5%	26.1%	0.96	0.97
Full Sample Average	1.17	0.10	81.9%	0.0%	18.1%	26.1%	0.96	1.00
Sub-Sample Average	1.14	0.09	78.5%	0.0%	21.5%	26.1%	0.91	0.96

Sources and Notes:

[1]: Supporting Schedule # 1 to Table No. BV-10, [1].
[2]: Supporting Schedule #1 to Table No. BV-13, [7].
[3]: Table No. BV-4a, [4].
[4]: Table No. BV-4a, [5].
[5]: Table No. BV-4a, [6].
[6]: Composite Federal and State Corporate Tax Rate
[7]: [1]*[3] + [2]*([4] + [5]).
[8]: {[1]*[3] + [2]*([4]+[5]*(1-[6]))} / {[3] + [4] + [5]*(1 -[6])}.

Supporting Schedule #1 to Table No. BV-13

Debt Beta Summary

Company	June 30, 2019 [1]	2nd Quarter, 2019 [2]	2nd Quarter, 2018 [3]	2nd Quarter, 2017 [4]	2nd Quarter, 2016 [5]	2nd Quarter, 2015 [6]	5-Year Average [7]
Kirby Corp.	0.10	0.10	0.10	0.10	0.10	0.05	0.09
Matson Inc.	0.10	0.10	0.10	0.10	0.10	0.10	0.10
CSX Corp.	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Kansas City South'n	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Union Pacific	0.05	0.05	0.05	0.05	0.05	0.05	0.05
ArcBest Corp.	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Covenant Transport Inc	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Heartland Express	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Hub Group	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Hunt (J.B.)	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Landstar Sys.	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Old Dominion Freight	0.10	0.10	0.10	0.10	0.10	0.10	0.10
P.A.M. Transport Svcs	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Saia Inc	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Schneider National Inc	0.10	0.10	0.10	0.10	0.10	0.10	0.10
U.S. Xpress Enterprises 'A'	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Werner Enterprises	0.10	0.10	0.10	0.10	0.10	0.10	0.10

Sources and Notes:

[1] - [6]: Ratings based on Supporting Schedule #1 to Table No. BV-11, Panel B. Debt Betas are from Corporate Finance, Berk and Demarzo, Third Edition, p. 413.

[7]: Average of [2] through [6].

Table No. BV-14

Sample Average Asset Beta Relevered at Young Brothers' Regulatory Capital Structure

	Asset Beta [1]	Debt Beta [2]	Young Brothers Regulatory % Debt [3]	Young Brothers Income Tax Rate [4]	Young Brothers Regulatory % Equity [5]	Estimated Equity Beta [6]
Full Sample:						
Asset Beta Without Taxes	0.96	0.10	40.0%	26.1%	60.0%	1.53
Asset Beta With Taxes	1.00	0.10	40.0%	26.1%	60.0%	1.44
Sub-Sample:						
Asset Beta Without Taxes	0.91	0.10	40.0%	26.1%	60.0%	1.46
Asset Beta With Taxes	0.96	0.10	40.0%	26.1%	60.0%	1.39

Sources and Notes:

[1]: Table No. BV-13, [7] - [8].

[2]: Debt Beta estimate for BBB rated entities. Corporate Finance, Berk and Demarzo, Third Edition, p. 413.

[3]: Young Brothers Regulatory Capital Structure.

[4]: Composite Federal and State Corporate Tax Rate.

[5]: Young Brothers Regulatory Capital Structure.

[6]: [1] + [3]/[5]*([1] - [2]) without taxes, [1] + [3]*(1 - [4])/[5]*([1] - [2]) with taxes.

Table No. BV-15

Risk-Positioning Cost of Equity using Hamada Procedure

Panel A: Long-Term Risk Free Rate of 3.35%, Long-Term Market Risk Premium of 6.91%

	Long-Term Risk-Free Rate [1]	Hamada Re-levered Equity Beta [2]	Long-Term Market Risk Premium [3]	CAPM Cost of Equity [4]	ECAPM (1.5%) Cost of Equity [5]
Full Sample:					
Asset Beta Without Taxes	3.35%	1.53	6.91%	13.9%	13.1%
Asset Beta With Taxes	3.35%	1.44	6.91%	13.3%	12.6%
Sub-Sample:					
Asset Beta Without Taxes	3.35%	1.46	6.91%	13.4%	12.7%
Asset Beta With Taxes	3.35%	1.39	6.91%	12.9%	12.4%

Sources and Notes:
[1]: Villadsen Direct Evidence.
[2]: Table No. BV-14, [6].
[3]: Villadsen Direct Evidence.
[4]: [1] + ([2] x [3]).
[5]: ([1] + 1.5%) + [2] x ([3] - 1.5%).

