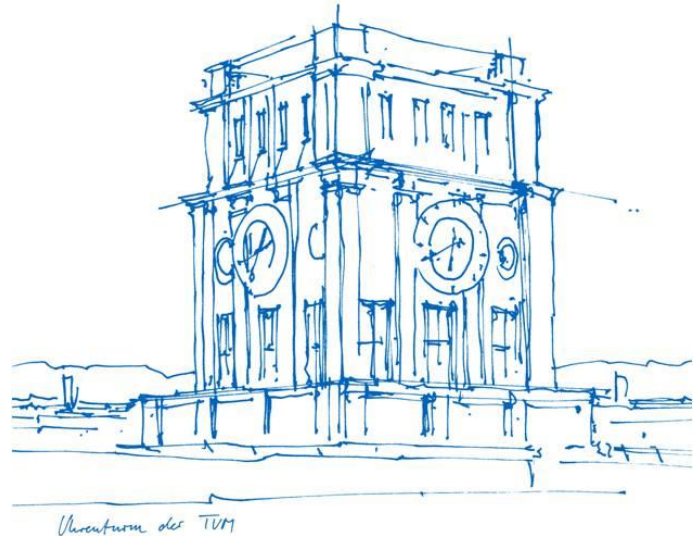


Economics II – Macroeconomics

I. Introduction to Macroeconomics

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Outline

- I. Introduction to macroeconomics (chapter 1)
- II. Technological change and economic growth (chapter 2)
- III. The aggregate economy (chapter 13)
- IV. Aggregate demand and fiscal policy (chapter 14)
- V. The labour market (chapters 6 and 9)
- VI. Aggregate demand and unemployment (chapter 14)
- VII. Credit, banks and money (chapter 10)
- VIII. Inflation and monetary policy (chapter 15)
- IX. Technological progress, unemployment and living standards in the long run (chapter 16)
- X. Economic and financial crises (chapter 17)

I. Introduction to Macroeconomics

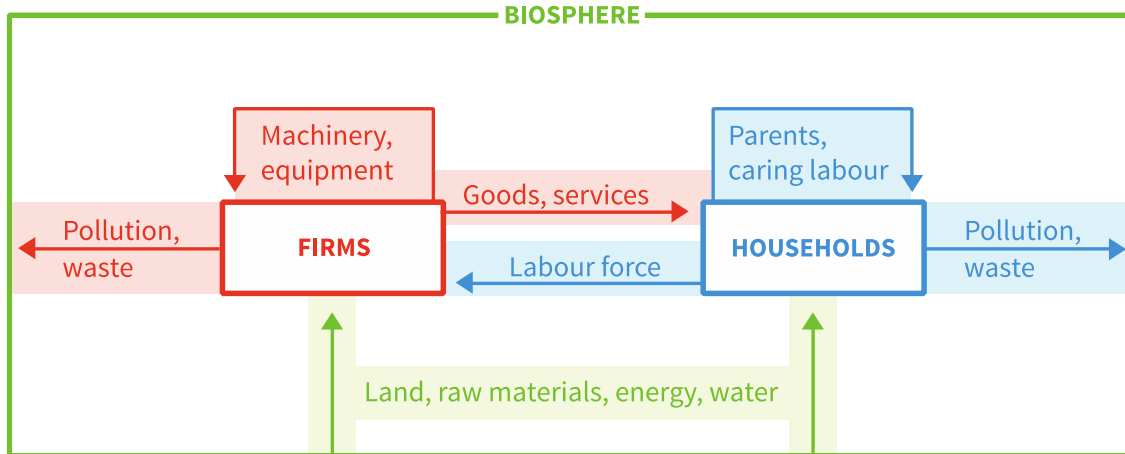
The Economy Chapter 1

- I. **Hockey Stick Growth, Technological Progress**
- II. The Economic System

What is (macro-)economics?

