Challenges Facing Railroads

Dan Keen
Wichita Ad Valorem Conference
July 31, 2019
U.S. Railroad Fast Facts

- 7 Class I, ~610 non-Class I RRs
- 137,000 miles
- 30,000 locomotives, 1.6 million railcars, 163,000 employees
- Little government funding
- Track owner and operator
Railroad Property Taxes
Almost $1.4 Billion

Figures are for Class I railroads only and only include taxes based on value of real estate and personal property used in rail operations. Excludes taxes on gross receipts, franchise fees, excise taxes, and similar items. Source: Railroad R-1 reports to the STB
Class I Railroad Operating Expenses and Revenue

Source: AAR
Class I Rail Industry
Net Income

($ billions)

'09: $6.4
'10: $9.1
'11: $10.9
'12: $11.9
'13: $13.4
'14: $14.4
'15: $14.5
'16: $13.2
'17: $14.4
'18: $20.5

Note: net income for 2018 has been adjusted to account for tax effects from the Tax Cuts and Jobs Act of 2017. Source: AAR
Rail Industry as a Whole Now Earns Its Cost of Capital

Class I RR Cost of Capital* vs. Return on Investment

*In 2006, the Surface Transportation Board significantly changed the method by which it calculates the rail industry cost of capital. 2017 is an AAR estimate. Source: STB
RR Return on Investment Minus Its Cost of Capital

*In 2006, the Surface Transportation Board significantly changed the method by which it calculates the rail industry cost of capital. Source: STB
Return on equity = net profit / shareholders' equity. Source: AAR, *Fortune* magazine
Class I Railroad Aggregate Operating Ratio*

*Operating expenses as a percentage of operating revenue.  Source: AAR
Challenges Fall Into Three Broad Categories

- Economy / Markets
- Regulation / legislation
- Technology
What Economies Do

WHERE ARE WE?

Here?

Peak

Here?

Recession

Here?

Expansion

GDP

Time
The Longest Recovery…

As of July 2019, the current recovery is 10 years old.

Source: Bureau of Economic Analysis, National Bureau of Economic Research
... But The Worst Average Growth

- Q4 '49 - Q2 '53: 6.9%
- Q4 '70 - Q4 '73: 6.2%
- Q1 '75 - Q1 '80: 5.2%
- Q1 '61 - Q4 '69: 5.1%
- Q4 '82 - Q3 '90: 4.4%
- Q2 '54 - Q3 '57: 4.4%
- Q3 '80 - Q3 '81: 4.1%
- Q2 '58 - Q2 '60: 4.0%
- Q1 '91 - Q1 '01: 3.7%
- Q4 '01 - Q4 '07: 2.9%
- Q3 '09 - Q2 '19: 2.3%

Averages:
- 1950-1979: 4.0%
- 1980-2000: 3.2%
- 2001-2018: 2.0%

Source: BEA, NBER
“If consumers are consuming more services like travel, data plans or health care, that doesn’t really impact our top line. We need consumers to buy a house and fill it with goods.”

-Lance Fritz, Union Pacific
The Economy Always Has Mixed Messages

Green
- Jobs
- Consumer confidence
- Consumer spending

Yellow or Red
- Housing
- Autos
- Manufacturing
- Trade
Excellent Job Growth

Source: Bureau of Labor Statistics
Consumer Confidence is Still Near All-Time High

(1985 = 100)

Source: Conference Board
Pretty Solid Consumer Spending

Month to Month % Change in Total Consumer Spending*

*3-month moving average     Source: Bureau of Economic Analysis

Anything over 0.3% is pretty good
Recent Plateau in Housing Starts

(annualized, 000s*)

*3-month moving average  Source: Census Bureau
New Vehicle Sales Have Peaked

(seasonally adjusted annual rate, millions)

*Passenger cars, SUVs, minivans, and pickups.  Source: Bureau of Economic Analysis
Industrial and Manufacturing Output Down

(2012 = 100, 3-month average)

*Includes manufacturing, utilities and resource extraction. Source: Federal Reserve

*Includes manufacturing, utilities and resource extraction. Source: Federal Reserve
Purchasing Managers Index vs. Non-Manufacturing Index