Table No. BV-15

Risk-Positioning Cost of Equity using Hamada Procedure

Panel B: Long-Term Risk Free Rate of 3.10%, Long-Term Market Risk Premium of 7.91%

	Long-Term Risk-Free Rate [1]	Hamada Re-levered Equity Beta [2]	Long-Term Market Risk Premium [3]	CAPM Cost of Equity [4]	ECAPM (1.5%) Cost of Equity [5]
Full Sample:					
Asset Beta Without Taxes	3.10%	1.53	7.91%	15.2%	14.4%
Asset Beta With Taxes	3.10%	1.44	7.91%	14.5%	13.8%
Sub-Sample:					
Asset Beta Without Taxes	3.10%	1.46	7.91%	14.6%	13.9%
Asset Beta With Taxes	3.10%	1.39	7.91%	14.1%	13.5%

Sources and Notes:
[1]: Villadsen Direct Evidence.
[2]: Table No. BV-14, [6].
[3]: Villadsen Direct Evidence.
[4]: [1] + ([2] x [3]).
[5]: ([1] + 1.5%) + [2] x ([3] - 1.5%).

Table No. BV-16

Recommended Cost of Capital

		Share	Cost	Weighted Cost
		[1]	[2]	[3]
Long-Term Debt	[a]	40%	6.50%	2.60%
Common Equity	[b]	60%	13.50%	8.10%
COST OF CAPITAL	[c]			**10.70%**

Notes and Sources:

[1]: The Brattle Group.

[2][a]: Merrill Lynch US Corporate High Yield Debt Rate, last 15 days of trading as of 06/30/2019 plus 50 bps for issuance costs.

[2][b]: The Brattle Group.

Supporting Schedule #1 to Table No. BV-16
BofA Merrill Lynch US High Yield Index

Date	Effective Yield [1]
6/11/2019	6.18
6/12/2019	6.19
6/13/2019	6.15
6/14/2019	6.15
6/17/2019	6.15
6/18/2019	6.05
6/19/2019	6.01
6/20/2019	5.85
6/21/2019	5.83
6/24/2019	5.83
6/25/2019	5.9
6/26/2019	5.93
6/27/2019	5.92
6/28/2019	5.89
6/30/2019	5.9
Average	6.00

Sources and Notes:
[1]: Merrill Lynch US Corporate High Yield Debt Rate as of July 11, 2019.
Accessed at https://fred.stlouisfed.org/series/BAMLH0A0HYM2EY.

Table 1. Young Brothers Hypothetical Debt Metrics

Year	Return on Assets	EBIT Margin	Debt / EBITDA	(EBITDA + Interest) / Interest
	[1]	[2]	[3]	[4]
2016	1.1%	1.1%	3.04	6.07
2017	-2.8%	-3.0%	6.77	3.27
2018	-9.5%	-9.1%	-12.89	-0.19
3-year Average	-4.1%	-3.7%	8.53	2.81

Sources and Notes:

[1]: Table 2, Column [8] / Table 2, Column [1].

[2]: Table 2, Column [6] / Table 2, Column [5].

[3]: Table 2, Column [4] / Table 2, Column [10].

[4]: (Table 2, Column [10] + Table 2, Column [11]) / Table 2, Column [11].

