An Update to the Study of Competition in the U.S. Freight Railroad Industry

Presentation to RETAC
Kelly Eakin
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Outline

- What Was Updated and Why
- Rates and Productivity
- Costs, Revenue, and Market Power
- Commodity Analyses
- Conclusions
What Was Updated and Why

- The original report, released in November 2008, used data through 2006
- Since then two additional years of R-1 data and Carload Waybill Sample have become available
- We updated Chapters 8-15 of original report
- The basic findings from our original study remain unchanged
Rates and Productivity

- Overall railroad rates have been steadily increasing since 2004, with a particularly steep increase in 2008.

- Preliminary PPI 2009 rate information suggests that overall railroad rates decreased in that year.

- Trends in input price and productivity growth are generally consistent with the pattern of rate changes.
  - 2007 and 2008 input prices continued to increase faster than productivity growth, resulting in unit cost increases.
  - Increases in fuel prices have driven the input price increases.
## Annual Percentage Increase in Industry-Wide Rate Indexes

<table>
<thead>
<tr>
<th>Index</th>
<th>Percentage Increase 2007</th>
<th>Percentage Increase 2008</th>
<th>Percentage Increase 2009</th>
<th>Average Annual Percentage Increase 2000-2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index Based on CWS Freight Revenue</td>
<td>4.6%</td>
<td>14.5%</td>
<td>---</td>
<td>3.5%</td>
</tr>
<tr>
<td>Index Based on CWS Freight &amp; Misc. Revenue</td>
<td>4.7%</td>
<td>15.5%</td>
<td>---</td>
<td>4.3%</td>
</tr>
<tr>
<td>STB Index</td>
<td>4.6%</td>
<td>---</td>
<td>---</td>
<td>4.1%</td>
</tr>
<tr>
<td>Producer Price Index</td>
<td>3.6%</td>
<td>11.0%</td>
<td>-6.4%</td>
<td>4.7%</td>
</tr>
</tbody>
</table>
Rail Costs and Productivity

1989-2009

RCAF-U

PAF

RCAF-A

2.7%
3.9%
4.7%
2.1%
2.0%
1.9%
-1.0%
-2.6%

1Q89-4Q09
1Q89-3Q02
3Q02-4Q09
Costs, Revenues, and Market Power

- Railroad industry marginal cost has been increasing at a faster average annual rate than railroad revenue per ton-mile
  - Consequently, the measure of railroad market power has been decreasing
  - In some years, the exercise of market power in the railroad industry changed by less than what was implied by changing cost conditions, while in other years it changed by more

- 2007 and 2008 Carload Waybill Sample data show lower shares of tons and ton-miles moving at rates exceeding 180 percent of URCS variable cost than in 2005 and 2006

- The railroad industry has remained approximately revenue sufficient in recent years
Industry Revenue Per Ton-Mile and Marginal Cost for a Ton Mile (Year 2000 Dollars)
## Changes in Revenue Per Ton Mile and Cost Variables

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue Per Ton-Mile</td>
<td>-0.90%</td>
<td>-1.16%</td>
<td>-1.29%</td>
<td>8.26%</td>
<td>5.73%</td>
<td>1.89%</td>
<td>9.48%</td>
</tr>
<tr>
<td>Marginal Cost</td>
<td>-2.15%</td>
<td>2.27%</td>
<td>-1.54%</td>
<td>11.18%</td>
<td>6.80%</td>
<td>9.59%</td>
<td>16.51%</td>
</tr>
<tr>
<td>Average Variable Cost</td>
<td>-3.09%</td>
<td>1.45%</td>
<td>-1.72%</td>
<td>2.40%</td>
<td>0.63%</td>
<td>1.85%</td>
<td>7.97%</td>
</tr>
<tr>
<td>Average Fixed Cost</td>
<td>-0.37%</td>
<td>-3.43%</td>
<td>22.76%</td>
<td>17.08%</td>
<td>-17.45%</td>
<td>12.84%</td>
<td>5.36%</td>
</tr>
<tr>
<td>Average Total Cost</td>
<td>-2.52%</td>
<td>0.41%</td>
<td>3.32%</td>
<td>5.99%</td>
<td>-4.25%</td>
<td>4.41%</td>
<td>7.31%</td>
</tr>
</tbody>
</table>
## Ton-Miles by R/VC Category

