## Northern Agriculture after the Civil War

<table>
<thead>
<tr>
<th></th>
<th>1869</th>
<th>1914</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>290 million bushels</td>
<td>897</td>
</tr>
<tr>
<td>Corn</td>
<td>782 million bushels</td>
<td>2524</td>
</tr>
<tr>
<td>Oats</td>
<td>284 million bushels</td>
<td>1066</td>
</tr>
<tr>
<td>Cotton</td>
<td>2.5 million bales</td>
<td>16.1</td>
</tr>
<tr>
<td>Cattle</td>
<td>4.6 billion lbs</td>
<td>11.5</td>
</tr>
<tr>
<td>Hogs</td>
<td>9.0 billion lbs</td>
<td>17.0</td>
</tr>
</tbody>
</table>
Sources of growth in output

- **Inputs:** population growth, increased cultivated land, western movement

- **Productivity:** seeds, breeds and mechanization

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<th>1914</th>
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<tr>
<td>Improved Land</td>
<td>189 million acres</td>
<td>479</td>
</tr>
<tr>
<td>Farm population</td>
<td>6.8 million</td>
<td>11.8</td>
</tr>
<tr>
<td>Area west of Iowa</td>
<td>6% of output</td>
<td>30%</td>
</tr>
</tbody>
</table>

**Also increased output per unit of input – productivity**

- 1. Specialization – due to lower transport costs with the growth of railroads
- 2. Technological improvements in reapers, threshers, plows, crop rotation
Some changes in Northern agriculture 1860-1890

1. Westward movement: 1860 the frontier was west of Iowa. 1890 the frontier was officially closed

2. Regional specialization
   a. Wheat production moved west with the frontier (required less rain than corn, lower transport costs)
   b. Livestock at about 100th meridian - livestock states: North Dakota, South Dakota, Kansas, Nebraska, Western Texas, Oklahoma, Colorado, Montana, Wyoming, and New Mexico
      - Improvements making western livestock profitable: rail transport (refrigerated cars in 1870s); breeding and round-up easier with invention of barbed wire; and windmills improved irrigation
   c. fruits and vegetables – growth of industry in CA, WA and OR because of shipping improvements
   d. Dairy – upper mid-west (WI, MI, IA, IL) technological changes- refrigerated transport, cream separator, selective breeding
   e. Corn – can be grown virtually everywhere. Comparative advantage in Midwest (IL, IA, IN, KS) primarily used as hog feed
In most ways this looks like a healthy agricultural economy, but there was a large-scale protest movement — sufficiently angry to overcome the free-rider problem.

- National Grange late 1860s – early 1870s:
  - primarily North Central and Northeast

- Greenback Party —
  - 1870s – broad based

- Farm Alliances —
  - west and south

- Populist Party —
  - 1890s
Where was protest movement strongest?

- I Wheat lands of ND, SD, KA, NE, MN
- II Central Midwest - IL, IA, MO, WI
- III Eastern Midwest – IN, MI, OH
The complaints

- 1. Railroad rates were too high and monopolistically set
- 2. Speculators took the best land at the expense of ordinary farmers
- 3. Interest rates were too high
- 4. Falling prices increased the burden of debt (need silver money)
- 5. Farmers sold their products in competitive markets, but bought inputs from monopolists
Ex-post validity of the complaints?

1. Railroad rates fell faster than the cost of wheat

Index of cost for wheat shipped from WNC

- 1870 100
- 1880 60
- 1890 45
- 1900 35
- 1910 24

Caveats: price discrimination particularly irksome; great year to year variation in crop prices, and envy (Vanderbilts and Stanfords)
Ex-post validity of the complaints?

2. Speculation and land monopolists –

Evidence is weak – no individual had enough land to be a price setter; and rates of return on small farms similar to large farms.
Ex-post validity of the complaints?

3. Interest rates

Index of interest rates
- 1870 100
- 1880 83
- 1890 68
- 1900 55
- 1910 52

Was variation due to risk or capital market imperfections?

Risk; there appeared to be no entry barriers and the West was subsidized by interest rate ceilings in East

Some evidence of regional interest rate differentials
- ND 9.3 NY 5.7
- SD 9.0 CT 5.7
- NB 8.2 OH 6.6
- KS 8.4
- MT 10.8
- AZ 11.4
- NV 10.8
Ex-post validity of the complaints?

4. Falling price levels and the burden of the debt

- From 1869-1890 fell at an avg of 1%/year
- Deflation most likely expected and hence you could contract around it.
- Overall indebtedness not high: debt/asset = 13% on average for farmers
- Value of farms in constant (1870) dollars went up
  - 1870 $18/acre
  - 1880 $26/acre
  - 1890 $35/acre
  - 1900 $33/acre
  - 1910 $52/acre

Caveats:

- Crop price falls sometimes very abrupt, e.g. 1871-1876 wheat prices fell 20% and cotton prices fell 43%
- Foreclosure rates IL (1880) 2.4%, MN (1891) 6.1%
Fear of failure could have been high

**Example:** If you have 15 neighboring farms

- Prob of at least one neighbor being foreclosed

<table>
<thead>
<tr>
<th>Local Annual Foreclosure Rate</th>
<th>1 Year</th>
<th>2 Years</th>
<th>3 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td>14%</td>
<td>26%</td>
<td>36%</td>
</tr>
<tr>
<td>2</td>
<td>26</td>
<td>45</td>
<td>60</td>
</tr>
<tr>
<td>3</td>
<td>37</td>
<td>60</td>
<td>75</td>
</tr>
<tr>
<td>5</td>
<td>54</td>
<td>79</td>
<td>90</td>
</tr>
<tr>
<td>10</td>
<td>79</td>
<td>96</td>
<td>99</td>
</tr>
</tbody>
</table>
Ex-post validity of the complaints?

5. Terms of trade – prices received vs. prices paid for machinery

<table>
<thead>
<tr>
<th>Year</th>
<th>Prices of Crops</th>
<th>Prices Machines</th>
</tr>
</thead>
<tbody>
<tr>
<td>1870</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>1880</td>
<td>76</td>
<td>68</td>
</tr>
<tr>
<td>1890</td>
<td>64</td>
<td>48</td>
</tr>
<tr>
<td>1900</td>
<td>63</td>
<td>45</td>
</tr>
<tr>
<td>1910</td>
<td>95</td>
<td>45</td>
</tr>
</tbody>
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No evidence of monopoly pricing but income depends on Prices and Output – productivity gains higher in mfg. and agrarian unrest correlates with variability of income

Also – envy; some people were getting really, really rich