

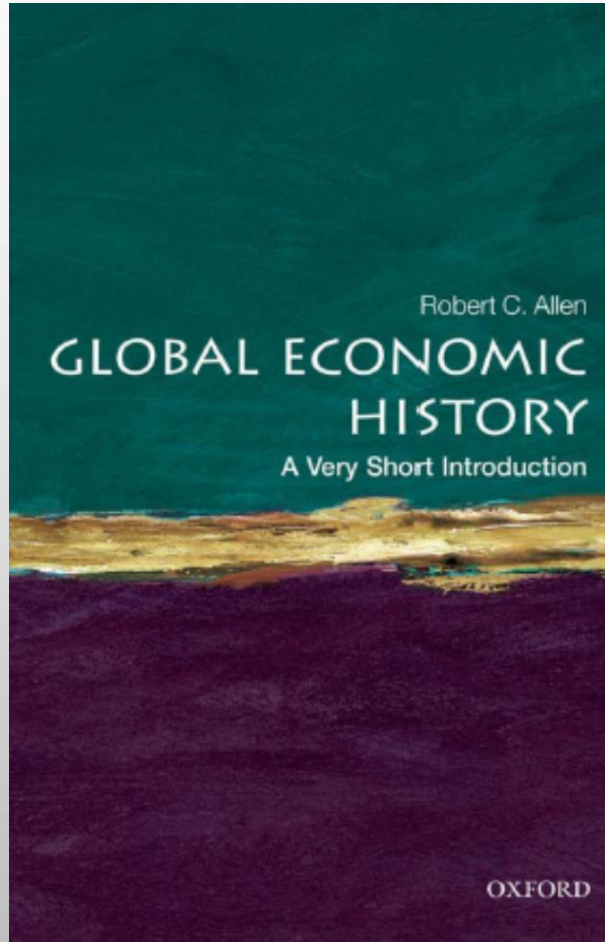
THE RISE OF THE WEST

- Why has the world become increasingly unequal?
- Why are some countries rich and others poor?
- Why did the Industrial Revolution happen in England rather than France
- Both 'fundamentals' like **geography, institutions, or culture** and '**accidents of history**' played a role.

READ

Global economic history: A Very Short Introduction by Robert C. Allen

CHAPTER 2, 3, 4



THE RISE OF THE WEST



- **Geography** is important.
- Malaria holds back the tropics, and Britain's coal deposits underpinned the Industrial Revolution.
- One of the aims of technology is to reduce the burden of bad geography.
- In the 18th century, the location of coal and iron deposits determined the location of blast furnaces.
- Today, ocean transportation is so cheap that Japan and Korea obtain their coal and iron ore from Australia and Brazil.

THE RISE OF THE WEST



- **Culture?**
- There are aspects of culture that affect economic performance.
- Max Weber: Protestantism made northern Europeans more rational and hard-working than anyone else. Protestant Britain was richer than Catholic Italy
- Since the 17th century, the **literacy and numeracy** help trade to flourish and science and technology to develop.
- These mental skills are spread by mass education, which has become a universal strategy for economic development.

THE RISE OF THE WEST

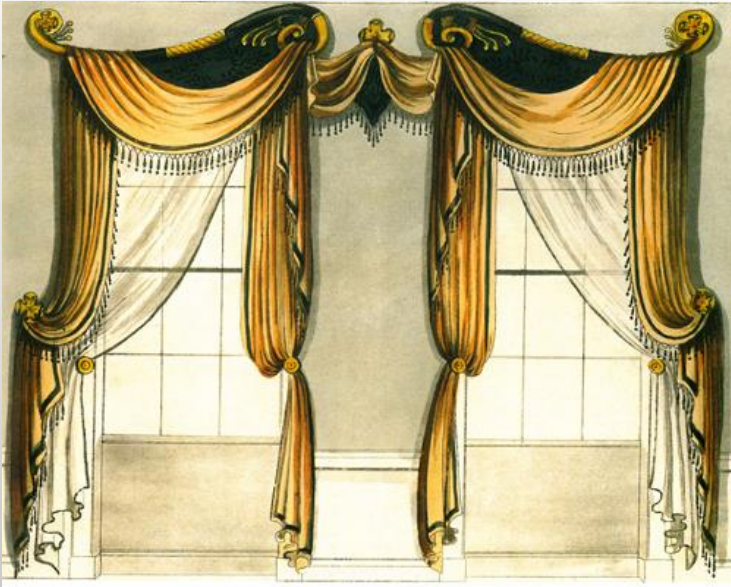
- **Institutions**

H₀: Economic success is the result of secure property rights, low taxes, and minimal government.