Table 2. Young Brothers Historical Financials for Instrastate Operations ($000s)

Year	Intrastate Rate Base	Consolidated Rate Base	Intrastate Rate Base as % of Consolidated	Assumed Debt-Finance Rate Base	Intrastate Revenues	Intrastate Operating Income	Intrastate Provision for Income Taxes	Intrastate Net Income	Estimated Intrastate Depreciation	Estimated Intrastate EBITDA	Estimated Intrastate Interest
	[1]	[2]	[3] = [1] / [2]	[4] = 40% x [1]	[5]	[6]	[7]	[8]	[9]	[10] = [7] + [8] + [9]	[11] = 6.50% x [4]
2016	$44,934	$69,567	64.6%	$17,974	$76,593	$825	$321	$504	$5,090	$5,915	$1,167
2017	$49,630	$70,674	70.2%	$19,852	$77,268	-$2,282	-$888	-$1,394	$5,216	$2,933	$1,289
2018	$56,631	$89,202	63.5%	$22,652	$79,709	-$7,232	-$1,863	-$5,369	$5,474	-$1,757	$1,471
3-year Average	$50,398	$76,481	66.1%	$20,159	$77,857	-$2,896	-$810	-$2,086	$5,260	$2,364	$1,309

Sources and Notes:

[1], [2], [8]: Data provided by Young Brothers.

[4]: 40% debt in capital structure based on recommendation.

[5], [6], [7]: Docket No. 2013-0032, 12-Month Trailing Cost of Service Reports.

[9] = Consolidated depreciation from Income Statement * [3].

[11]: 6.50% cost of debt based on recommendation.

Young Brothers Historical Rate Base and Return on Rate Base

	Rate Base ($000s)			Net Income ($000s)		Intrastate Return on Rate Base (%)	
Year	Interstate	Intrastate	Consolidated	Consolidated	Intrastate	Allowed Rate of Return	Actual Rate of Return
2005	$12,408	$33,059	$45,467	$3,878	$1,855	11.06%	5.60%
2006	$13,576	$34,444	$48,020	$2,391	$582	11.06%	1.70%
2007	$20,451	$41,837	$62,288	$5,610	$2,910	10.76%	6.96%
2008	$24,943	$59,881	$84,824	$2,462	$1,792	10.76%	2.99%
2009	$26,355	$71,905	$98,260	$2,033	$678	10.82%	0.94%
2010	$28,163	$72,188	$100,351	$2,842	$32	10.82%	0.04%
2011	$23,996	$67,647	$91,643	-$162	-$2,190	10.25%	-3.24%
2012	$24,726	$59,372	$84,098	$10,088	$3,947	10.25%	6.65%
2013	$25,656	$59,294	$84,950	$8,302	$3,740	10.25%	6.31%
2014	$23,759	$48,785	$72,544	$10,808	$5,132	10.25%	10.52%
2015	$24,725	$43,158	$67,883	$12,116	$6,026	10.25%	10.86%
2016	$24,632	$44,934	$69,567	$4,042	$504	10.25%	1.12%
2017	$21,044	$49,630	$70,674	$2,476	-$1,394	9.56%	-2.81%
2018	$32,571	$56,631	$89,202	-$4,434	-$5,369	9.56%	-9.48%

Source: Data provided by Young Brothers.

Income Statement Data

(in thousands of dollars)	2018	2017	2016
	[1]	[2]	[3]
Total Operational Revenues	$119,455	$114,002	$115,692
Depreciation	$8,623	$7,427	$7,880
Net Operating Income Before Interest Expense and Income Taxes	-$11,380	$551	$2,603
Net Income	-$11,380	$554	$2,603

Sources and Notes:

[1]: Young Brothers, LLC 2018 Financial Statements, p. 22.

[2]: Young Brothers, LLC 2018 Financial Statements, p. 22.

[3]: Young Brothers, Ltd. 2016 Financial Statements, p. 22.

Intrastate Cost of Service Report

(in thousands of dollars)	2018	2017	2016
	[1]	[2]	[3]
Total Revenue	$79,709	$77,268	$76,593
Net Operating Income Before Interest Expense and Income Taxes	-$7,232	-$2,282	$825
Provision for Income Taxes	-$1,863	-$888	$321
Net Income	-$5,369	-$1,394	$504

Sources and Notes:

[1]: Docket No. 2013-0032, 12-Month Trailing Cost of Service Report for the period from January 2018 to December 2018, p. 3.

[2]: Docket No. 2013-0032, 12-Month Trailing Cost of Service Report for the period from January 2017 to December 2017, p. 4.

[3]: Docket No. 2013-0032, 12-Month Trailing Cost of Service Report for the period from January 2016 to December 2016. Data provided by Young Brothers.