



Cost of Capital Study

January 1, 2021

Staff Recommendation

Railroad Class I Industry (SIC 4011)			Reference
Equity			
Risk Adjusted Models	CAPM	9.27%	Page 5
Dividend Growth Models			
	DGM or DCF Model (Dividend Growth)	10.50%	Page 7
	DGM or DCF Model (Earnings Growth)	11.75%	Page 7
	DGM or DCF Model (b * ROE = Growth)	15.75%	Page 7
Estimated Cost of Equity Capital		15.00%	
Debt			
Estimated Cost of Debt Capital		3.27%	Page 3
Cost of Capital Summary			
Capital Component	Market Capital Structure	Cost of Capital	Before-Tax Weighted Average Cost of Capital
Debt	25.00%	3.27%	0.82%
Equity	75.00%	15.00%	11.25%
Total	100.00%		12.07%
		Rounded	12.00%



Cost of Capital Study

January 1, 2020

Staff Recommendation

Railroad Non-Class I Industry (SIC 4013)			Reference
Equity			
Risk Adjusted Models	CAPM	<u>9.27%</u>	Page 5
Dividend Growth Models			
	DGM or DCF Model (Dividend Growth)	10.50%	Page 7
	DGM or DCF Model (Earnings Growth)	11.75%	Page 7
	DGM or DCF Model (b * ROE = Growth)	<u>15.75%</u>	Page 7
Estimated Cost of Equity Capital		<u>15.75%</u>	
Debt			
Estimated Cost of Debt Capital		<u>3.27%</u>	Page 3
Cost of Capital Summary			
Capital Component	Market Capital Structure	Cost of Capital	Before-Tax Weighted Average Cost of Capital
Debt	25.00%	3.27%	0.82%
Equity	<u>75.00%</u>	15.75%	<u>11.81%</u>
Total	<u>100.00%</u>		<u>12.63%</u>
		Rounded	<u>12.75%</u>

Cost of Capital Study

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Staff Recommendation

Railroad Class I Industry (SIC 4011)				Reference
Direct Rate				
Equity				
	<u>Estimated Cost of Equity Capital</u>		4.49%	Page 8
Debt				
	<u>Estimated Cost of Debt Capital</u>		4.78%	Page 9
Cost of Capital Summary				
<u>Capital Component</u>	<u>Market Capital Structure</u>	<u>Cost of Capital</u>	<u>Before-Tax Weighted Average Cost of Capital</u>	
Debt	25.00%	4.78%	1.20%	
Equity	<u>75.00%</u>	4.49%	<u>3.37%</u>	
Total	<u>100.00%</u>		<u>4.57%</u>	
		Rounded	<u>4.50%</u>	

Cost of Capital Study
January 1, 2021
Analysis of Debt Capital

Railroad Class I Industry (SIC 4011)				
		Ratings		
Company	Ticker	Moody's	S&P	
Canadian National Railway	CNI	A2	A	
Canandian Pacific Railway	CP	Baa1	NF	
CSX Corp.	CSX	Baa1	BBB+	
GATX Corp.	GATX	Baa2	BBB	
The Greenbrier Companies, Inc.	GBX	RW	BB	
Kansas City Southern	KSU	Baa2	BBB	
Average Rating		Baa	BBB	
NR = Not Rated				
RW = Ratings Withdrawn				
Mergent Bond Record, Jan 2021, Page				
Corporate	Aaa	Aa	A	Baa
October	2.35%	2.55%	2.88%	3.44%
November	2.30%	2.47%	2.79%	3.30%
December	2.26%	2.44%	2.72%	3.16%
Average	2.30%	2.49%	2.80%	3.30%
Public Utilities	Aaa	Aa	A	Baa
October	-	2.72%	2.95%	3.27%
November	-	2.63%	2.85%	3.17%
December	-	2.57%	2.77%	3.05%
Average	-	2.64%	2.86%	3.16%
Industrials	Aaa	Aa	A	Baa
October	2.35%	2.37%	2.81%	3.60%
November	2.30%	2.30%	2.72%	3.41%
December	2.26%	2.31%	2.66%	3.27%
Average	2.30%	2.33%	2.73%	3.43%
Debt Yield Rate Estimate				3.27%
Data Source:				
https://www.moodys.com				
https://standardandpoors.com				
Mergent Bond Record, January 2021				

Ratings			
Dispersions & Averages			
Agency	Number of Companies		
S&P			
AAA	1		
AA	2		
A	3	1	3
BBB	4	3	12
BB	5	1	5
B	6		
CCC	7		
C	9		
D	10		
Total:		5	20
Average Rating			4.00
Moody's			
Aaa	1		
Aa	2		
A	3	1	3
Baa	4	4	16
Ba	5		
B	6		
Caa	7		
Ca	8		
C	9		
Total:		5	19
Average Rating			3.80