H₀: Arbitrary government is bad for growth because it leads to high taxes, regulations, corruption, and rent-seeking – all of which reduce the incentive to produce.

H₀: Successful economic development was due to the replacement of absolutism with representative government.

THE FIRST GLOBALIZATION



- The first phase of globalization that began in the late 15th century after the ships that could sail the high seas.

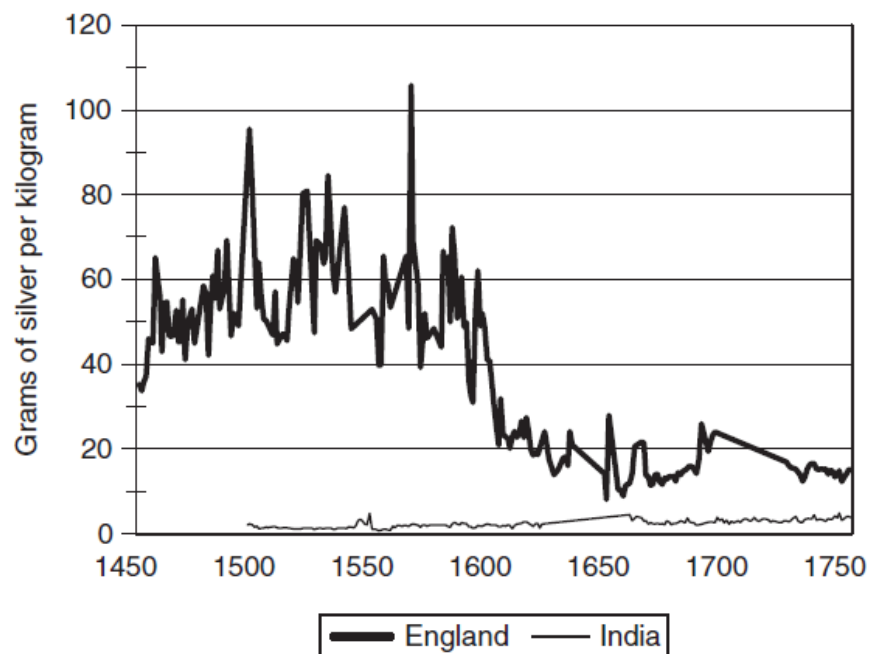
1. The relocation of Europe's manufacturing industry to northwestern Europe

- The Dutch began shipping Polish grain from Danzig to the Netherlands and, by the late 16th century, to Spain, Portugal, and the Mediterranean.
- English and Dutch producers contrived to make lightweight worsted cloth in imitation of Italian fabrics. With these 'new draperies', the English and Dutch drove the Italians out of business

