



Cost of Capital Study

January 1, 2015

Staff Recommendation

| Industry: Railroad Industry - Class I | | | SIC: 4002 |
|--|---|------------------------|--|
| Equity: | | | Reference |
| Risk Adjusted Models | | | |
| CAPM | | 10.35% | Page 5 |
| Dividend Growth Models | | | |
| DGM or DCF Model (Dividend Growth) | | 13.00% | Page 7 |
| DGM or DCF Model (Earnings Growth) | | 13.00% | Page 7 |
| DGM or DCF Model (b * ROE = Growth) | | 16.50% | Page 7 |
| Estimated Cost of Equity Capital | | 13.00% | |
| Debt: | | | |
| Estimated Cost of Debt Capital | | 4.75% | Page 3 |
| <hr/> Cost of Capital Summary <hr/> | | | |
| Capital Component | Market Capital Structure | Cost of Capital | Before-Tax Weighted Average Cost of Capital |
| Debt | 16.00% | 4.75% | 0.76% |
| Equity | 84.00% | 13.00% | 10.92% |
| TOTAL | 100.00% | | 11.68% |
| | | Rounded | 11.75% |



Cost of Capital Study

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| | | | |
|--|---|------------------------|--|
| Industry: Railroad Industry - Non Class I | | | SIC: 4002 |
| Equity: | | | Reference |
| Risk Adjusted Models | | | |
| CAPM | | 12.10% | Page 5 |
| Dividend Growth Models | | | |
| DGM or DCF Model (Dividend Growth) | | 13.50% | Page 7 |
| DGM or DCF Model (Earnings Growth) | | 13.75% | Page 7 |
| DGM or DCF Model (b * ROE = Growth) | | 15.00% | Page 7 |
| Estimated Cost of Equity Capital | | 13.75% | |
| Debt: | | | |
| Estimated Cost of Debt Capital | | 4.75% | Page 3 |
| <hr/> Cost of Capital Summary <hr/> | | | |
| Capital Component | Market Capital Structure | Cost of Capital | Before-Tax Weighted Average Cost of Capital |
| Debt | 20.00% | 4.75% | 0.95% |
| Equity | 80.00% | 13.75% | 11.00% |
| TOTAL | 100.00% | | 11.95% |
| | | Rounded | 12.00% |

Cost of Capital Study

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Staff Recommendation

| | | | |
|--|---|------------------------|-----------------------------------|
| Industry: Railroad Industry - Class I | | | SIC: 4002 |
| Equity: | Direct Rate | | Reference |
| | Estimated Cost of Equity Capital | 5.00% | Page 8 |
| Debt: | | | |
| | Estimated Cost of Debt Capital | 5.05% | Page 9 |
| <hr/> Cost of Capital Summary <hr/> | | | |
| | | | Before-Tax Weighted Average |
| Capital Componer | Market Capital Structure | Cost of Capital | Cost of Capital |
| Debt | 16.00% | 5.05% | 0.81% |
| Equity | 84.00% | 5.00% | 4.20% |
| TOTAL | 100.00% | | 5.01% |
| | | Rounded | 5.00% |

Cost of Capital Study
January 1, 2015
Analysis of the Market Capital Structure
Analysis of Debt Capital

| Industry: Railroad Class I | | Ratings | |
|------------------------------------|--------|------------|------------|
| Company | Ticker | Moody's | S&P |
| Can. National Railway | CNI | A2 | A |
| Can. Pacific Railway | CP | Baa1 | BBB- |
| CSX Corp. | CSX | Baa1 | BBB+ |
| Kansas City Southern | KSU | NR | BBB- |
| Norfolk Southern | NSC | Baa1 | BBB+ |
| Union Pacific | UNP | A3 | A |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| Overall Average Debt Rating | | Baa | BBB |

NR = Not Rated

| Mergent Bond Record, Jan 2015, Page 213 | | | | |
|---|--------------|--------------|--------------|--------------|
| Corporate | Aaa | Aa | A | Baa |
| October | 3.92% | 3.99% | 4.13% | 4.69% |
| November | 3.92% | 4.04% | 4.18% | 4.79% |
| December | 3.79% | 3.89% | 4.05% | 4.74% |
| Average | 3.88% | 3.97% | 4.12% | 4.74% |
| Public Utilities | Aaa | Aa | A | Baa |
| October | | 3.98% | 4.06% | 4.67% |
| November | | 4.03% | 4.09% | 4.75% |
| December | | 3.90% | 3.95% | 4.70% |
| Average | | 3.97% | 4.03% | 4.71% |
| Industrials | Aaa | Aa | A | Baa |
| October | 3.92% | 4.00% | 4.20% | 4.70% |
| November | 3.92% | 4.04% | 4.27% | 4.82% |
| December | 3.79% | 3.89% | 4.15% | 4.77% |
| Average | 3.88% | 3.98% | 4.21% | 4.76% |

| | |
|----------------------------------|--------------|
| Debt Yield Rate Estimate: | 4.75% |
|----------------------------------|--------------|