<table>
<thead>
<tr>
<th>Period</th>
<th>R/VC &lt; 100 Percent</th>
<th>R/VC Between 100 and 180 Percent</th>
<th>R/VC Between 180 and 300 Percent</th>
<th>R/VC &gt; 300 Percent</th>
<th>Subtotal R/VC &gt; 180 Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001-2002</td>
<td>22%</td>
<td>56%</td>
<td>19%</td>
<td>2%</td>
<td>21%</td>
</tr>
<tr>
<td>2003-2004</td>
<td>21%</td>
<td>57%</td>
<td>17%</td>
<td>5%</td>
<td>22%</td>
</tr>
<tr>
<td>2005-2006</td>
<td>29%</td>
<td>52%</td>
<td>16%</td>
<td>4%</td>
<td>20%</td>
</tr>
<tr>
<td>2007</td>
<td>33%</td>
<td>50%</td>
<td>15%</td>
<td>2%</td>
<td>17%</td>
</tr>
<tr>
<td>2008</td>
<td>34%</td>
<td>49%</td>
<td>14%</td>
<td>3%</td>
<td>17%</td>
</tr>
</tbody>
</table>
Percentage increases in revenue per ton-mile have not been uniform across commodities

- Real revenue per ton-mile for the industry increased by about 12 percent in 2007-2008
- Coal and chemicals experiencing above average increases for 2007-2008

Ability to change shipment characteristics varies across commodities
Trends in Real Revenue per Ton-mile by Commodity

-15%  -10%  -5%  0%  5%  10%  15%  20%

Chemicals  Coal  Corn  Intermodal  Wheat  Industry RPTM

% Change from 2001 RPTM

-15%  -10%  -5%  0%  5%  10%  15%

2002  2003  2004  2005  2006  2007  2008
### Growth Rates for Revenue per Ton-Mile and Industry Marginal Cost

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemicals</td>
<td>0.80%</td>
<td>-6.70%</td>
<td>-5.00%</td>
<td>4.30%</td>
<td>3.90%</td>
<td>4.50%</td>
<td>10.10%</td>
<td>1.60%</td>
</tr>
<tr>
<td>Coal</td>
<td>-1.00%</td>
<td>-2.00%</td>
<td>-6.30%</td>
<td>5.30%</td>
<td>0.50%</td>
<td>2.20%</td>
<td>22.10%</td>
<td>2.60%</td>
</tr>
<tr>
<td>Corn</td>
<td>0.80%</td>
<td>-3.30%</td>
<td>-4.00%</td>
<td>7.40%</td>
<td>1.40%</td>
<td>3.90%</td>
<td>7.90%</td>
<td>1.90%</td>
</tr>
<tr>
<td>Intermodal</td>
<td>0.00%</td>
<td>-2.40%</td>
<td>4.00%</td>
<td>4.90%</td>
<td>2.20%</td>
<td>-2.70%</td>
<td>4.10%</td>
<td>1.40%</td>
</tr>
<tr>
<td>Wheat</td>
<td>1.00%</td>
<td>-4.10%</td>
<td>5.10%</td>
<td>1.10%</td>
<td>-2.90%</td>
<td>0.20%</td>
<td>9.30%</td>
<td>1.30%</td>
</tr>
<tr>
<td>All (Industry RPTM)</td>
<td>2.40%</td>
<td>-3.20%</td>
<td>-4.20%</td>
<td>5.10%</td>
<td>1.40%</td>
<td>1.60%</td>
<td>10.40%</td>
<td>1.80%</td>
</tr>
<tr>
<td>Industry MC</td>
<td>-2.20%</td>
<td>2.30%</td>
<td>-1.50%</td>
<td>11.20%</td>
<td>6.80%</td>
<td>9.60%</td>
<td>16.50%</td>
<td>5.90%</td>
</tr>
</tbody>
</table>
## Lerner Markup Indexes by Commodity