THE FIRST GLOBALIZATION

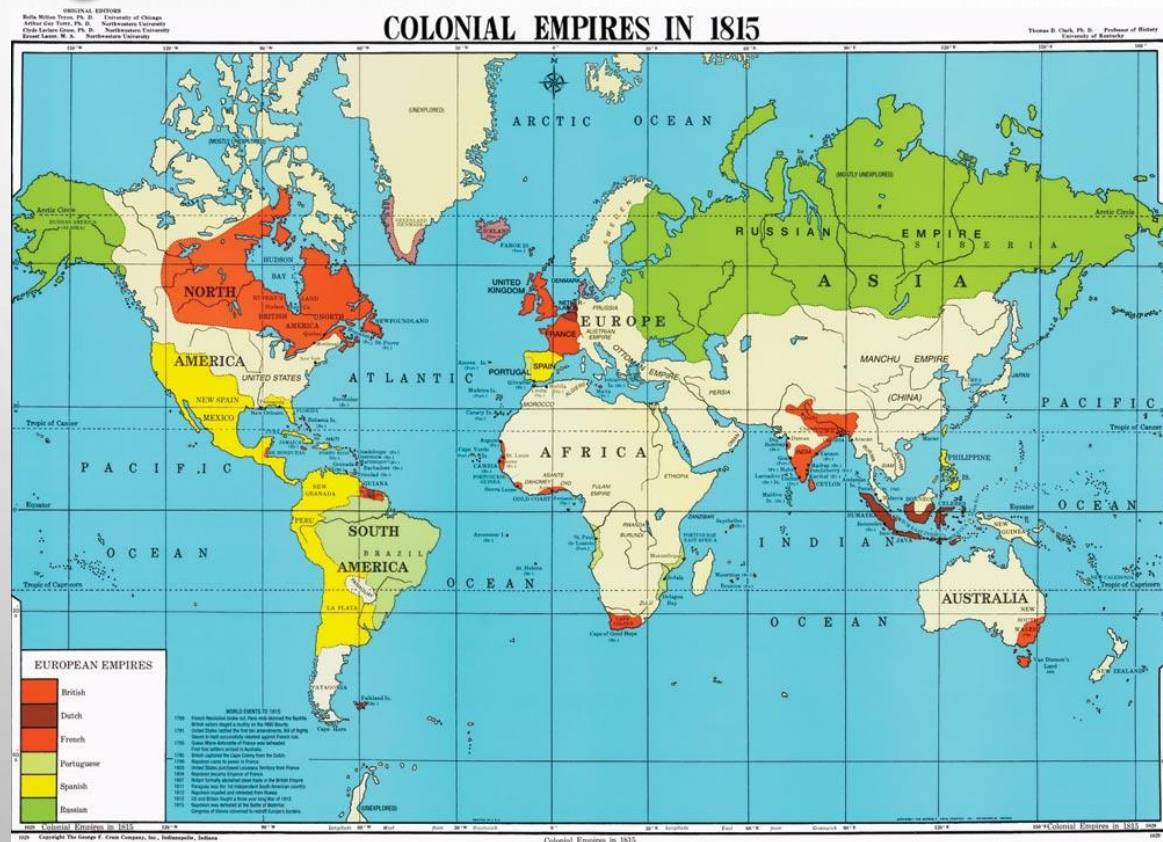
2. The Voyages of Discover

- Networks of Indian, Arab, and Venetian merchants shipped pepper and spices from Asia, across the Middle East, to Europe, and the Portuguese.
- Pepper from India: The other 96% of the price difference was transport costs. By 1760, the gap between the Indian and English prices had dropped by 85%, and that reduction is a measure of the efficiency gain from the all-sea route.
- The arrival of the English and Dutch East Indies companies in the early 17th century that broke Portugal's maritime monopoly and cut the European price by two-thirds.



Price of pepper, adjusted to price level of 1600

COLONIALISM



- **1492:** Christopher Columbus talked to King Ferdinand and Queen Isabella of Spain into financing his expedition and sailing west from Europe directly to Asia, the East Indies. But it was the Americas he had 'discovered'.
- The Portuguese also accidentally discovered Brazil in 1500, which became their biggest colony.
- Looting the Aztecs and the Incas brought immediate wealth to Spain.
- The silver flooding into Spain paid for the Habsburg armies fighting the Protestants across Europe, provided Europeans with the cash to buy up Asian goods, and unleashed decades of inflation known as **the Price Revolution**

STRUCTURAL CHANGE

	urban	1500 rural nonagri- culture	agri- culture	urban	1750 rural nonagri- culture	agri- culture
greatest transformation						
England	7%	18%	74%	23%	32%	45%
significant modernization						
Netherlands	30	14	56	36	22	42
Belgium	28	14	58	22	27	51
slight evolution						
Germany	8	18	73	9	27	64
France	9	18	73	13	26	61
Austria/Hungary	5	19	76	78	32	61
Poland	6	19	75	4	36	60
little change						
Italy	22	16	62	22	19	59
Spain	19	16	65	21	17	62

- English and Dutch trade with their colonies drove their economies forward
- Cities and export-oriented manufacturing grew
- Occupational structure changed accordingly

STRUCTURAL CHANGE



- England was the most rapidly urbanizing country in Europe
- Most of these people were engaged in manufacturing industries, and their products were shipped across Europe and around the world.
- By 1647, the East India Company had 23 establishments in India.
- New York was seized in 1664.
- English colonies were established along the American coast from Georgia to Maine.
- Their economies grew rapidly by exporting tobacco, rice, wheat, and meat to England and the Caribbean.
- By 1770, the population of British America had reached 2.8 million, or almost half of England's.