*“Economics is the science which studies human behaviour as a relationship between **ends** and **scarce** means which have **alternative** uses.”* (Lionel Robbins, 1932)

(Macro-)Economics studies of how people interact with each other and with their natural surroundings in producing their livelihoods, and how this changes over time.

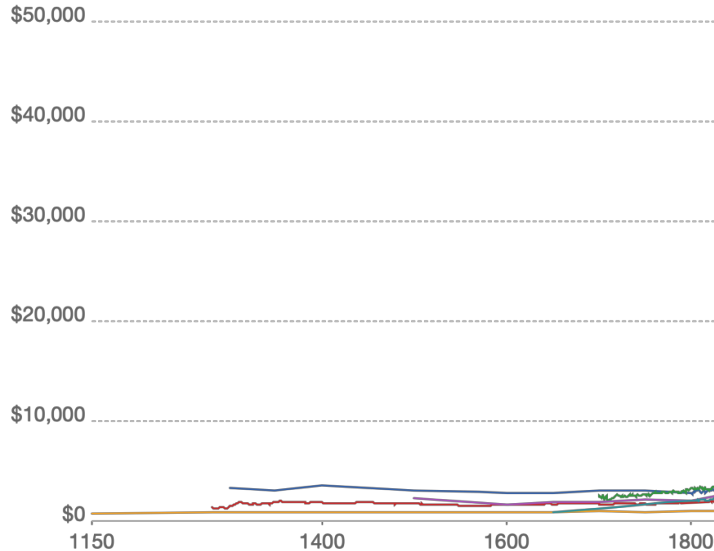


Zero growth

GDP per capita

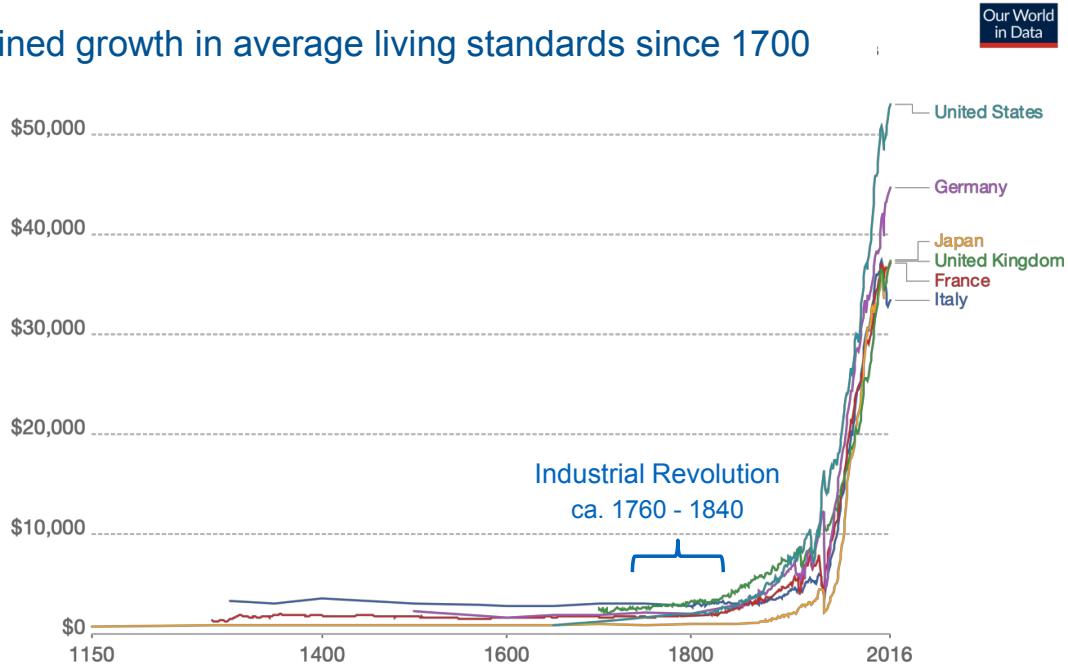
GDP per capita adjusted for price changes over time (inflation) and price differences between countries – it is measured in international-\$ in 2011 prices.

