

Comment to “Without steam in the age of coal and dams in the age of electricity: a natural resource explanation for Portuguese economic divergence” by Sofia Teives Henriques

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Shaping
powerful
minds

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Getting inside the paper

- Clear research question – did differential conditions of access to coal determine the relative lack of success of the Portuguese Industrial Revolution?
- The arguments are laid out in a nice way (and readable to the non-expert)
- My ignorance has an advantage – I can ask any question, even “silly” ones

Overview

Main argument:

- First industrial revolution – technology intensive in coal, technology adapted to UK conditions
- Portugal lacked the resources (coal), and did not have an obvious cheap alternative – remained labour intensive

- Second industrial revolution – based on electricity
- Portugal had more water than coal – but lacked:
 - Demand for industrial use of electricity – cost from being behind in the first industrial revolution
 - No experience with the technology
- Development based on electricity was hindered by low industrial development since coal time

Broad issues / questions

- Why the inability to adapt? Looking at technology, in the sense of production function, it seems that there was a lack of human capital as well – p. 148 & ft 386 & p.363
- “never used due to lack of capital to hire an engineer”
- “lack of scientific knowledge of industrialists, who do not even know how many turns does a wheel make per second”
- “Portugal did not participate in scientific innovations of the 1870s-1880s”

- Why not the entry of new firms funded by international capital? (political decisions to close the market? International environment did not favor investment in Portugal?)

Broad issues / questions

- What was the role of market power in keeping innovations away? (Arrow substitution effect in monopolies & innovation incentives)

Smaller points

- Prices of coal, table 1 – increasing in the UK, Germany, Canada, France, Spain, but decreasing in Portugal – level is higher in the beginning but not so much at the end – what was going on?
- International comparison of costs of internal transportation in other countries?

- How were imports of equipment organized? Monopolies? Competitive imports without barriers – licensing, duties, etc...
- What is the relevant theory of technological adoption? “economic incentives to adopt steam technology is to compare the relative coal to labour prices” – expected demand, prices of final products, current market structure: incentives vs conditions?

- Role of international trade? (p.155), it seems to me from reading the paper that even in a close economy adoption would be low – “quality” of labor input to make technology work was lacking
- Portugal was poor in coal, but also in ore and other metals – lack of complementary resources, it was not only cost and quality of coal?

- Expansion of railways drained resources from other (tradable) sectors? Both financial and physical
- “steel needed a minimum operative scale” – natural monopoly in Portugal? What does it really mean?
- Technology was driven by UK; but no local adaptation existed, lack of local R&D as a “missing input”?

- “Portugal did not benefit from the presence of early international companies as Italy did”, why?
- Electricity as missed opportunity, what if that way? Technology was dictated by geography, but something different could have been done? Engineering skills for dams were not there?
- Classification of causes to endogenous vs exogenous conditions?

- The answer to the research question: “the labor intensive path chosen during the First Industrial Revolution implied low levels of energy demand and prevented capital accumulation”
- How many industries / companies were born at the time elsewhere? It was an issue of critical mass? Exports not a substitute for a strong internal market?