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# Credit Summary: Union Pacific Corp. (A-, stable)

## New capital-allocation plans derail UP's credit quality

**Morningstar Credit Ratings, LLC**
15 June 2018

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### Executive Summary

On June 8, we downgraded Union Pacific's credit rating one notch to A-. The downgrade stems from Union Pacific's decision to reward shareholders by capitalizing on the operating strength of its business and the recent tax reform. To implement this plan, Union Pacific will increase its rent-adjusted leverage target to 2.7 times from 2.0 times and will look to repurchase 20% of its market capitalization through 2020. Still, Union Pacific's credit profile is bolstered by its impressive competitive position as the largest class I rail under our coverage and its robust profitability. We've assigned the company a stable outlook because we expect our rating to remain at the current level over the next few years.

### Key Takeaways

- Overall, Union Pacific's credit profile benefits from its low Business Risk. The company's irreplaceable position as the operator of more than 32,000 miles of track supports its rating.
- Union Pacific must reinvest a meaningful percentage of its revenue back into its business to support its network while returning the remaining cash flow to shareholders via increasing dividends and repurchases. However, the company's recent capital allocation plan further strains its Cash Flow Cushion score.
- The meaningful consolidation that has occurred started in the 1980s was a boon for industry profitability. The trend continues today, as the railroads have produced average increases in revenue per carload above the increase in average railcar inflation.

### Companies Mentioned

| Name/Ticker | Rating | Outlook | Coupon | Maturity | Price | Yield % | Spread |
|---|---|---|---|---|---|---|---|
| Canadian National CNI | A | Stable | 2.75% | 3/1/2026 | 93.61 | 3.71 | +80 |
| Union Pacific UNP | A- | Stable | 3.95% | 9/10/2028 | 100.17 | 3.93 | +101 |
| Canadian Pacific CP | BBB+ | Stable | 3.70% | 2/1/2026 | 98.33 | 3.96 | +104 |
| CSX CSX | BBB+ | Stable | 3.80% | 3/1/2028 | 97.54 | 4.11 | +117 |
| Norfolk Southern NSC | BBB+ | Stable | 3.15% | 6/01/2027 | 93.95 | 3.96 | +103 |
| Kansas City Southern KSU | BBB | Stable | 3.13% | 6/1/2026 | 92.09 | 4.31 | +139 |

Source: Interactive Data, as of June 14, 2018

### Credit Rating Rationale

Earlier this month, we downgraded our corporate credit rating on Union Pacific Corporation one notch to A- to account for management's new capital-allocation strategy. This new policy includes increasing the rent-adjusted leverage target to 2.7 times from up to 2.0 times. In total, management is looking to reward shareholders by repurchasing $20 billion worth of shares by 2020, a move that will necessitate a total of at least $8 billion of incremental debt by our calculation. These decisions had the largest effect on our Cash Flow Cushion score and have resulted in the downgrade. The rating outlook is stable.

Our rating reflects Union Pacific's strong competitive position offset by its leverage aspirations and generous shareholder payments. Union Pacific owns assets that are difficult to reproduce and are the basis for Morningstar's Equity Research Group's wide economic moat, which is the cornerstone of its low Business Risk score. Union Pacific serves a multitude of industries and customers, which bolsters the customer concentration and cyclicality components of the score. Union Pacific has leveraged its competitive position into midteens returns on invested capital and solid interest coverage ratios that underpin its strong Solvency Score, although the additional debt will elevate the financial leverage component of the forward-looking score. Over the next five years, we project that the company will generate average annual operating cash flow of $9.5 billion and reinvest $3.8 billion per year in the business. Incorporating management's new payout ratio translates into a nearly 50% increase in the company's $2 billion annual dividend during this span. Management will repurchase $20 billion worth of shares by 2020. In total, this will consume more than all its available cash flow. Union Pacific also has a meaningful debt maturity schedule, with average maturities of $1 billion due per year over the next five years. These factors contribute to its weak Cash Flow Cushion score.

### Pillar Analysis

**Exhibit 1** Union Pacific Corp Credit Pillar Summary

**Current Rating: A-** — Strongest ⟷ Weakest

| Rating Pillars | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Business Risk | | | | ■ | | | | | | |
| Cash Flow Cushion | | | | | | | | ■ | | |
| Solvency Score | | | | ■ | | | | | | |
| Distance to Default | | | ■ | | | | | | | |

Source: Morningstar Credit Ratings, LLC

Please refer to the appendix for a full description of the rating pillars.

- Business Risk (4): Union Pacific benefits from its strong competitive advantage and medium uncertainty rating. However, the company receives a fairly aggressive management score and is now extremely dependent on the capital markets to finance its $20 billion in share repurchases over the next three years.
    - Size (Very Large): Union Pacific generated $21.2 billion in revenue in 2017 and we project $22.1 billion in 2018.