<table>
<thead>
<tr>
<th>Commodity Group</th>
<th>LMI</th>
<th>LMI</th>
<th>LMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm Products</td>
<td>0.55</td>
<td>0.54</td>
<td>0.45</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barley</td>
<td>0.68</td>
<td>0.69</td>
<td>0.50</td>
</tr>
<tr>
<td>Corn</td>
<td>0.68</td>
<td>0.68</td>
<td>0.62</td>
</tr>
<tr>
<td>Wheat</td>
<td>0.64</td>
<td>0.68</td>
<td>0.58</td>
</tr>
<tr>
<td>Soybeans</td>
<td>0.56</td>
<td>0.56</td>
<td>0.47</td>
</tr>
<tr>
<td>Metallic Ores</td>
<td>0.32</td>
<td>0.26</td>
<td>0.36</td>
</tr>
<tr>
<td>Coal</td>
<td>0.31</td>
<td>0.35</td>
<td>0.25</td>
</tr>
<tr>
<td>Nonmetallic Minerals</td>
<td>0.41</td>
<td>0.27</td>
<td>0.44</td>
</tr>
<tr>
<td>Food Products</td>
<td>0.50</td>
<td>0.48</td>
<td>0.40</td>
</tr>
<tr>
<td>Lumber or Wood Products</td>
<td>0.54</td>
<td>0.53</td>
<td>0.36</td>
</tr>
<tr>
<td>Chemicals</td>
<td>0.55</td>
<td>0.47</td>
<td>0.45</td>
</tr>
<tr>
<td>Petroleum or Coal Products</td>
<td>0.55</td>
<td>0.56</td>
<td>0.52</td>
</tr>
<tr>
<td>Clay, Concrete, Glass, or Stone Products</td>
<td>0.51</td>
<td>0.51</td>
<td>0.43</td>
</tr>
<tr>
<td>Primary Metal Products</td>
<td>0.44</td>
<td>0.42</td>
<td>0.41</td>
</tr>
<tr>
<td>Transportation Equipment</td>
<td>0.38</td>
<td>0.25</td>
<td>0.20</td>
</tr>
</tbody>
</table>
Coal

- Cumulative change in real revenue per ton-mile
  - 2007-2008  +24.8%
  - 2005-2006  +5.8%
  - 2002-2004  -9.1%

- Trends toward lower-cost shipment composition leveling off
  - Prior to 2006, longer unit trains, increasing average length of haul because of growth of PRB coal
  - Since 2006, stabilization of east-of-Mississippi coal share; little room for further cost-reducing adjustments

- Railroad competition at destination has strongest downward impact on revenue per ton-mile
Coal Rate Indexes

(1987=100.0)

- - - - CWS Freight Rev  --- CWS Freight/Misc Rev
Chemicals

- Cumulative change in real revenue per ton-mile
  - 2007-2008: +15.1%
  - 2005-2006: +8.4%
  - 2002-2004: -10.7%

- Limited possibilities for shifts toward more favorable cost characteristics
  - Modest increases in tons/carload and tons/shipment
  - Average length of haul largely unchanged 2001-2008

- Findings on Competition
  - Rail competition at origin lowers RPTM
  - Rail competition at destination lowers RPTM
  - Proximity of water transportation to destination lowers revenue per ton-mile
Corn

- Cumulative change in real revenue per ton-mile
  - 2007-2008  +12.1%
  - 2005-2006  +8.9%
  - 2002-2004  -6.4%

- Shipments have lower-cost characteristics
  - 70% unit trains in 2001 and 84% in 2008
  - Average length of haul 23% greater in 2008 than in 2001
  - Likely reflects increase in exports

- No strong competition impacts found
Wheat

- Cumulative change in real revenue per ton-mile
  - 2007-2008 +9.5%
  - 2005-2006 -1.8%
  - 2002-2004 +1.8%

- Shipments have lower-cost characteristics
  - 41% unit trains in 2001 and 45% in 2008
  - Average length of haul 10% greater in 2008 than in 2001
  - Likely reflects increase in exports

- Findings on Competition
  - Nearness of water transportation to origin lowers RPTM
  - Only one railroad at origin or destination raises RPTM
Intermodal Shipments

- Cumulative change in real revenue per ton-mile
  - 2007-2008  +1.3%
  - 2005-2006  +7.2%
  - 2002-2004  +1.5%

- Shipments cost characteristics
  - Average length of haul relatively flat 2001-2008
  - Tons per car historically declining, but increased 2006-2008

- Findings on Competition
  - Shorter distances to port facilities tend to reduce RPTM
Conclusions

- Study was updated through 2008
- Basic findings of original study remain unchanged
- Rates steadily increased 2004-2008
  - Particularly steep increase in 2008
  - Preliminary data for 2009 show a decrease
- Since 2004 input prices increased faster than rail productivity
- Fuel price increases have driven the input price increases
- Measure of railroad market power has been decreasing
- Railroad industry appears revenue sufficient