Innovation (and the Industrial Revolution)

EBH27, LECTURE 3

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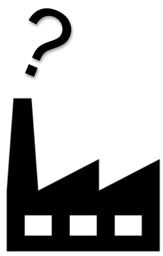
1. ‘Industry’ and ‘Industrial Revolution’



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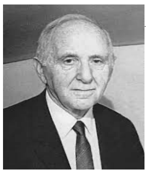
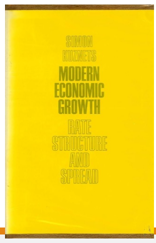
Modern Economic Growth: the Theory



Simon Kuznets, 1901-85



GROWTH CHARACTERISTICS

A. Aggregate growth

1. High rates of increase in per capita product, accompanied by substantial rates of population growth

2. High rates of increase in output per unit of all inputs

B. Structural transformation

3. A high degree of structural transformation, encompassing a shift from agriculture to industry and services

4. Changes in the structure of society and its ideology

C. International spread

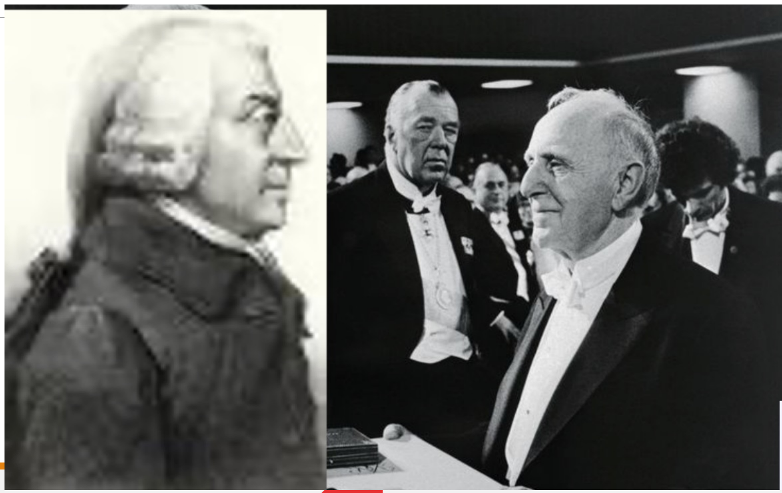
5. Opening up of international communications

6. A growing gap between developed and under-developed nations

Industrial Revolution: theory or period?

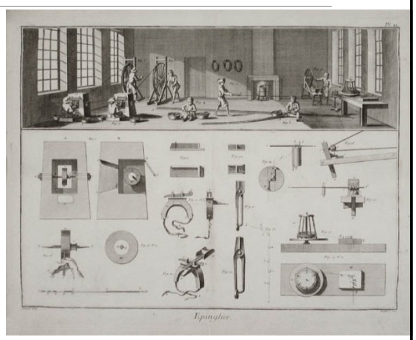
- The term “Industrial Revolution” (IndRev) describes 3 distinct ideas
  1. a period (very loosely, 1750-1850) in which growth accelerated (this is the usage given by Galor)
  2. a process (approx. the same as ‘MEG’)
  3. a theory for explaining growth, arguing that growth comes from technological and structural change originating in the industrial sector
- In 1 and 2, IndRev is a conventional term (like the 'Middle Ages', the 'Rennaissance', 'Climate Crisis', 'Cold War') or a well-defined process, with quantitative features
- **Meaning 3 is unsustainable, for reasons exposed here.**

Smith vs Kuznets



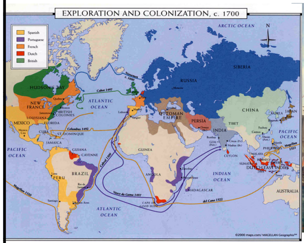
Growth in Labour Productivity

- Economic growth implies the increase of output per worker (or hour worked)
- The increase in labour productivity is typically the result of more (physical or human) capital per worker, like in Adam Smith's Pin Factory
- By contrast, in the IndRev theory, economic growth was an effect of rapidly-improving technology (steam machines and labour-saving machinery in textile industry and ironworks) in 1700-1800. Does this make sense?