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“Hockey-stick” growth

Rapid, sustained growth in average living standards since 1700

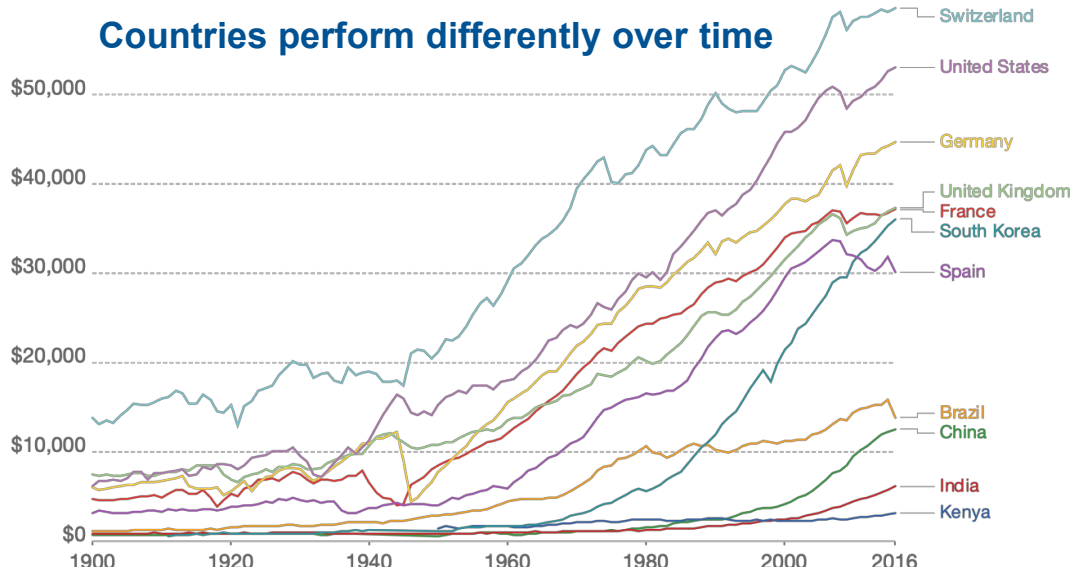


GDP per capita growth since 1900

GDP per capita

GDP per capita adjusted for price changes over time (inflation) and price differences between countries – it is measured in international-\$ in 2011 prices.

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GDP per capita growth since 1900



<https://ourworldindata.org/grapher/maddison-data-gdp-per-capita-in-2011us-single-benchmark?time=1900..2016&country=USA+GBR+FRA+KOR+CHE+DEU+ESP+BRA+CHN+KEN+IND>

Data on inequality across the world: <https://wid.world>

Timing of growth

Growth take-off occurred at different points in time for different countries:

- Britain first country to experience sustained economic growth, starting around 1650.
- In Japan, it occurred around 1870.
- The kink for China and India happened in the second half of the 20th century.

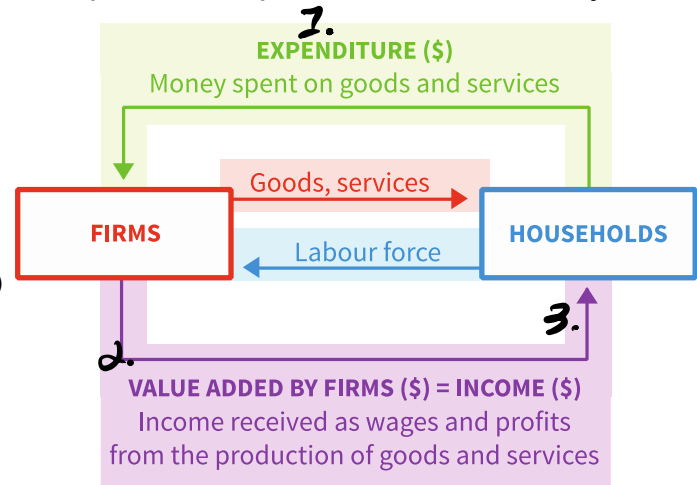
In some economies, substantial improvements in people's living standards did not occur until they gained independence from colonial rule or interference by European nations!