Cost of Capital Study
January 1, 2021
Analysis of the Market Capital Structure

Railroad Class I Industry (SIC 4011)									
Company Name	Stock Symbol	Debt (\$ mil)	Debt %	Stock Price	Shares (mil) Outstanding	Equity (\$ mil)	Equity %	Total Capital (\$ mil)	
Canadian National Railway	CNI	9,113.1	10.43%	109.85	712.3	78,246	89.57%	87,359.1	
Canandian Pacific Railway	CP	6,265.3	11.65%	346.69	137.0	47,497	88.35%	53,762.3	
CSX Corp.	CSX	15,993.0	18.56%	90.75	773.5	70,195	81.44%	86,188.0	
GATX Corp.	GATX	4,788.3	62.32%	83.18	34.8	2,895	37.68%	7,683.3	
The Greenbrier Companies, Inc.	GBX	804.1	40.32%	36.38	32.7	1,190	59.68%	1,994.1	
Kansas City Southern	KSU	3,228.0	14.13%	204.13	96.1	19,617	85.87%	22,845.0	
Norfolk Southern Corp.	NSC	11,880.0	16.24%	237.61	257.9	61,280	83.76%	73,160.0	
Trinity Industries, Inc.	TRN	4,881.9	60.71%	26.39	119.7	3,159	39.29%	8,040.9	
Union Pacific Corp.	UNP	23,943.0	14.25%	208.22	692.1	144,109	85.75%	168,052.0	
Westinghouse Air Brake Technologies Corp.	WAB	4,333.6	23.60%	73.20	191.7	14,032	76.40%	18,365.6	
Mean		8,523	27.22%			44,222	72.78%	52,745	
Median		5,574	17.40%			33,557	82.60%	38,304	
Market Capital Structure Estimate		Debt	25.00%			Equity	75.00%		
2020 Closing Stock Price									
Shares Outstanding = number of common shares outstanding (millions)									
Data Source:									
Yahoo Finance, 12-31-2020									
Value Line Industry Summary & Index, 3-8-2021									

Cost of Capital Study
January 1, 2021
 Capital Asset Pricing Model (CAPM)

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

Railroad Class I Industry (SIC 4011)	
Risk-Free Rate (R_f)	1.66%
Beta (β)	1.05
Equity Risk Premium (ERP): ($R_m - R_f$)	7.25%
Adjusted Equity Risk Premium: ($\beta * ERP$)	7.61%
Cost of Equity Capital - CAPM	9.27%
Duff & Phelps Cost of Capital Navigator, 2021 Valuation Handbook – U.S. Guide to Cost of Capital	
Long-Term Government Bonds - Income Return (1)	4.91%
Intermediate Term Government Bonds - Income Return (1)	4.33%
U.S. Treasury Bills - Total Returns (1)	3.34%
Long-horizon expected equity risk premium, ERP Historical (2)	7.25%
Internal Revenue Service, Interest Rates Tables, January 2021	
Long Term Treasury (30 year) (3)	1.67%
Value Line Investment Survey, Selection & Opinion, Selected Yields, Page 701, January 2021	
U.S. Treasury Securities:	
5-year	0.39%
10-year	0.95%
30-year	1.68%
30-year Zero	N/A
Federal Reserve Statistical Release, http://www.federalreserve.gov/Releases/H15/, January 2021	
Treasury constant Maturities:	
5-year	0.36%
10-year	0.93%
20-year	1.46%
30-year	1.66%
Risk-Free Rate of Return R_f, 30-year Treasury Rate, January 2021	1.66%
Data Source:	
1 - CRSP Deciles Size Study - Supplementary Data: Summary Statistics of Annual Total Returns (1926-2020) Arithmetic Mean	
2 - Duff & Phelps Cost of Capital Navigator, Risk Premium Report Study, February 2021	
3 - http://www.irs.gov/Retirement-Plans/Weighted-Average-Interest-Rate-Table	

Cost of Capital Study
January 1, 2021
Beta (β) Analysis

Railroad Class I Industry (SIC 4011)		
Company Name	Stock Symbol	Beta "β"
Canadian National Railway	CNI	0.85
Canadian Pacific Railway	CP	0.95
CSX Corp.	CSX	1.05
GATX Corp.	GATX	0.95
The Greenbrier Companies, Inc.	GBX	1.25
Kansas City Southern	KSU	1.05
Norfolk Southern Corp.	NSC	1.10
Trinity Industries, Inc.	TRN	0.90
Union Pacific Corp.	UNP	1.10
Westinghouse Air Brake Technologies Corp.	WAB	1.25
Mean		1.05
Median		1.05
Beta (β) Estimate		1.05
Not Meaningful (NMF)		
Data Source:		
Yahoo Finance, 12-31-2020		
Value Line Industry Summary & Index, 3-8-2021		