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- Economic moat (Wide): Morningstar's Equity Research Group awards Union Pacific with a wide moat based on its cost advantages versus trucking and its efficient scale of having a vast network that is unlikely to see new entrants emerge.
- Uncertainty (Medium): Union Pacific earns a medium uncertainty rating due to the defensive nature of the transportation industry.
- Product/customer concentration (Neutral): We rate Union Pacific as having neutral customer concentration because of its industry and customer breadth. The chart below shows the company's breakdown by commodity type—premium is intermodal, and finished vehicles.
- Management (Fairly Aggressive): Management announced at its May 31, 2018 analyst day that it is increasing rent-adjusted leverage to 2.7 times from 2.0 times and is now managing toward a credit rating of at least BBB+. The company is repurchasing $20 billion in shares over the next three years to meet this goal and raised $6 billion (or roughly half of the total) in early June.
- Dependence on capital markets (Extremely Dependent): Union Pacific wants to repurchase $20 billion in shares over the next three years. This compares to our estimate of adjusted free cash flow before repurchases of $13.8 billion. Thus, if management uses all its available cash, it would still be roughly $6 billion short and thus is wholly dependent on the capital markets to meet its stated objective, and this low score reflects the temporary effect that these repurchases have on the company's otherwise strong ability to finance its business without needing to rely on the capital markets.
- Cyclicality (Average Cyclicality): Union Pacific provides ships products that relate in part to the everyday function of society, providing some countercyclicality. However, freight carloads are more cyclical than industrial production, which is in itself a cyclical indicator, and thus we assign only an average score.

- Cash Flow Cushion (8): We project operating cash flow will increase from $8.7 billion in 2018 to $10.2 billion by 2022. However, we project that UP will see capital spending increase from $3.3 billion in to $4.1 billion over this span, consistent with historical spending that has averaged 16% of sales. The company is targeting a 40% to 45% payout ratio and wants to repurchase $20 billion in shares over the next three years funded by debt. The company also faces average maturities of $910 million per year over this forecast period. In all, UP will need access to the debt markets to fulfill its repurchase goal

- Solvency Score (4): UP generates impressive ROICs and strong interest coverage ratios offset by slightly high leverage. Over time, we expect the incremental leverage will cause the TL/TA to worsen and thus possibly put further pressure on the Solvency Score.

- Distance to Default (3): Over the last 12 months, Union Pacific's stock price has outperformed the broader market's advance by nearly 130%. Today, the company has market cap approaching $115 billion compared with its total debt balance of $23.6 billion. This provides a substantial amount of equity cushion for bondholders and contributes to its strong score.

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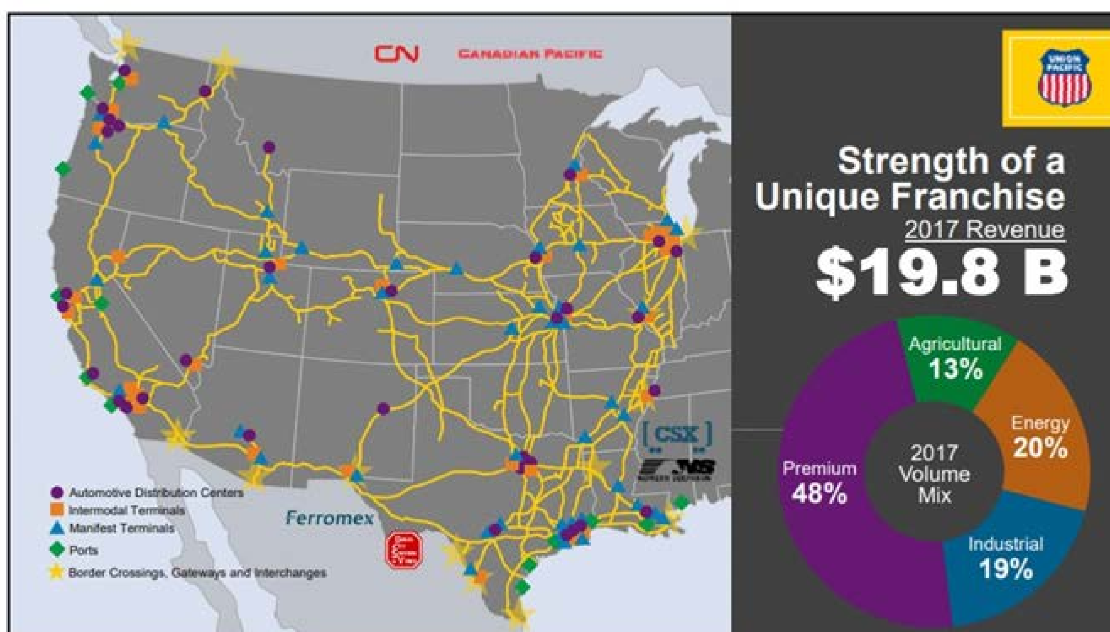
## Union Pacific

### Company Overview

Union Pacific is among the largest of the seven United States Class I railroads, which the Associate of American Railroads, or AAR, defines as having revenue of more than $453 million. Union Pacific's rail network, through its subsidiaries and affiliates, consists of 32,122 route miles, of which it owns 26,042, that links 23 states in the western two thirds of the country. The rail's nearly $20 billion freight revenue is viewed through four groups. Premium, which is intermodal and automotive; energy; industrial; and agricultural. The below exhibits show the individual franchises and the associated 2017 volume mix.