| Ratings Dispersion & Averages | | | |
|-------------------------------|---------------------|---|------|
| Agency | Number of Companies | | |
| S&P | | | |
| AAA | 1 | | |
| AA | 2 | | |
| A | 3 | 2 | 6 |
| BBB | 4 | 4 | 16 |
| BB | 5 | | |
| B | 6 | | |
| CCC | 7 | | |
| C | 9 | | |
| D | 10 | | |
| Total: | | 6 | 22 |
| Average Rating: | | | 3.67 |
| Moody's | | | |
| Aaa | 1 | | |
| Aa | 2 | | |
| A | 3 | 2 | 6 |
| Baa | 4 | 3 | 12 |
| Ba | 5 | | |
| B | 6 | | |
| Caa | 7 | | |
| Ca | 8 | | |
| C | 9 | | |
| Total: | | 5 | 18 |
| Average Rating: | | | 3.60 |

Cost of Capital Study
January 1, 2015
Analysis of the Market Capital Structure

| Industry: Railroad Class I | | | | | | | | SIC: 4002 | |
|---|--------------|---------------|---------------|-------------|--------------------|-----------------|---------------|------------------------|--|
| Company Name | Stock Symbol | Debt (\$ mil) | Debt % | Stock Price | Shares Outstanding | Equity (\$ mil) | Equity % | Total Capital (\$ mil) | |
| Can. National Railway | CNI | 6,764.0 | 11.77% | 62.68 | 809.3 | 50,724 | 88.23% | 57,487.7 | |
| Can. Pacific Railway | CP | 4,867.0 | 14.20% | 176.99 | 166.1 | 29,399 | 85.80% | 34,265.6 | |
| CSX Corp. | CSX | 9,514.0 | 23.95% | 30.47 | 991.6 | 30,217 | 76.05% | 39,731.0 | |
| Kansas City Southern | KSU | 1,841.0 | 13.22% | 109.45 | 110.4 | 12,084 | 86.78% | 13,924.6 | |
| Norfolk Southern | NSC | 8,924.0 | 22.36% | 100.57 | 308.2 | 30,995 | 77.64% | 39,919.4 | |
| Union Pacific | UNP | 11,018.0 | 9.82% | 114.48 | 883.4 | 101,133 | 90.18% | 112,150.7 | |
| Mean: | | | 15.89% | | | 42,425 | 84.11% | 49,580 | |
| Median: | | | 13.71% | | | | 86.29% | | |
| Market Capital Structure Estimate: | | Debt: | 16.00% | | | Equity: | 84.00% | | |

Stock Price = 2014 Average Closing Price

Data Source: Value Line Investment Survey

Cost of Capital Study
January 1, 2015
Capital Asset Pricing Model (CAPM)

CAPM ==> $K_c = R_f + (\beta * ERP)$

| | |
|--|------------------|
| Industry: Railroad Class I | SIC: 4002 |
| Risk-Free Rate (R_f) | 3.00% |
| Beta (β) | 1.05 |
| Equity Risk Premium (ERP): ($R_m - R_f$) | 7.00% |
| Adjusted Equity Risk Premium: ($\beta * ERP$) | 7.35% |
| Cost of Equity Capital - CAPM | 10.35% |
| Ibbotson SBBBI 2015 Market Report | |
| Long-Term Government Bonds - Income Return ¹ | 6.10% |
| Intermediate Term US Treasury Coupon Note Yield (5-Year) ¹ | 5.40% |
| Short-Term US Treasury Bill Yield (30-Day) ¹ | 3.50% |
| Long-Term Horizon Expected Equity Risk Premium ² (Large Compay Stock Total Return - Long-Term US Government Bond Income) | 7.00% |
| ¹ Table 7: Basic Series, Summary Statistics of Annual Total Returns, Arithmetic Mean, p. 13 | |
| ² Table 10: Long-Horizon Expected Equity Risk Premium (historical), p. 16 | |
| Federal Interest Rates - IRS.gov, January 2015 Weighted Average Rates | |
| Long Term Treasury (30 year) ¹ | 3.35% |
| Composite Corporate Bonds ² | 4.48% |
| ¹ http://www.irs.gov/Retirement-Plans/Weighted-Average-Interest-Rate-Table | |
| ² http://www.irs.gov/Retirement-Plans/Composite-Corporate-Bond-Rate-Table | |
| The ValueLine Investment Survey, Selected Yields, Page 4445, January 9, 2015 | |
| U.S. Treasury Securities: | |
| 5-year | 1.68% |
| 10-year | 2.19% |
| 30-year | 2.76% |
| 30-year Zero | 2.86% |
| Federal Reserve Statistical Release (http://www.federalreserve.gov/Releases/H15/20150105/) 1//2015 | |
| Treasury constant Maturities: | |
| 5-year | 1.67% |
| 10-year | 2.18% |
| 20-year | 2.47% |
| 30-year | 2.75% |
| Risk-Free Rate of Return R_f Estimate: | 3.00% |

