Economics 210a: The Agricultural Revolution

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Memo Question for the Agricultural Revolution

• Does the Agricultural Revolution deserve its "R"? That is, is it well-conceptualized as a "Revolution" rather than as something much slower and much more gradual?
Readings for the Agricultural Revolution


### Table 1: Longest-Run Economic Growth

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>-8000</td>
<td>5</td>
<td>$500</td>
</tr>
<tr>
<td>0</td>
<td>170</td>
<td>$500</td>
</tr>
<tr>
<td>1500</td>
<td>500</td>
<td>$500</td>
</tr>
<tr>
<td>1800</td>
<td>750</td>
<td>$600</td>
</tr>
<tr>
<td>1900</td>
<td>1500</td>
<td>$1200</td>
</tr>
<tr>
<td>2007</td>
<td>6300</td>
<td>$7000</td>
</tr>
</tbody>
</table>

Note: Malthusian stagnation
Implied Global Growth Rates

<table>
<thead>
<tr>
<th>Period</th>
<th>Real GDP Growth</th>
<th>TFP Growth (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-8000-0</td>
<td>0.04%</td>
<td>0.01%</td>
</tr>
<tr>
<td>0-1500</td>
<td>0.07%</td>
<td>0.02%</td>
</tr>
<tr>
<td>1500-1800</td>
<td>0.2%</td>
<td>0.09%</td>
</tr>
<tr>
<td>1800-1900</td>
<td>1.38%</td>
<td>0.89%</td>
</tr>
<tr>
<td>1900-2007</td>
<td>3.38%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Memo: capital share of 0.3, resources share of 0.2

Where is the innovation?
A Cross-Eurasia Comparison from Bob Allen

[Graph showing welfare ratios for London, Amsterdam, Milan, Leipzig, Beijing, and Suzhou/Shanghai from 1738 to 1918.]
Real Wages of Construction Workers in England

Fig. 3. Changes in the equivalent of the wage rate of a building craftsman expressed in a composite physical unit of consumables in southern England 1264-1954.
Nominal Wage Rigidity

Fig. 1. Wages of building craftsman and labourer in Southern England 1264-1954
Real Wages vs. Population in England
McCloskey: Enclosure

http://www.jstor.org/stable/2117175

• Issues
  • A large institutional change, 1700-1850
  • The “open field system”
  • Equity
  • Efficiency
McCloskey: Enclosure

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  • The “open field system”
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  • Efficiency

• 1760-1820: Parliamentary Enclosure...
  • England in 1760 has the wrong property rights...

• Risk aversion...
  • Microclimates with a vengeance...

• Free riders?
  • Sociological methods of controlling free riders... (Ostrom)
Allen: Nitrogen


• Between 1300 and 1800, the yield of wheat rose from about 12 bushels per acre to about 20 bushels. The yield of peas and beans grew similarly, while barley and oats realized even greater increases. Regional variation was important, of course, and, in particular, some parts of eastern England had already achieved 1800 yields by 1300…
  • You need 2 bushels per acre for seed…

• Agricultural productivity as a linear programming problem…
  • Nitrogen as the key link
Allen: Nitrogen

• How do you get nitrogen into the soil?
• Nitrogen is an extremely slow chemical to accumulate...
  • Knowledge?
  • Centuries...
    • Hopeful coincidence
    • Less confidence in market Pareto optimality...
Allen: Nitrogen

- Numbers of animals?
- How do you feed the animals?
- Time lags?
- Rotations:
  - The “Norfolk rotation”: turnips, barley, clover, wheat
  - Convertible husbandry
- To what extent did people understand what was going on?
Allen: Tracking


• Issues:
  • How many?
  • Timing?
  • Institutions?
Allen: Tracking

- The standard view
- Early AR revisionists—Havinden, Jones, Kerridge, Allen, Clark
- Rerevisionists—Overton
- Small-scale farmers in open fields
- Enclosures
- Post-enclosure farming for the industrial population
Why the Agricultural Revolution?
Many historians writing earlier in this century had a narrow view of the agricultural revolution—when it happened and what it consisted of. They emphasized the views of the eighteenth-century improvers who were enamoured of the institutions and innovations of their own day—hence, the emphasis on the progressive role of the great estate, the importance of enclosure, and the productivity raising effects of turnips, clover, and new sheep. Arthur Young’s understandable lack of historical perspective was incorporated into historical writing where it is less forgivable. Recently, historians have placed the eighteenth century in a much longer historical context. Seen from this perspective, eighteenth-century farming looks less path breaking than it did from the saddle of Arthur Young’s horse. Despite his best efforts, Overton cannot get us back into the saddle again.