**Exhibit 2** The Union Pacific Railroad Franchise




| Premium--$5.8 billion 2017 revenue | |
|---|---|
| Domestic Intermodal | 51.0% |
| International Intermodal | 37.0% |
| Finished Vehicles | 11.0% |
| Other | 1.0% |

| Industrial--$5.2 billion 2017 revenue | |
|---|---|
| Construction | 23.0% |
| Industrial Chemicals | 18.0% |
| Plastics | 16.0% |
| Forest Products | 14.0% |
| Specialized | 12.0% |
| Metals | 10.0% |
| Soda Ash | 7.0% |

| Energy--$4.5 billion 2017 revenue | |
|---|---|
| PRB Coal | 56.0% |
| Other Coal/Coke | 17.0% |
| Sand | 15.0% |
| Petroleum, LPG, and Renewables | 12.0% |

| Agricultural Products--$4.3 billion 2017 revenue | |
|---|---|
| Grain | 39.0% |
| Grain Products | 27.0% |
| Food & Beverage | 18.0% |
| Fertilizer | 16.0% |

Source: Company 2018 analyst day

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**Financial Projections**

We project revenue will grow 3.8% on average per year over our forecast period, consistent with management's aims of positive volume growth and pricing that exceeds rail inflation. We expect this pricing dynamic will enable UP to obtain its 60% OR goal, and foresee further gains to 58.9%, but are skeptical that the OR will hit the 55% level given that it has hovered at roughly 63% since 2014. Refer to the the Union Pacific Financial Snapshot in the appendix for complete projections.

**Exhibit 3** Financial Projections ($ in Millions Unless Otherwise Noted)

| Figures | 2018E | 2019E | 2020E | 2021E | 2022E |
|---|---|---|---|---|---|
| Revenue | 22,137 | 23,043 | 23,833 | 24,714 | 25,535 |
| Revenue Growth | 4.2% | 4.1% | 3.4% | 3.7% | 3.3% |
| EBITDA | 10,863 | 11,422 | 11,986 | 12,431 | 12,895 |
| Operating Ratio | 60.4% | 60.0% | 59.4% | 59.2% | 58.9% |
| Operating Cash Flow | 8,717 | 9,025 | 9,516 | 9,817 | 10,212 |
| Capital Expenditures | (3,300) | (3,687) | (3,813) | (3,954) | (4,086) |
| Free Cash Flow | 5,417 | 5,338 | 5,703 | 5,863 | 6,126 |

Source: Morningstar Credit Ratings, LLC

**Capital Structure and Liquidity Analysis**

Union Pacific operates with a multifaceted capital structure, although it relies primarily on senior unsecured bonds and capitalized leases secured by equipment in addition to modest equipment financing and a receivables securitization program for financing. As of March 31, the company held cash of $1.1 billion and total debt of $23.6 billion pro forma for its June $6 billion new issuance. Union Pacific had operated with rent-adjusted leverage of 2.0 times, but management raised its targeted range to 2.7 times and proforma for the new issue we estimate rent-adjusted leverage is at 2.4 times. expects to achieve half of this increase by the end of 2018. Union Pacific supplements its liquidity with a $1.7 billion credit facility that also supports its commercial paper program. The facility carries a debt/net worth restriction that prohibits debt from exceeding 200% of net worth, or $48.8 billion by Union Pacific's calculation. We forecast that Union Pacific will generate nearly $9.5 billion in average annual operating cash flow over the next five years, but that it must reinvest roughly $3.8 billion per year into the business to support its large network. Union Pacific is now targeting a 40%–45% dividend payout ratio, implying that its $2 billion dividend will grow by 50% over the next five years. Moreover, management will repurchase $20 billion in shares by 2020 through at least $8 billion of incremental debt issuances net of retirements, by our estimation, of which the company raised $6 billion in June. Incorporating the new issuances, Union Pacific faces a meaningful debt maturity schedule: $800 million in 2018, $1.1 billion due in 2019, $1 billion due in 2020, $1.3 billion due in 2021, and $920 million due in 2022.

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**Exhibit 4** Capital Structure March 2018 proforma for June 2018 Debt Raise ($s in Millions)

| Type | Maturity | in USD | Debt/ EBITDAR |
|---|---|---|---|
| Notes and debentures | through 2067 | $21,096 | |
| Receivables securitization | 2019 | $ 650 | |
| Other | | $ 2,635 | |
| Unamortized discount and deferred issuance costs | | $ (793) | |
| Total Gross Debt | | $23,588 | 2.1x |
| Capitalized Operating Lease | | $ 3,840 | 0.3x |
| Total Rent-Adjusted Debt | | $27,428 | 2.4x |
| Cash | | $ 1,680 | -0.1x |
| Net Rent-Adjusted Debt | | $25,748 | 2.3x |
| EBITDAR (2018) | | $11,363 | |

Source: Company filings, Morningstar Credit Ratings, LLC

### Capital-Allocation Policy

Union Pacific generates copious operating cash flow but has historically reinvested roughly 16% of sales back into the business. Management is guiding toward 15%, but this seems low. Thereafter, Union Pacific has used the cash to repurchase shares and increase the dividend. Going forward, management is looking to repurchase $20 billion in shares and lift the dividend payout ratio to 40%–45% from around 35% historically.