The Gross Domestic Product (GDP)

National accounts = system used to measure overall output and expenditure in a country.

3 equivalent ways to measure GDP:

1. Total spending on domestic products
2. Total domestic production (measured as value added)
(Firms)
3. Total domestic income



Circular flow model
shows this equivalence

The Gross Domestic Product (GDP)

3 equivalent ways to measure GDP:

1. **Total spending on domestic products**
2. **Total domestic production** (measured as value added)
3. **Total domestic income**

OECD: *[GDP as] an aggregate measure of production equal to the sum of the gross values added of all resident and institutional units engaged in production (plus any taxes, and minus any subsidies, on products not included in the value of their outputs).*

IMF: *GDP measures the monetary value of final goods and services—that are bought by the final user—produced in a country in a given period of time (say a quarter or a year).*

Measuring income and living standards

Gross Domestic Product (GDP):

- A measure of total income and output of the economy in a given period
- Usually expressed as in per capita terms (as an average)
- Growth rate = change in GDP / original level of GDP

Disposable income: (↑↓)

- Total income – taxes + government transfers

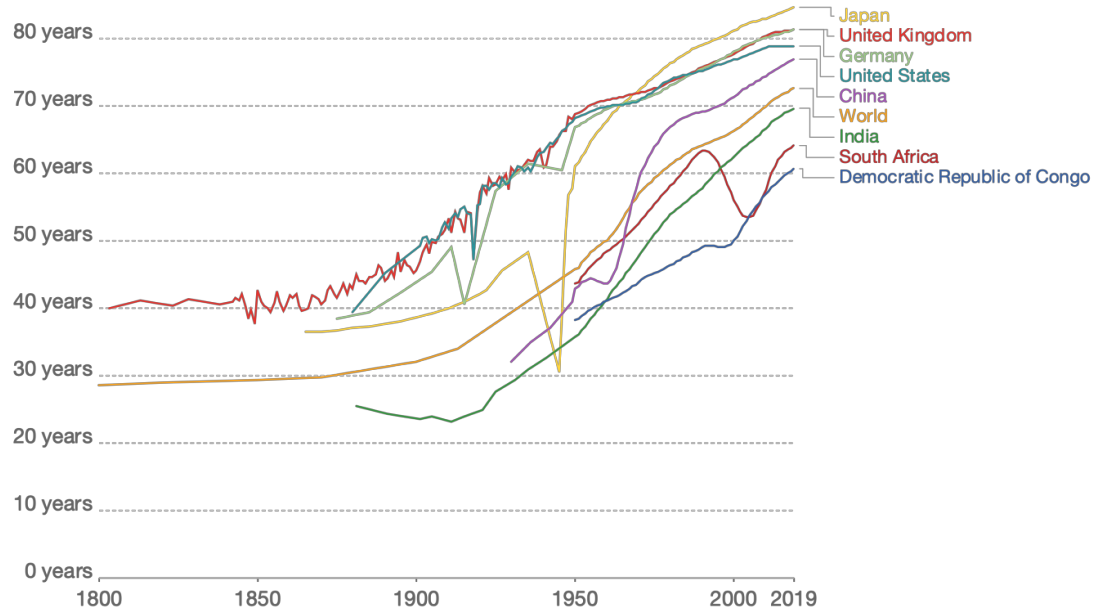
GDP per capita ≠ Disposable income

- GDP per capita tells us something about the differences in the availability of goods/services
- Both are imperfect measures of well-being