STRUCTURAL CHANGE

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- The Netherlands were even more urbanized than England and also had large, export oriented rural industries.
- A technological revolution in shipbuilding led to a competitive advantage in shipping that helped the young Republic become the dominant trade power by the mid-17th century.
- **The Dutch East Indies Company** created a Dutch Empire in Asia at the expense of the Portuguese.
- The Dutch seized the Molucca, Malacca, Ceylon, Cochin, Jakarta, even seized Brazil in the 1630s and 1640s, and New York in 1624.
- Beside trade, an early "industrial revolution" (powered by wind, water and peat), land reclamation from the sea, and agricultural revolution, helped the Dutch economy achieve the highest standard of living in Europe (and probably the world) by the middle of the 17th century.

STRUCTURAL CHANGE



- Globalization spurred northwestern Europe forward but held southern Europe back.
- In the 16th century, **Spain** looked like the most successful imperialist, for Latin America yielded so much silver.
- Silver imports, however, led to much greater inflation in Spain than elsewhere.
- As a result, Spanish agriculture and manufacturing became uncompetitive.
- The constancy in the share of the urban population in Spain masks great changes – the populations of old industrial cities collapsed while Madrid expanded on the basis of American loot.

ECONOMIC DEVELOPMENT



- **First**, the growth in urbanization and rural manufacturing increased **the demand for labour** and led to tight labour markets and high wages.
- Living standards were high in London and Amsterdam.
- **Second**, growing cities and a high-wage economy put great **demands on agriculture for food and labour**.
- The result was **agricultural revolutions** in both England and the Netherlands.
- Output per farm worker increased by about 50% in both countries and reached the highest levels in Europe

ECONOMIC DEVELOPMENT



Third, growing urban demand also led to **energy revolutions** in both England and the Netherlands.

- In the Middle Ages, charcoal and firewood were the principal fuels burned in cities.
- As the cities grew, wood prices skyrocketed, and substitute fuels were developed.
- In the Netherlands, the alternative was peat; in England, it was coal.
- Coal was mined in Durham and Northumberland and shipped down the coast to London.
- England was the only country in the world with a large coal-mining industry in the 18th century, and that also gave it access to the cheapest energy in the world

ECONOMIC DEVELOPMENT

Table 4. Adult literacy, 1500 and 1800. Percentage of the adult population that could sign its name

	1500	1800
England	6	53
Netherlands	10	68
Belgium	10	49
Germany	6	35
France	7	37
Austria/Hungary	6	21
Poland	6	21
Italy	9	22
Spain	9	20

Fourth, the high-wage economy generated a high level of literacy, numeracy, and skill formation in general

- The expansion of commerce and manufacturing increased the demand for education by making it economically valuable;
- At the same time, the high-wage economy provided parents with the money to pay for schooling their children
- By the 18th century, most sons of craftsmen, artisans, shop keepers, and farmers, and a smaller share of the sons of labourers, received several years of primary education. Many girls were also schooled.
- The result was a public that read newspapers and followed politics to an unprecedented degree

THE INDUSTRIAL REVOLUTION

(1760 TO 1850)

- Britain was continuously extending the world's technology frontier which it led to continuous growth, so that income compounded to the mass prosperity of today
- There were famous inventions like the steam engine, the machines to spin and weave cotton, and the new processes to smelt and refine iron and steel using coal instead of wood fuels.
- In addition, there were a host of simpler machines that raised labor productivity in unglamorous industries like hats, pins, and nails.
- ***Why was the revolutionary technology invented in England rather than the Netherlands or France or China or India?***

THE INDUSTRIAL REVOLUTION

(1760 TO 1850)