### Credit Rating History

- We initiated coverage of Union Pacific in November 2009 with a BBB rating. Our rating at the time incorporated the negative effects that the recession had on its credit profile, as well an operating ratio that hovered around 78%.
- We upgraded our rating two notches to A- in June 2010. The upgraded stemmed from a multiple notch improvement in the Solvency Score due to, at the time, a first-quarter record-low 75.1% operating ratio on a forecast for double-digit volume growth, as the 2008 recession finally ended.
- We upgraded Union Pacific one notch to A August 2014. The upgrade was a culmination of the rail's resolute operational performance, consisting of record operating ratios and a rent-adjusted leverage target of 1.5 times. Moreover, we saw a benefit to the Business Risk because Morningstar's Equity Research Group raising the company's economic moat to wide.
- We downgraded United Pacific's rating one notch to A- on June 2018 as a result of the company's new capital-allocation plans, which included increasing its rent-adjusted leverage target to 2.7 times from up to 2.0 times and repurchasing $20 billion worth of shares by 2020.

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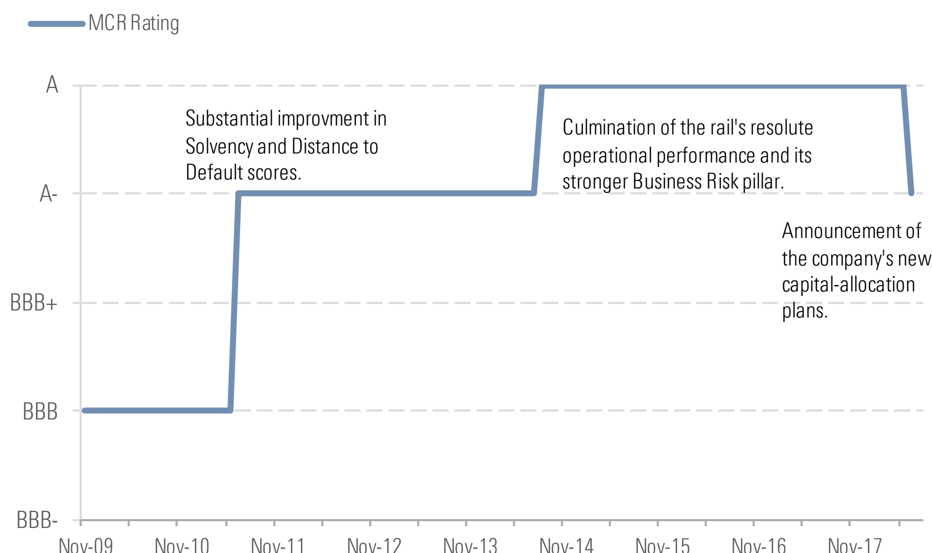
**Exhibit 5** Union Pacific Corp Credit Rating History




Source: Morningstar Credit Rating, LLC

## Peer Comparison

We compare Union Pacific with the other five class I railroads that we cover. Traditionally, Union Pacific compared most closely with Canadian National given the similar leverage and rating profiles. However, with the recent change in capital allocation, it fits in between Canadian National and its lower-rated peers because it is the largest rail by revenue under our coverage list and is more profitable than most them.

**Exhibit 6** Peer Analysis ($ in Millions)

| Trailing-Twelve Months Ended Mar. 31, 2018 | | | | | | |
|---|---|---|---|---|---|---|
| Financial Metric | CNI | UNP | CP | CSX | NSC | KSU |
| Credit Rating | A | A- | BBB+ | BBB+ | BBB+ | BBB |
| Reporting Currency | CAD | $ | CAD | $ | $ | $ |
| Revenue | $13,029 | $21,583 | $6,613 | $11,415 | $10,693 | $2,612 |
| EBITDA | $6,645 | $10,340 | $3,394 | $5,475 | $4,732 | $1,255 |
| Operating Ratio | 58.8% | 62.0% | 58.7% | 63.6% | 65.7% | 64.4% |
| Debt | $11,912 | $23,588 | $8,357 | $13,787 | $10,287 | $2,609 |
| Rent-Adjusted Leverage | 2.0x | 2.4x | 2.6x | 2.6x | 2.4x | 2.3x |

Source: Company filings, Morningstar Credit Ratings, LLC most recent annualized data

