Natural Resources and Economic Outcomes
Prepared for the Gavin Wright Conference, September 26-27, 2008

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Overview

- American industrial success
  - 1990 and 1992 papers
- Early exploitation of American minerals
  - 1997 and 2005 papers
- Natural resource curses in perspective
  - 2004 paper
- Parlor game – name that famous person
American Industrial Success

- Stylized facts
  - Between 1880 and 1900, the United States becomes the largest producer of world industrial output
  - Between 1900 and 1920, the United States becomes the largest producer on a per capita basis
  - This alarms European producers
American Industrial Success

- What accounted for American industrial success from 1879-1940?
  - Economists would have said technology
  - Economic historians would have said the build out of the transportation network, the growth of national markets and the rise of large-scale corporations
    - Changing nature of capital, changing organization of production
  - In fact, we were missing an important part of the story
American Industrial Success

- In his 1990 *AER* paper, Gavin took a closer look at American industrial success
  - The answer was very surprising
    - Exports into world markets used markedly more nonreproducible natural resources than imports in 1879
    - The natural resource intensity of inputs was rising up to 1914
  - Natural resources were a key ingredient in American industrial success
<table>
<thead>
<tr>
<th></th>
<th>1879</th>
<th>1899</th>
<th>1909</th>
<th>1914</th>
<th>1928</th>
<th>1940</th>
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<td>Exports</td>
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<td>1.53</td>
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<td>Imports</td>
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<td>Exports/Imports</td>
<td>1.96</td>
<td>1.66</td>
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<td>1.75</td>
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*Sources: Coefficients from Eysenbach, pp. 297–301; trade figures, see Table 1.*
Manufactured Goods

- In 1914 (using the 1947 coefficients)
  - Capital labor ratios are 1.8
  - Average wage ratios are 1.2
  - Direct natural resource ratios are 7.4
  - Direct and indirect natural resource ratios are 2.4
<table>
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<tr>
<th>Year</th>
<th>Iron and Steel Products (except Machinery and Vehicles)</th>
<th>Machinery</th>
<th>Automobiles and Parts</th>
<th>SUM (1,2,3)</th>
<th>Petroleum Products</th>
<th>SUM (1,2,3,5)</th>
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American Industrial Success

- Room for a book on American Industrial Success
- Integrated analysis that considers
  - Natural resources
  - Political and legal environment
  - Organization of production
  - Labor
  - Capital
  - Capital markets
  - Technology
American Industrial Success

- In their 1992 *JEL* paper, Gavin and Richard Nelson examine the broader picture
  - Pre WWII: Large domestic market and natural resource abundance
  - Post WWII: Technological lead built on education and R&D
  - Both have eroded, but for slightly different reasons
Early Exploitation

• David and Wright (1997) in *Industrial and Corporate Change*
  • Incentives
    • Interplay between mineral interests, legislatures, courts, and Congress
    • In Clay and Wright (2005) in *EEH*, we examine property rights in the California gold rush
  • Public knowledge
  • Mining education
  • An ethos of exploration
FINAL REPORT

ON THE

GEOLOGY OF MASSACHUSETTS:

VOL. I.

CONTAINING

I. ECONOMICAL GEOLOGY.
II. SCENOGRAPHICAL GEOLOGY.

BY EDWARD HITCHCOCK, LL. D.

PROFESSOR OF CHEMISTRY AND NATURAL HISTORY IN AMHERST COLLEGE; GEOLOGIST TO THE
STATE OF MASSACHUSETTS, Etc.

AMHERST: J. S. & C. ADAMS.
NORTHAMPTON: J. H. BUTLER.
1841.
Natural Resources Curse

• Sachs and Warner (1995, 1997) argue that empirically abundant natural resources led to slow growth over the period 1971-1989
  • Subsequent literature focuses on institutions as the mediating influence
• Wright and Czelusta (2004) examine a variety of historical and contemporary cases
  • Make the point that natural resources have a variety of effects
    • These effects have depended on government policy
Natural Resources Curse

- A broad interpretation of Wright (1990) and the later literature on resource curses suggests that they are not necessarily inconsistent.
  - Different numbers of countries and different time periods
Natural Resources Curse

• Suppose early exploitation required good institutions.

• Following World War II markets became less national and more international.
  
  • Thus the discovery and development of natural resources became less dependent on country-specific institutions.

• Certainly by the 1970s and 1980s, the countries with the largest as yet undeveloped resources were also the countries with the weakest institutions.
  
  • There was negative selection
    • Variation in outcomes that depended on institutions and on policy