Cost of Capital Study
January 1, 2015
Beta (β) Analysis

| Industry: Railroad Class I | | SIC: 4002 |
|--|---------------------|----------------------------------|
| Company Name | Stock Symbol | Beta "β" |
| Can. National Railway | CNI | 0.95 |
| Can. Pacific Railway | CP | 1.05 |
| CSX Corp. | CSX | 1.15 |
| Kansas City Southern | KSU | 1.20 |
| Norfolk Southern | NSC | 1.05 |
| Union Pacific | UNP | 1.05 |
| Mean: | | 1.08 |
| Median: | | 1.05 |
| Beta (β) Estimate: | | 1.05 |

NMF = Not Meaningful

Data Source: Value Line Investment Survey

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January 1, 2015

Dividend Growth Model (DGM or DCF)

$$\text{DGM or DCF Model} \implies K_e = \frac{D_1}{P_0} + g$$

where

K_e = Cost of Equity

D_1 = Expected Dividends

P_0 = Current Price

g = Sustainable Growth

| Industry: Railroad - Class I | | | | | | | | | | | | SIC: 4002 |
|--|--------------|-------------------|-------------------------|------------------------------|---------------------|---------------------|--------|--------|---------------|-------------------|------------------|---------------------|
| Company Name | Stock Symbol | Stock Price P_0 | Expected Dividend D_1 | Dividend Yield (D_1 / P_0) | Dividend Growth g | Earnings Growth g | | | | (Dividends) K_e | (Earnings) K_e | $g=(b * ROE)$ K_e |
| | | | | | | | b | ROE | $g=(b * ROE)$ | | | |
| Can. National Railway | CNI | 62.68 | 1.00 | 1.60% | 13.00% | 9.00% | 73.60% | 22.98% | 16.91% | 14.60% | 10.60% | 18.51% |
| Can. Pacific Railway | CP | 176.99 | 1.12 | 0.63% | 12.00% | 16.50% | 83.47% | 26.32% | 21.97% | 12.63% | 17.13% | 22.60% |
| CSX Corp. | CSX | 30.47 | 0.64 | 2.10% | 9.50% | 8.50% | 67.36% | 17.24% | 11.61% | 11.60% | 10.60% | 13.71% |
| Kansas City Southern | KSU | 109.45 | 1.32 | 1.21% | 14.00% | 13.00% | 77.94% | 14.09% | 10.98% | 15.21% | 14.21% | 12.19% |
| Norfolk Southern | NSC | 100.57 | 2.36 | 2.35% | 6.50% | 8.00% | 65.65% | 16.11% | 10.58% | 8.85% | 10.35% | 12.92% |
| Union Pacific | UNP | 114.48 | 2.20 | 1.92% | 13.00% | 12.00% | 68.49% | 24.44% | 16.74% | 14.92% | 13.92% | 18.66% |
| Mean: | | | | 1.44% | 11.50% | 11.33% | 74.81% | 22.18% | 16.83% | 12.97% | 12.80% | 16.43% |
| Median: | | | | 1.60% | 12.00% | 9.00% | 73.60% | 22.98% | 16.91% | 13.61% | 12.26% | 16.11% |
| Cost of Equity Capital - DCF K_e Estimate: | | | | | | | | | | 13.00% | 13.00% | 16.50% |

NMF = Not Meaningful

$b = (1 - \text{payout ratio}) = \text{Retention Ratio}$

ROE = Return on Book Equity

Stock Price = 2014 Average Closing Price

Data Source: Value Line Investment Survey

Support for Market Multiples
Railroad - Class I
2015 Assessment Year

| Industry Overall | | | | |
|-----------------------|--------|----------------------|----------|-----------------|
| Company Name | Ticker | \$Stock\$ Average | Earnings | P/E Multiple |
| Can. National Railway | CNI | 62.68 | 3.23 | 19.40 |
| Can. Pacific Railway | CP | 176.99 | 7.28 | 24.31 |
| CSX Corp. | CSX | 30.47 | 1.92 | 15.87 |
| Kansas City Southern | KSU | 109.45 | 4.79 | 22.85 |
| Norfolk Southern | NSC | 100.57 | 6.39 | 15.74 |
| Union Pacific | UNP | 114.48 | 5.75 | 19.91 |
| Mean: | | | | 19.68 |
| Median: | | | | 19.66 |
| Weighted Mean: | | | | 20.25 |
| P/E Estimate: | | | | 20.0 |
| Equity Rate: | | | | 5.00% |

NMF = Not Meaningful

Stock Price = 2014 Average Closing Price

Note: Units per share comparisons

Data Source: ValueLine Investment Survey

Cost of Capital Study
January 1, 2015
Direct Debt Rate Calculation

| Industry: Railroad | | |
|--|--|--------------|
| Direct Capitalization Debt Rate | | |
| Interest Expense | | \$ 2,166.0 |
| Total Value of Debt (TVD) | | \$ 42,928.0 |
| Current Yield = Interest Expense/TVD | | 5.05% |

\$ (millions)

Data Source: ValueLine Investment Survey