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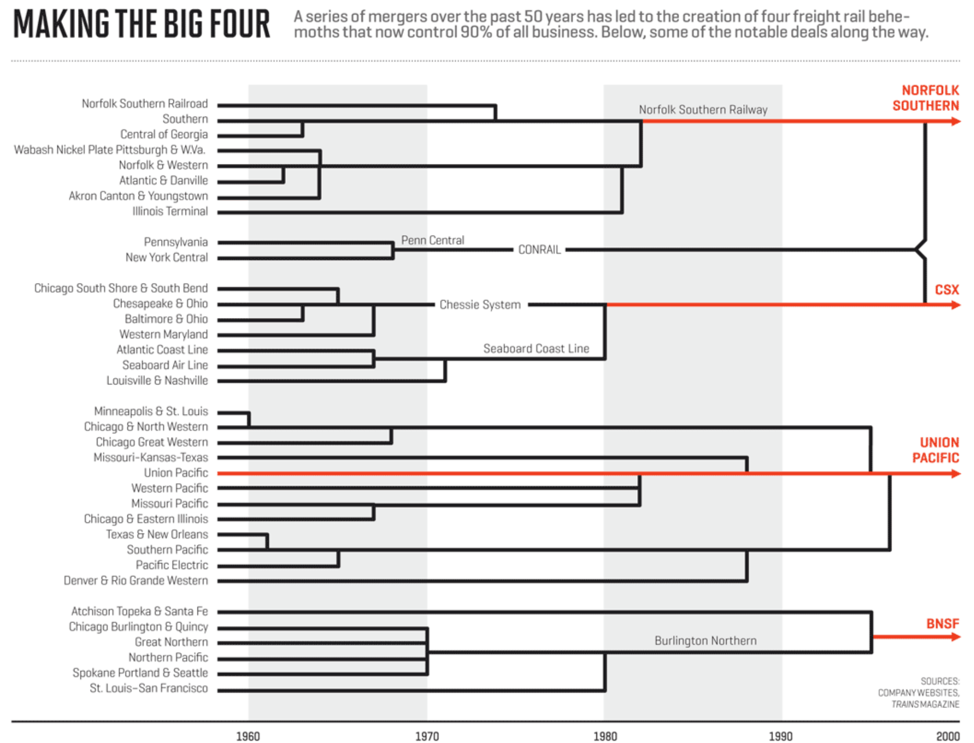
## Industry Dynamics

### Consolidation Has Helped Boost Profitability

A lot has been written about the rail renaissance that occurred around 2004 and the newfangled pricing power. We think part of the explanation relates to the substantial consolidation that has occurred over the past 50 years, prodded along by the passage of the Staggers Act of 1980. The act deregulated the American railroad industry and allowed a rail carrier to establish rates and enter into contracts. Regulated rates still exist in markets where there is no effective competition, such as coal. Today, the remaining U.S. carriers (Burlington Northern, CSX, Norfolk Southern, and Union Pacific) handle nearly 90% of all U.S. rail freight. The Association of American Railroads expects that a line haul freight railroad will qualify as a U.S. Class I railroad if it generates more than $453 million in operating revenue; this adds Kansas City Southern and the American operating companies of the Canadian rails (Canadian National's Grand Trunk Corporation and Canadian Pacific's Soo Line Corporation) to the mix. Theoretically, fewer competitors reduces the benefit of an aggressive pricing campaign, since revenue earned from capturing new market share is more than offset by price reductions impelled upon existing business. We believe this consolidation has supported a rational market and has resulted in the rails' pricing power.

**Exhibit 7** Staggers Act Encouraged Consolidation




Source: http://www.wistrans.org/cfire/2011/10/railroad-mergers/, Nicolas Rapp for Fortune magazine, company information, Trains magazine