Cost of Capital Study
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Dividend Growth Model (DGM or DCF)

DGM or DCF Model ==> $K_e = \frac{D_1}{P_0} + g$ where
 K_e = Cost of Equity
 D_1 = Expected Dividends
 P_0 = Current Price
 g = Sustainable Growth

Railroad Class I Industry (SIC 4011)													
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	$g=(b * ROE)$				
Canadian National Railway	CNI	109.85	1.87	1.70%	8%	9.50%	63.38%	23.36%	14.81%	9.70%	11.20%	16.51%	
Canandian Pacific Railway	CP	346.69	2.88	0.83%	14%	10.50%	83.11%	34.51%	28.68%	14.83%	11.33%	29.51%	
CSX Corp.	CSX	90.75	1.04	1.15%	8%	9.00%	77.09%	28.11%	21.67%	9.15%	10.15%	22.82%	
GATX Corp.	GATX	83.18	-	0.00%	2%	0.50%	65.49%	10.94%	7.16%	NMF	NMF	7.16%	
The Greenbrier Companies, Inc.	GBX	36.38	2.00	5.50%	3%	-0.50%	46.60%	5.09%	2.37%	8.50%	5.00%	7.87%	
Kansas City Southern	KSU	204.13	1.08	0.53%	7%	11.50%	79.11%	15.51%	12.27%	7.53%	12.03%	12.80%	
Norfolk Southern Corp.	NSC	237.61	1.76	0.74%	8%	10.50%	65.14%	17.92%	11.67%	8.74%	11.24%	12.41%	
Trinity Industries, Inc.	TRN	26.39	3.96	15.01%	7%	11.50%	48.40%	7.83%	3.79%	22.01%	26.51%	18.80%	
Union Pacific Corp.	UNP	208.22	0.84	0.40%	8%	10.50%	56.11%	32.65%	18.32%	8.40%	10.90%	18.72%	
Westinghouse Air Brake Technolog	WAB	73.20	3.88	5.30%	10%	10.50%	88.97%	7.44%	6.62%	15.30%	15.80%	11.92%	
Mean				3.12%		7.50%	8.35%	67.34%	18.34%	12.74%	11.57%	12.68%	15.85%
Median				0.99%		8.00%	10.50%	65.32%	16.72%	11.97%	9.15%	11.24%	14.66%
Cost of Equity Capital - DCF K_e Estimate										10.50%	11.75%	15.75%	
b = (1 - payout ratio) = Retention Ratio ROE = Return on Book Equity Not Meaningful (NMF) Data Source: 2020 Closing Stock Price https://finance.yahoo.com , 12-31-2020 Value Line Industry Summary & Index, 3-8-2021													

Cost of Capital Study
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Support for Market Multiples

Railroad Class I Industry (SIC 4011)				
Company Name	Ticker	Stock Price	Earnings	P/E Multiple
Canadian National Railway	CNI	109.85	4.48	24.52
Canandian Pacific Railway	CP	346.69	13.45	25.78
CSX Corp.	CSX	90.75	4.17	21.76
GATX Corp.	GATX	83.18	5.51	15.10
The Greenbrier Companies, Inc.	GBX	36.38	1.97	18.47
Kansas City Southern	KSU	204.13	6.94	29.41
Norfolk Southern Corp.	NSC	237.61	10.25	23.18
Trinity Industries, Inc.	TRN	26.39	1.27	20.78
Union Pacific Corp.	UNP	208.22	8.38	24.85
Westinghouse Air Brake Technologies Corp	WAB	73.20	4.18	17.51
Mean				22.14
Median				22.47
P/E Estimate				22.25
Equity Rate				4.49%
Not Meaningful (NMF)				
Data Source:				
2020 Closing Stock Price				
Yahoo Finance, 12-31-2020				
Value Line Industry Summay & Index, 3-8-2021				

Cost of Capital Study
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Direct Debt Rate Calculation

Railroad Class I (SIC 4011)		
Direct Capitalization Debt Rate		
Interest Expense (\$ mil)		\$ 2,660.0
Total Value of Debt (TVD) (\$ mil)		\$ 85,458.2
Current Yield = Interest Expense/TVD		3.11%
Data Source: Value Line Investment Survey, 3-8-2021		