Cultural and political context

- The Industrial Revolution took place in a particular political and cultural context that was favorable to innovation
- The English constitution had many features that promoted economic growth
- The English Parliament introduced a land tax in 1693 that was imposed on peers as well as commoners.
- The English state collected about twice as much per person as the French state and spent a larger fraction of the national income. Most of the money was spent on the army and the navy.
- Imperialism was the basis of the high-wage economy, which in turn led to growth by inducing labor-saving technical change.
- Constitution was far from democratic: only 3–5% of the English could vote and even fewer of the Scots.
- Much power remained with the Crown – in particular, the power to make war and peace. While Parliament had a constitutional right to refuse funds for war, it never did

THE INDUSTRIAL REVOLUTION

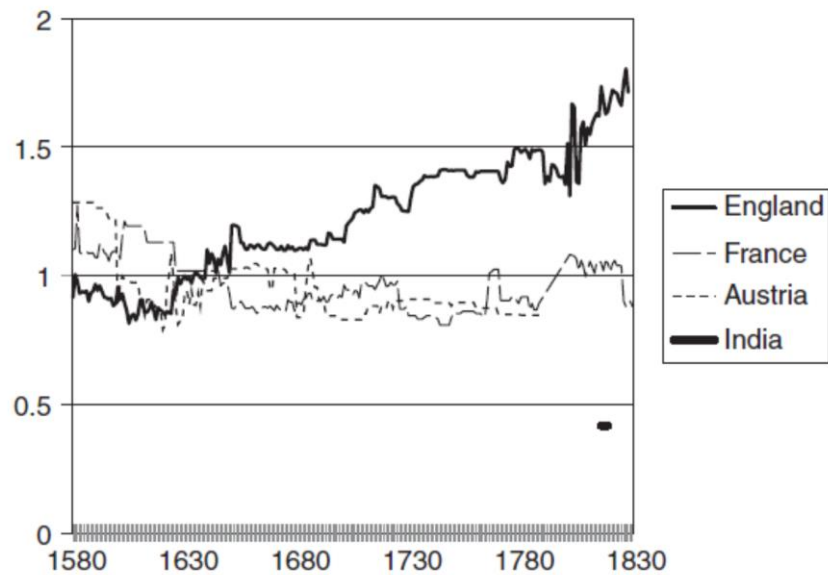
(1760 TO 1850)

Cultural and political context

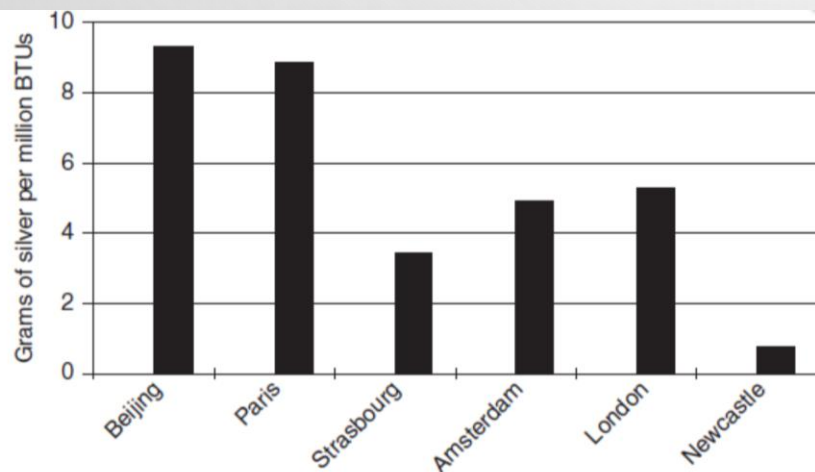
- The Industrial Revolution was sustained by the emerging scientific culture. The Scientific Revolution of the 17th century led to a handful of discoveries about the natural world that were applied by inventors in the 18th.
- Newton's model of the Solar System was the greatest achievement, and it inspired a reorientation of upper-class ideas about religion and nature
- However, scientific discoveries were known across Europe. But revolution was British!

THE INDUSTRIAL REVOLUTION

(1760 TO 1850)



7. Wage relative to price of capital services



6. Price of energy

- Instead, the explanation lies in Britain's unique **structure of wages and prices**.
- Britain's high-wage, cheap-energy economy made it profitable for British firms to invent and use the breakthrough technologies of the Industrial Revolution.
- British wages were high relative to the price of capital
- By the middle of the 18th century, labor relative to capital was 60% more expensive in England than on the continent.