Living standards: life expectancy

Life expectancy

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Source: https://ourworldindata.org/grapher/life-expectancy?time=1800..2019&country=JPN+GBR+OWID_WRL+ZAF+D
EU+CHN+IND+COD+USA

Living standards: life expectancy

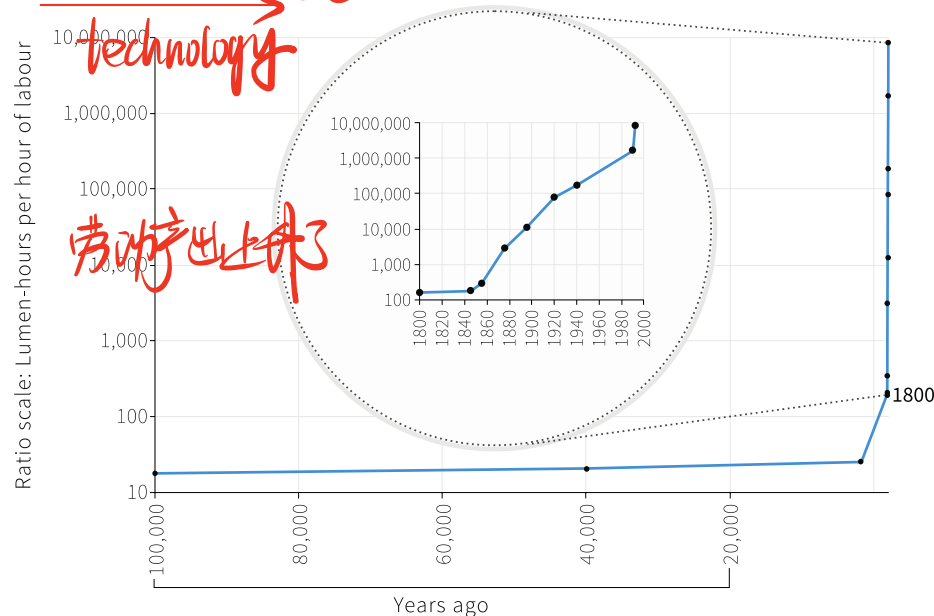


https://ourworldindata.org/grapher/life-expectancy?time=1800..2019&country=JPN+GBR+OWID_WRL+ZAF+DEU+CHN+IND+COD+USA

The technological revolution (industrial revolution)

Technology = process that uses inputs to produce an output

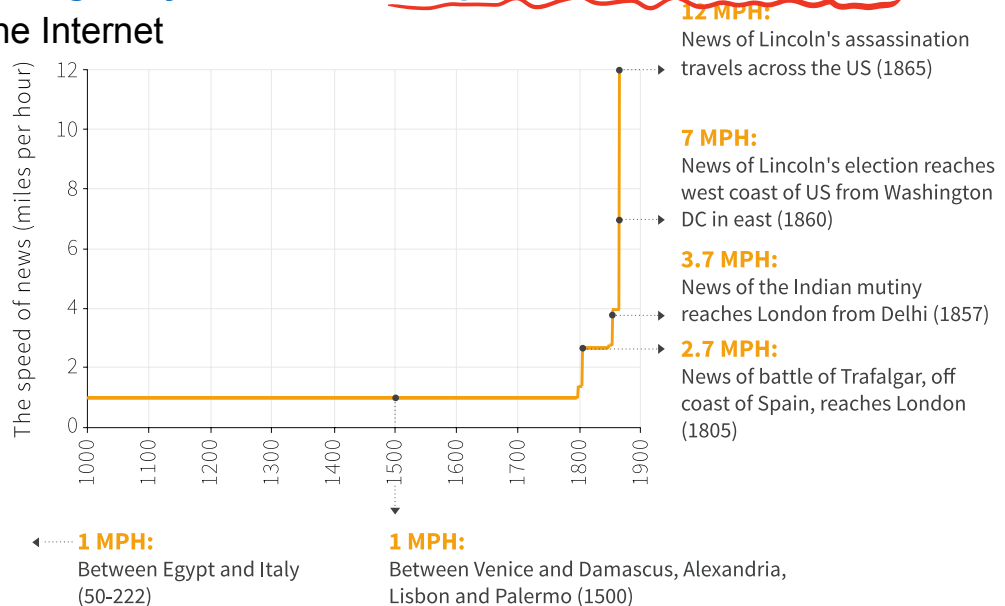
- For example, a technology for making a cake can be described by the recipe that specifies the combination of **inputs** (ingredients such as flour, and labour activities such as stirring) needed to create the **output** (the cake)
- By reducing the amount of work/time it takes to produce things, technological changes allowed significant increases in living standards**