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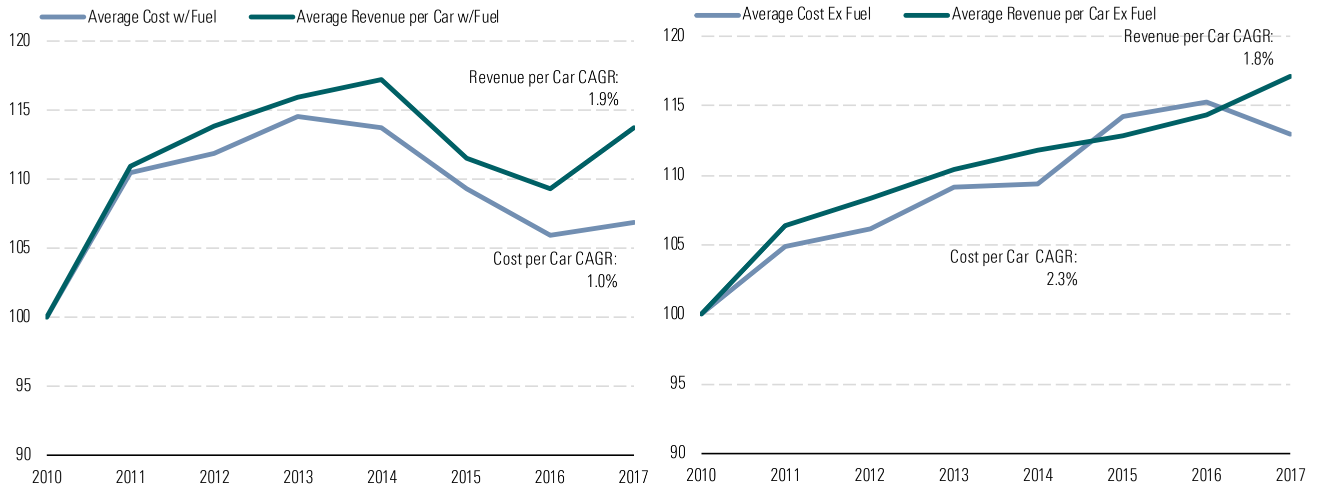
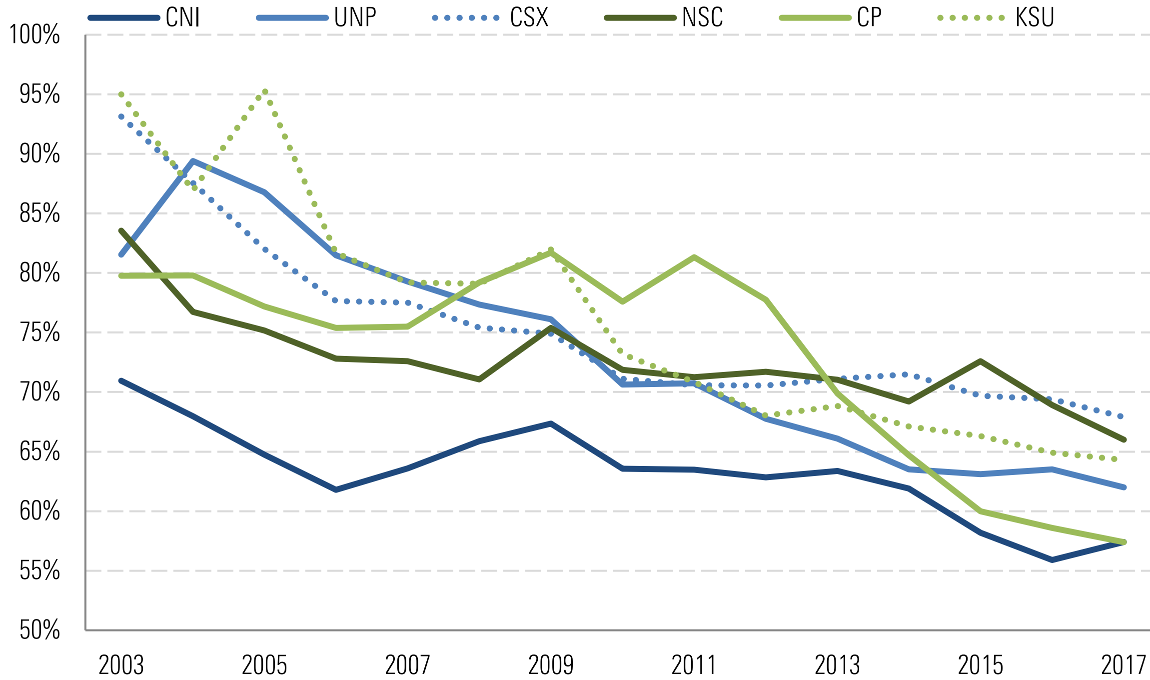
Following the 2008 recession, we estimate that the compound annual growth rate of revenue per car—both including and excluding fuel—has outstripped the increase in costs per car. As a result, the rails have seen profitability surge.