THE INDUSTRIAL REVOLUTION

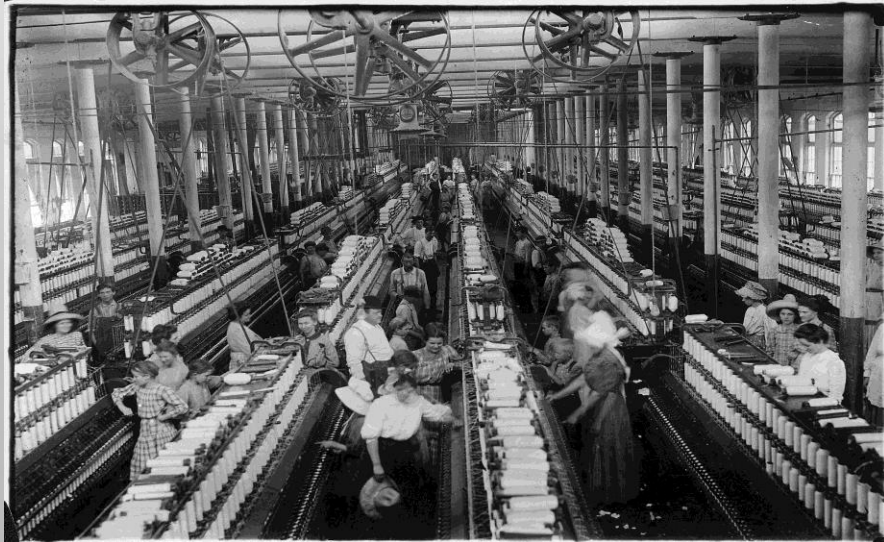
(1760 TO 1850)



- Cotton was the first industry to be transformed by factory production.
- The cotton industry grew to be Britain's largest, accounting for 8% of GDP in 1830 and 16% of British manufacturing jobs
- The various East Indies companies began to ship cotton calicoes and muslins to Europe in the late 17th century where they successfully competed against linen and wool, the principal European textiles.
- In the 17th century, China and India had the world's largest cotton industries.
- International competition was the spur that led to the mechanization of cotton spinning. The finer the cotton, the more time it took to spin.
- England could only compete if machines were invented to reduce labor

THE INDUSTRIAL REVOLUTION

(1760 TO 1850)



- Richard Arkwright's greatest achievement was to design a mill (Cromford Mill No.2)
- As a result, the cost saving from mechanical spinning was higher.
- In the 1780s, the rate of return to building an Arkwright mill was 40% in England, 9% in France, and less than 1% in India
- There were 150 Arkwright mills were erected in Britain in the 1780s, 4 in France, and none in India.
- Most factories were driven by water power until the 1840s. After that, the use of steam to power industry expanded continuously.
- By the 1870s, factory cotton production began to shift into the Third World.

THE INDUSTRIAL REVOLUTION

(1760 TO 1850)

The steam engine

- Steam power was a spin-off of the Scientific Revolution. A practical engine was completed by Thomas Newcomen in 1712
- The science of the engine was pan-European, but the R&D was conducted in England because Britain had many more mines than any other country due to the large coal industry and that was where it paid to use the steam engine.
- In addition, the early steam engines burned vast quantities of coal, so they were cost-effective only where energy was cheap.
- The steam engine then allowed mechanical power to be used in a wide range of industries as well as in railways and ocean ships.



THE INDUSTRIAL REVOLUTION

(1760 TO 1850)

The steam engine

- Steam power also revolutionized transportation in the 19th century.
- In 1804, Richard Trevithick built the first steam locomotive for a railway at the Penydarren Ironworks in Wales.
- By the middle of the 19th century, steam was displacing sail in ocean transportation. Britain became the centre of world shipbuilding in view of its pre-eminence in iron and engineering.
- Steam power is an example of a general-purpose technology (GPT), that is a technology that can be applied to a variety of uses [same as electricity and computer].
- Half of the growth of labor productivity in Britain in the mid-19th century was due to steam. This long-run pay-off is an important reason that economic growth continued through the century.