A connected world

Technological progress also greatly increased the speed of information flows.

- From horse couriers to the Internet



Technological progress

1956 IBM Model 350: 5 MB



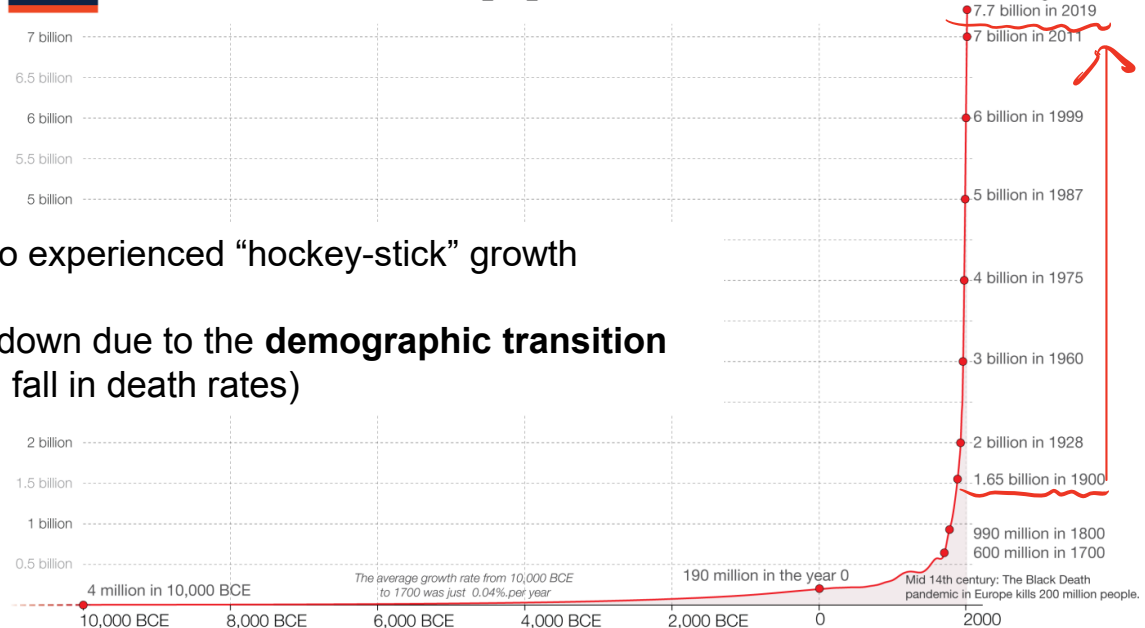
Micro SD Card: 204800 MB



Population growth

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The size of the world population over the last 12.000 years