> 50 = growing   < 50 = shrinking

Source: Institute for Supply Management
*Figures are 4-week averages. Source: USDA
Data are non-seasonally adjusted average weekly originations for each month. Data don’t include intermodal or the U.S. operations of CN and CP. Source: AAR Rail Time Indicators.
Total U.S. Rail Carloads

(% change from same month previous year)

Data are based on non-seasonally adjusted average weekly originations for each month. Data exclude intermodal and the U.S. operations of CN and CP. Source: AAR Rail Time Indicators
U.S. Class I RR Gross Revenue in 2018
($ billions)

Total = $75.6 billion

- Coal $10.7 (14%)
- Grain $5.8 (8%)
- Food $6.2 (14%)
- Lumber & wood $2.1 (3%)
- Pulp & paper $2.4 (3%)
- Chemicals $11.0 (14%)
- Motor veh. $5.9 (8%)
- Primary metal prod. $2.7 (4%)
- Stone, sand, gravel $3.8 (5%)
- Petr. & coal prod. $3.3 (4%)
- Intermodal* $13.5 (18%)
- Other $7.0 (9%)
- Crude oil $1.2 (2%)

*Some intermodal is included in other commodities. In total, intermodal is ~24% of revenue. Source: AAR (FCS)
U.S. Rail Carloads Excl. Coal, Grain, and Petroleum Products

(average weekly originations)

Data are non-seasonally adjusted average weekly originations for each month. Data don’t include intermodal or the U.S. operations of CN and CP. Source: AAR Rail Time Indicators
U.S. Rail Carloads Excl. Coal, Grain, and Petroleum Products

Data are based on non-seasonally adjusted average weekly originations for each month. Data don’t include intermodal or the U.S. operations of CN and CP. Source: AAR Rail Time Indicators
### Change in U.S. Rail Carloads: Jan.-June 2019 vs. Jan.-June 2018

<table>
<thead>
<tr>
<th>Category</th>
<th>Change 2019 vs. 2018</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petrol. &amp; petr. products</td>
<td>62,743</td>
<td>23.2%</td>
</tr>
<tr>
<td>Nonmetallic minerals</td>
<td>6,767</td>
<td>6.8%</td>
</tr>
<tr>
<td>Waste &amp; nonferrous scrap</td>
<td>1,745</td>
<td>1.9%</td>
</tr>
<tr>
<td>Primary forest products</td>
<td>993</td>
<td>3.5%</td>
</tr>
<tr>
<td>Chemicals</td>
<td>-939</td>
<td>-0.1%</td>
</tr>
<tr>
<td>Stone, clay &amp; glass prod.</td>
<td>-1,248</td>
<td>-0.6%</td>
</tr>
<tr>
<td>Farm products excl. grain</td>
<td>-1,640</td>
<td>-7.6%</td>
</tr>
<tr>
<td>Food products</td>
<td>-2,414</td>
<td>-1.6%</td>
</tr>
<tr>
<td>Metallic ores</td>
<td>-3,058</td>
<td>-2.3%</td>
</tr>
<tr>
<td>Carloads n.e.c.</td>
<td>-3,858</td>
<td>-2.5%</td>
</tr>
<tr>
<td>Pulp &amp; paper products</td>
<td>-3,975</td>
<td>-2.7%</td>
</tr>
<tr>
<td>Lumber &amp; wood products</td>
<td>-4,217</td>
<td>-4.6%</td>
</tr>
<tr>
<td>Primary metal products</td>
<td>-4,250</td>
<td>-1.7%</td>
</tr>
<tr>
<td>Iron &amp; steel scrap</td>
<td>-4,588</td>
<td>-4.5%</td>
</tr>
<tr>
<td>Motor veh. &amp; parts</td>
<td>-9,349</td>
<td>-2.1%</td>
</tr>
<tr>
<td>Coke</td>
<td>-11,393</td>
<td>-10.5%</td>
</tr>
<tr>
<td>Grain mill products</td>
<td>-12,014</td>
<td>-4.9%</td>
</tr>
<tr>
<td>Grain</td>
<td>-30,942</td>
<td>-5.1%</td>
</tr>
<tr>
<td>Coal</td>
<td>-114,619</td>
<td>-5.4%</td>
</tr>
<tr>
<td>Nonmetallic minerals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data are originations, do not include intermodal, and do not include the U.S. operations of CN and CP. Source: AAR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Data are average weekly originations for each month, are not seasonally adjusted, and don’t include the U.S. operations of CN and CP. Source: AAR Rail Time Indicators.
U.S. Rail Intermodal Traffic

(% change from same month previous year)

Data are based on non-seasonally adjusted average weekly originations for each month. Data exclude intermodal and the U.S. operations of CN and CP. Source: AAR Rail Time Indicators
What’s Been Holding Rail Traffic Back?

