What *really* happened in the English Industrial Revolution?

Proposal for EHA session at 2014 ASSA conference

Stephen C. Bannister

Department of Economics

University of Utah

Salt Lake City, Utah 84112

USA

steve.bannister@econ.utah.edu

Abstract

England, during the period leading up to and spanning the first Industrial Revolution, learned how to consume a virtually unconstrained quantity of fossil carbon energy. This led directly to modern economic growth for the first time in recorded history.

Studying the event empirically, I use recent long-period series estimates of the rate of English energy consumption, Gross Domestic Product, and population to test the hypothesis that this was primarily an *energy* revolution with important but very limited institutional/cultural support.

The outcome should provide insights into economic development for development economists, highlighting the importance of energy transitions for growth of economic systems. Additionally, the analytic framework I develop can be applied across time and geography, adding insights to ongoing development puzzles.

1 Introduction

Unravelling the history of the English Industrial Revolution remains in the center ring of economic history. Beyond its historical significance, it holds major lessons for development economists in modern eras.

In this paper, I propose a methodological return to data-informed economic principles to explain the miracle. And I conclude that it was primarily an energy revolution; the English learned how to consume virtually unconstrained amounts of fossil energy. This directly led to modern economic growth for the first time in history.

Many, but not all, historians look to primarily institutional or cultural explanations for the event often expressed as a form of English exceptionalism; I propose a taxonomy in table 1 with illustrative but not exhaustive examples. But this is not a paper about institutions; it is about economics. I try to make a strong case that while (a very few) necessary institutions were proximate, they were not sufficient, and do so by telling a compelling economic story.

Table 1: Taxonomy of EIR explanations

Label	Examples
English exceptionalists	Landes (1969), McCloskey (2010), Mokyr (1992,2010)
Partial culturalists	Cipolla (1966), Pomeranz (2001), Allen (2009)
Primarily energetic	Cottrell (1955), Wrigley (1988,2010), Malanima (2010)
Thermodynamicists	Georgescu-Roegen (1975), Ayres (2003), Garrett (2009)

One must include Max Weber [1] among the canonical exceptionalists, although indirectly bearing on England. Rather than lengthening this paper with details of this taxonomy, those will be in a forthcoming project. So I will proceed with the economics, acknowledging the few potentially

[1] Weber (2002)

causal cultural/institutional events that are required.

The contributions I hope to make are to build a framework for analyzing the event which: coherently explains the event; can be extended to test the hypothesized importance of any institutional or cultural events; can accommodate new data series; proposes a structure of different energy/GDP regimes; re-dates the start of the event, moving it considerably earlier than many historians propose; uses statistical methods to understand the dynamics of the event; and applies macroeconomic and microeconomic theoretical principles to describe and explain the incentives embedded in this great *sui generis* event.

2 Research question

I seek to identify empirically, economically, and eventually institutionally, what facts constituted the English Industrial Revolution. What was it, why did it occur, why did it happen when it did, why did it happen in England and only England? This paper addresses a subset of this agenda, describing what happened empirically, and suggesting the economic events that caused this result.

3 Hypotheses

The English Industrial Revolution (henceforth EIR) was the first example of modern economic growth.[2] There were both macroeconomic and microeconomic forces that were causal. The primary driver of the EIR was an energy consumption revolution. There is limited statistical space for a very few causal institutional or cultural events.

[2]Kuznets 1996