A 18th-cent. pin factory, Adam Smith's example of how the division of labour multiplied productivity by a very large factor … in the industrial sector

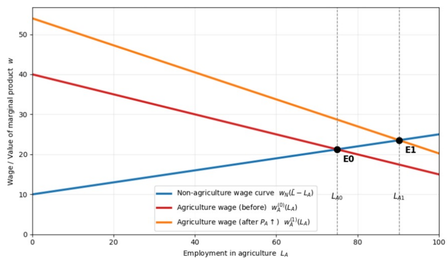
Why an 'IndRev' could not occurr with changes in the industrial sector?




- In a market economy, prices and wages in the agrarian sector would rise abruptly in case of a massive flow of labour and capital into the industrial sector.
- 18th-
cent Europe did not have the technological conditions to transport bulk agrarian goods a cross borders
- Given proteccionism and great powers' frequent warfae, the political conditions for smoo th trade were also lacking

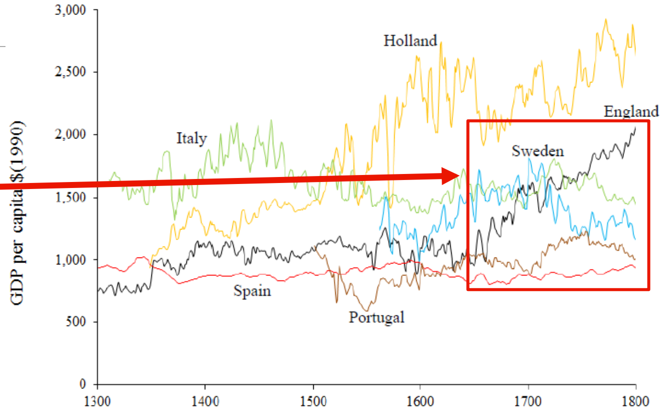
Why an 'IndRev' could not occurr etc.? (2)

- Given proteccionism and great power s' frequent warfae, the political condit ions for smooth trade were also lacki ng
- As such, each country was constrained by its natural resources
- This problema can be called 'The Agrarian Deadlock' and is coherent to the Malthusian theory:
  - Natural scarcity prevents any sustainable rise in incomes



MEG. When and Where?

How was the Agrarian Deadlock broken here?



Sources: England (Broadberry et al. 2011); Italy (Malanima 2011); Holland (van Zanden and van Leeuwen 2012); Sweden (Schön and Krantz 2012); Spain (Alvarez-Nogal and Prados de la Escosura 2013); Portugal: (Reis et al. 2013, Palma and Reis 2014). * 3-year average; Spain: 11-year average.

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Agricultural Population (%)

	1705	1775	1845
England	35	29	20
France	70	65	59
Prússia	80	70	60
Spain	71	66	61
Average	64	58	50

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Source: Dennison e Simpson 2010: 149

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The Agrarian Deadlock

- By 1700, England was already well ahead of its continental rivals, as it was able to provide its essential goods with a small share of the population (reminder: by the 18th century, no tech or political conditions for trading
bulk agrarian goods across borders)
- Also, England was more urbanised, wages were higher and specialization was more advanced

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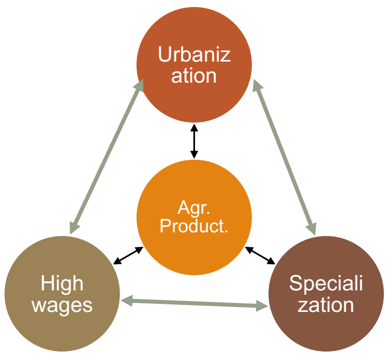
English Headstart in Agriculture



English and Dutch farm sector had more stimuli to increase productivity

High wages, higher productivity in other sectors, urbanization and specialization both stimulate and increase higher agrarian productivity

Yet, all these variables (industrial productivity, high wages, specialization and urbanization) are closely intertwined and have reciprocal causality

Can we find some independent variables?

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