**Exhibit 8** Pricing Power Remains Evident




While Operating Ratios Have Fallen Aggressively




Source: Company filings, Morningstar Credit Ratings, LLC estimates

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# Appendix

**Exhibit 9** Union Pacific Financial Snapshot

| All values (except per share amounts) in: USD Millions | 2015 | 2016 | 2017 | Forecast *2018* | *2019* | *2020* | *2021* | *2022* |
|---|---|---|---|---|---|---|---|---|
| **Income Statement** | | | | | | | | |
| Revenue | 21,813 | 19,941 | 21,240 | 22,137 | 23,043 | 23,833 | 24,714 | 25,535 |
| Gross Profit | 8,052 | 7,272 | 8,061 | 8,758 | 9,222 | 9,686 | 10,081 | 10,495 |
| Operating Income | 8,052 | 7,272 | 8,061 | 8,758 | 9,222 | 9,686 | 10,081 | 10,495 |
| Adjusted EBITDA | 10,064 | 9,310 | 10,166 | 10,863 | 11,422 | 11,986 | 12,431 | 12,895 |
| Net Income | 4,772 | 4,233 | 10,712 | 5,833 | 5,919 | 6,267 | 6,520 | 6,830 |
| **Balance Sheet** | | | | | | | | |
| Cash + Investments | 1,391 | 1,277 | 1,275 | 1,606 | 1,858 | 3,291 | 1,062 | 626 |
| Total Debt | 14,201 | 15,007 | 16,944 | 20,844 | 24,694 | 29,506 | 30,603 | 31,758 |
| Total Adjusted Debt | 18,921 | 19,287 | 21,308 | 25,370 | 29,384 | 34,339 | 35,595 | 36,899 |
| **Cash Flow Statement** | | | | | | | | |
| Cash Flow From Operations | 7,344 | 7,525 | 7,230 | 8,717 | 9,025 | 9,516 | 9,817 | 10,212 |
| Capital Expenditures | (4,650) | (3,505) | (3,238) | (3,300) | (3,687) | (3,813) | (3,954) | (4,086) |
| Free Cash Flow (CFO-Capex) | 2,694 | 4,020 | 3,992 | 5,417 | 5,338 | 5,703 | 5,863 | 6,126 |
| Free Cash Flow / Sales | 12.4% | 20.2% | 18.8% | 24.5% | 23.2% | 23.9% | 23.7% | 24.0% |
| **Growth (% YoY)** | | | | | | | | |
| Revenue | -9.1% | -8.6% | 6.5% | 4.2% | 4.1% | 3.4% | 3.7% | 3.3% |
| Gross Profit | -8.0% | -9.7% | 10.8% | 8.6% | 5.3% | 5.0% | 4.1% | 4.1% |
| Operating Income | -8.0% | -9.7% | 10.8% | 8.6% | 5.3% | 5.0% | 4.1% | 4.1% |
| Adjusted EBITDA | -5.6% | -7.5% | 9.2% | 6.9% | 5.1% | 4.9% | 3.7% | 3.7% |
| **Profitability (%)** | | | | | | | | |
| Gross Margin | 36.9% | 36.5% | 38.0% | 39.6% | 40.0% | 40.6% | 40.8% | 41.1% |
| Operating Margin | 36.9% | 36.5% | 38.0% | 39.6% | 40.0% | 40.6% | 40.8% | 41.1% |
| Adjusted EBITDA Margin | 46.1% | 46.7% | 47.9% | 49.1% | 49.6% | 50.3% | 50.3% | 50.5% |
| Net Margin | 21.9% | 21.2% | 50.4% | 26.4% | 25.7% | 26.3% | 26.4% | 26.7% |
| Adjusted ROIC | 15.1% | 13.3% | 4.4% | 15.2% | 15.6% | 16.0% | 16.2% | 16.3% |
| Adjusted RONIC | -21.5% | -167.1% | -448.5% | 434.3% | 31.7% | 27.7% | 22.2% | 21.7% |
| **Coverage / Cash Flow** | | | | | | | | |
| Adjusted EBITDA / Interest Expense | 16.2 | 13.3 | 14.1 | 9.2 | 7.5 | 7.8 | 7.8 | 8.1 |
| (Adj. EBITDA-CapEx) / Int. Exp. | 8.7 | 8.3 | 9.6 | 6.4 | 5.1 | 5.3 | 5.3 | 5.5 |
| Adj. EBITDAR / (Int. Exp. + 1/3 Rents) | 13.0 | 11.2 | 12.1 | 8.4 | 7.0 | 7.3 | 7.3 | 7.6 |
| Dividends / FCF | 87% | 47% | 50% | 45% | 47% | 46% | 47% | 47% |
| Share repurchase (issuance) / FCF | 129% | 77% | 101% | 122% | 124% | 116% | 113% | 82% |
| **Leverage** | | | | | | | | |
| Total Debt / Adj. EBITDA | 1.4 | 1.6 | 1.7 | 1.9 | 2.2 | 2.5 | 2.5 | 2.5 |
| Net Debt / Adj. EBITDA | 1.3 | 1.5 | 1.5 | 1.8 | 2.0 | 2.2 | 2.4 | 2.4 |
| Total Adj. Debt / Adj. EBITDAR | 1.8 | 2.0 | 2.0 | 2.2 | 2.5 | 2.7 | 2.7 | 2.7 |
| EV /Adj. EBITDA | 8.0 | 10.8 | 9.7 | 11.4 | - | - | - | - |
| Debt / Capital | 41% | 43% | 41% | 49% | 57% | 66% | 71% | 73% |
| FCF / Total Debt | 19% | 27% | 24% | 26% | 22% | 19% | 19% | 19% |

Source: Company filings, Morningstar Credit Ratings, LLC

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**Exhibit 10** Descriptors for Pillar Analysis

| | | Rating Pillars | | | |
|---|---|---|---|---|---|
| **Score Range** | | **Business Risk** | **Cash Flow Cushion** | **Solvency Score** | **Distance to Default** |
| Strongest | 1-2 | Minimal | Very Strong | Very Strong | Very Strong |
| | 3-4 | Low | Strong | Strong | Strong |
| | 5-6 | Moderate | Moderate | Moderate | Moderate |
| | 7-8 | High | Weak | Weak | Weak |
| Weakest | 9-10 | Very High | Very Weak | Very Weak | Very Weak |

| **Business Risk Pillar Components** | |
|---|---|
| Country Risk (10% of Business Risk Score) | |
| Weakest | Very High Risk |
| | High Risk |
| | Moderate Risk |
| Strongest | Low Risk |