- Tariffs, threats of tariffs, etc.
- Slower economy here and abroad
- Weather
- Lane rationalizations
- Changing markets
- Tough comps

“Businesses depend on consistent policy to make decisions on how to deploy capital, and willy-nilly tariff threats create uncertainty that retards investment and growth.”

- Wall Street Journal
  June 11, 2019
Surface Transportation Board

- Revenue adequacy
- Commodity exemptions
- Demurrage / incidental charges
- Rate relief process
- Mandated terminal switching
Suppose Firm 3 wants to ship freight to Firm 1. RR 1 could handle the entire movement by itself. Or, the freight could move on RR 2 to Point A, then be switched and carried by RR 1 to Firm 1. Under existing STB regulations, RR 1 can choose which option to use. Under mandatory reciprocal switching, the shipper, not the railroad, would choose which option is used, and the rate for the switch and any associated mainline movement could be set by the STB.
What’s Wrong With Mandated Switching?

- Millions of carloads potentially affected.
- Potential loss of ~$1,000 per car. Reduced RR investment would be inevitable.
- Potentially widespread service disruptions and inefficiencies.
Key Legislative Issues

- Reregulation
- Truck size and weight
- USMCA
- Crew size
Recent Years Have Been the Safest Ever for U.S. RRs

- Train accidents: ↓ 36%
- Grade crossing collisions: ↓ 36%
- Employee injuries: ↓ 48%

% = change in rate from 2000-2018.  
Source: FRA
What is Positive Train Control (PTC)?

Designed to stop or slow a train before certain accidents caused by human error occur:

- Collisions
- Derailments caused by excessive speed
- Unauthorized incursions onto track where maintenance is taking place
- Movement of train through a track switch left in the wrong position.
Using Technology to Improve Safety Proactively

- Track-side detectors
- Track geometry cars
- Below-the-ground inspections
- Drones
- “Big data” and AHSI
- AskRail
- Command & control vs. performance standards
Technology Will Make Trucks Tougher Competitors

Share of Motor Carrier Costs

- Fuel costs 22%
- Lease payments 16%
- Repairs & maintain. 10%
- Insurance & permits 5%
- Tires 2%
- Tolls 2%
- Driver compensation 43%

- Platooning
- Other fuel saving
- Autonomous trucks

https://www.youtube.com/watch?v=RjRaVExmwVk
What About the Future?
Index of Leading Economic Indicators

Source: Conference Board

(2016 = 100)

- July '90 to Mar. '91
- March 2001 to Nov. 2001
- Dec. 2007 to June 2009

= recession

Source: Conference Board
Index of Leading Economic Indicators

(\% change from same month prior year)

Source: Conference Board
Recession on the Way?

Probability of Recession in Next 12 Months

Source: Wall Street Journal
Long-Term Demand for Freight Transportation Will Grow

Billions of Tons of Freight Transported in the U.S.

<table>
<thead>
<tr>
<th>Year</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>17.8</td>
</tr>
<tr>
<td>2020p</td>
<td>19.7</td>
</tr>
<tr>
<td>2030p</td>
<td>21.9</td>
</tr>
<tr>
<td>2040p</td>
<td>24.1</td>
</tr>
</tbody>
</table>

The U.S. DOT estimates that total U.S. freight movements will rise from around 17.8 billion tons in 2017 to 24.1 billion tons in 2040 – a 35% increase.

p – projected  
Source: FHWA - *Freight Analysis Framework*, version 4.51
Not Realistic to Think Highway Construction Will Keep Up

(index 1980 = 100)

Highway vehicle-miles traveled (VMT)

Highway lane-miles

Source: Federal Highway Administration