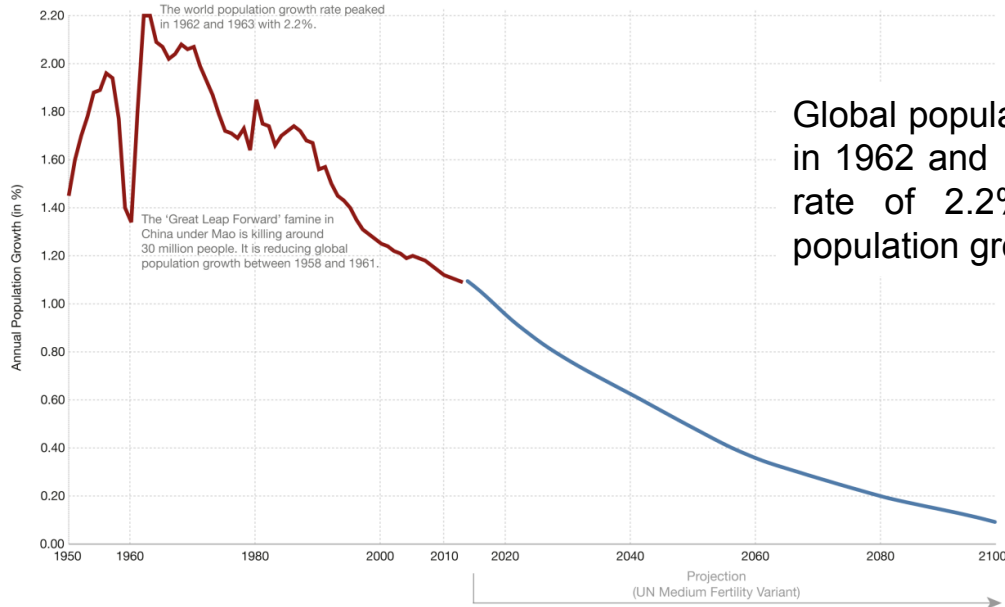
Population has also experienced “hockey-stick” growth

Growth is slowing down due to the **demographic transition**
(fall in birth rates > fall in death rates)

Population growth rate

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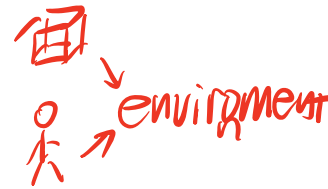
Annual world population growth rate (1950-2100)



Global population growth reached a peak in 1962 and 1963 with an annual growth rate of 2.2%; but since then, world population growth has halved

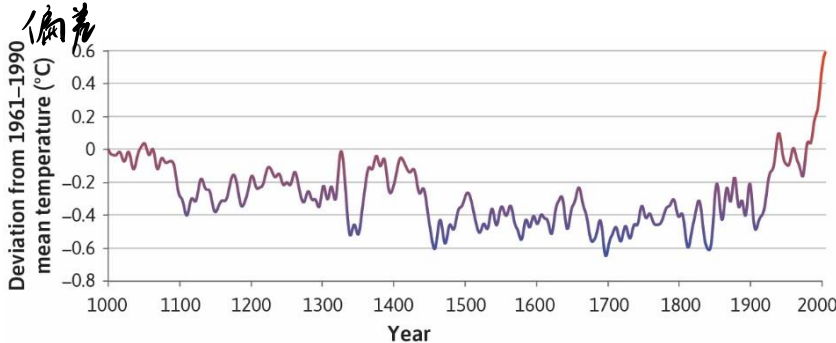
技术↑“土地”利用产出↑
富有生!
生个土地人均↓穷↓
不生!

Environmental consequences



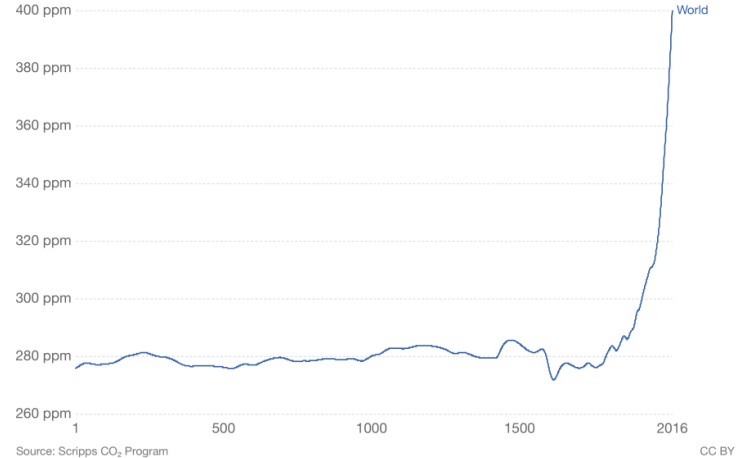
Increased production and population growth affects the environment