| **Company Risk (90% of Business Risk Score)** | | | | |
|---|---|---|---|---|
| | **Size** | **Economic Moat** | **or Sustainable Competitive Advantage** | **Uncertainty** |
| Weakest | Very Small | None | None | Extreme |
| | Small | | | Very High |
| | Moderate | Narrow | Moderate | High |
| | Large | | | Medium |
| Strongest | Very Large | Wide | Substantial | Low |
| | **Product/Customer Concentration** | **Management** | **Dependence on Capital Markets** | **Cyclicality** |
| Weakest | Highly Concentrated | Aggressive | Extremely Dependent | Highly Cyclical |
| | Concentrated | Fairly Aggressive | Highly Dependent | Cyclical |
| | Neutral | Neutral | Dependent | Average Cyclicality |
| | Diversified | Fairly Conservativ | Low Dependence | Mild Cyclicality |
| Strongest | Highly Diversified | Conservative | Very Low Dependence | Non-Cyclical |

Source: Morningstar Credit Ratings, LLC
Economic Moat provided by Morningstar's Equity Research Group

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**Union Pacific Moat and Trend**

The following description comes directly from Morningstar's Equity Research Group.

"Most rails don't outearn their cost of capital by much, but UP has generated 14%-16% returns on invested capital in recent years versus our estimated 8.4% cost of capital, and we model similar performance going forward. Our wide moat rating stems from our confidence that rails will generate positive economic profits for the benefit of shareowners with near certainty 10 years from now, and more likely than not 20 years from now; according to Morningstar's methodology, this defines a wide economic moat.

"UP's wide economic moat is based on cost advantages and efficient scale. While barges, ships, aircraft, and trucks also haul freight, railroads are the low-cost option by far where no waterway connects the origin and destination, especially for freight with low value per unit weight. Moreover, railroads claim quadruple the fuel efficiency of trucking per ton-mile of freight, and thanks to greater railcar capacity and train length make more effective use of manpower despite the need for train yard personnel. Even for goods that can be shipped by truck, we estimate railroads charge 10%-30% less than truckers to transport containers on the same lane.

"Efficient scale followed industry consolidation escalated by the 1980 Staggers Act, which permitted extensive rail line sales, abandonment, and combination. North America numbered more than 40 Class I rails in 1980, but today there are just nine major railroads (a Class I generated at least $447 million in 2015 operating revenue). Staggers also allowed private contracts and rate setting. On all but the busiest lanes (like Wyoming's coal-rich Powder River Basin), generally a single railroad serves an end-of-the-line shipper, and only two railroads operate in most regions in North America. Indeed, we opine that absent government intervention, the rational number of competitors on the continent would be two, via additional consolidation, since in most regions customers already have only two capable providers.

"The network of track and assets that U.S. Class I railroads have in place is impossible to replicate. The UP system spans the Western U.S., from the Pacific to the Mississippi, capturing about half of the rail volume in the region. UP has strength in hauling imports from Asia arriving at busy West Coast ports, and in coal, as it still hauls dozens of long trains daily southbound out of Wyoming's rich PRB. UP's rights of way and installed track form a nearly impenetrable barrier to entry. The steep barrier to entry formed by the need to obtain contiguous rights of way on which to lay continuously welded steel rail spanning a significant portion of a huge continent fends off would-be entrants. Railroads may build new spurs or restore abandoned lines, but we anticipate no new mainlines will be built, given the massive barriers to entry.

"We rate UP's economic moat as stable. In fact, we believe the economic moats of all six public Class I railroads are stable. We believe large North American railroads will continue improving operations and

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raising rates, as they have since around 2004. However, these cost advantage enhancements are routine practices in railroading by now, not changes in competitive advantage—thus the stable moat rating.

"We think operating measures will converge at the Class I railroads during the next five years or so, with all rails delivering margins slightly below what Canadian National has achieved. All Class I railroads have made astounding progress in asset utilization and operating efficiency since about 2004, increasing their attractiveness relative to other modes of transport. UP has tremendously improved its on-time arrivals, velocity, terminal dwell, employee productivity, and overall operating ratio. Rails continue on the right trajectory, particularly among those that had more room for improvement, like UP, which pulled its margins even with the BNSF during the 2009 freight recession and to record levels in 2010–14. Union Pacific has made great strides in profitability and asset utilization during the past eight years. It has a sizable automotive franchise that was hobbled by anemic demand in 2009 but raged back on easy comps in 2010. West Coast port connections and cross-border operations with Mexico (including its ownership stake in a Mexican railroad) give UP exposure to global exchange. UP helped to develop its intermodal franchise in 2009 by winning intermodal marketing company Hub Group away from its historical supplier, BNSF, and also by retaining its legacy intermodal partner, Pacer, at the expiration of a challenging contract. As fuel prices rise and environmental issues persist, railroads, particularly Western long-haul railroads such as Union Pacific, are a ready solution to public concerns."

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