BRITAIN'S SUCCESS FACTORS?

- In the middle of the 19th century, Britain was the 'workshop of the world', producing most of the world's exported manufactures.

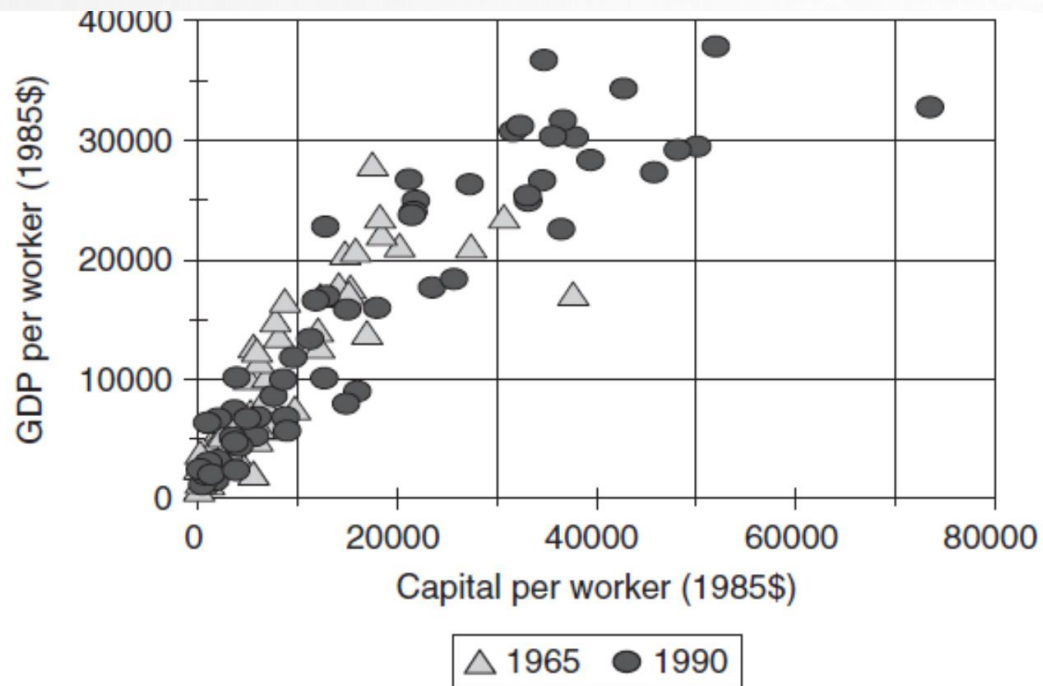
Though Britain did not have a policy to 'industrialize',

- **First**, Britain's early start meant that British manufacturers could out-compete those on the continent,
- **Second**, the technology of the industrial revolution was inappropriate for continental countries where wages were lower and energy prices generally higher than in Britain.
- Continental industrialization required the invention of appropriate technology and protection from British competition while that took place

WESTERN'S SUCCESS FACTORS?

- However, the continental Europe and North America overtake Britain in industrial output between 1870 and 1913.
- Countries with strong university programmes in these areas reaped economic benefits.
- Germany is the pre-eminent example before the 1930s. Its physicists and chemists won many Nobel Prizes.
- But Hitler, the Second World War, and post-war division derailed German science.
- The lead in university research passed to the USA, which had been developing a very large higher education sector. University research in the USA floated on a sea of government money.
- This was directed towards the military during the Cold War

WESTERN'S SUCCESS FACTORS?



World production function

- The high wages of rich countries induced them to invent products that economized on labour by increasing the use of capital.
- This led to **an ascending spiral of progress**: high wages induced more capital-intensive production
- That, in turn, led to higher wages. This spiral underlies the rising incomes of rich countries.

WESTERN'S SUCCESS FACTORS?

- The reason that poor countries are poor is because they use technology that was developed by rich countries in the past.
- The most successful industry of many developing countries is the manufacture of clothing.
- The process of technical change, in which inventors in the leading economies sought to save high-wage labour, resulted in machinery that further increased the competitive advantage of rich countries without conferring any advantage on the poor countries of the world.