- Global impacts – climate change
- Local impacts – pollution in cities, deforestation



Atmospheric CO₂ concentration (ppm)

Global average long-term atmospheric concentration of carbon dioxide (CO₂), measured in parts per million (ppm).

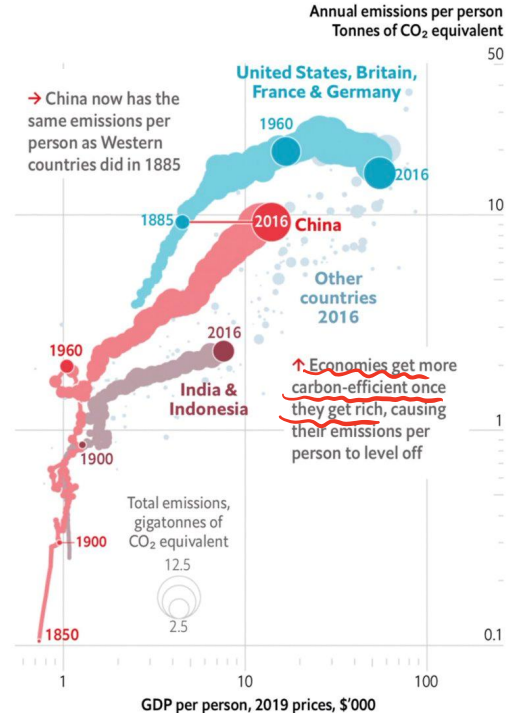


Environmental consequences

Increased production and population growth
affects the environment

But: New technologies & industrial change

因为 household 和 firm 都产生 pollute
GDP per person v annual emissions per person
1850-2016, log scales



I. Introduction to Macroeconomics

The Economy Chapter 1

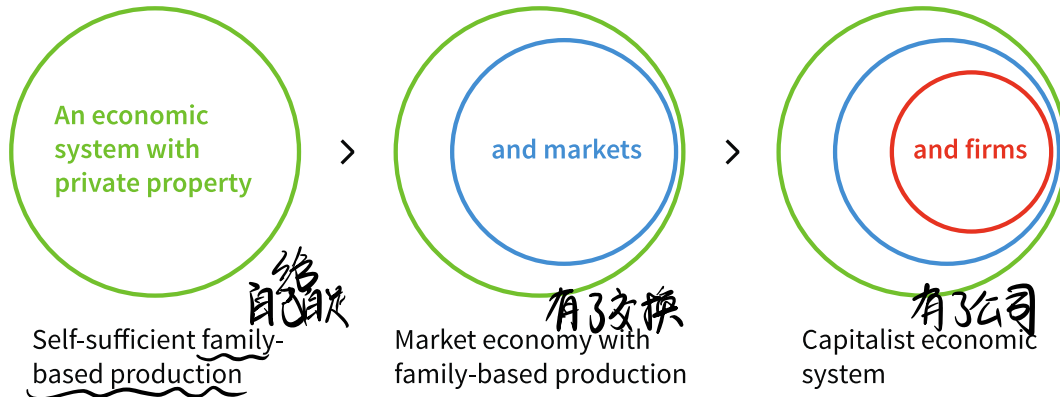
I. Hockey Stick Growth, Technological Progress

II. The Economic System

The economic system

Institutions are the laws and social customs governing the production and distribution of goods and services.


Capitalism is an economic system in which the main institutions are private property, markets, and firms. However, other institutions (e.g., governments, families) are also important.



Key concepts in capitalism

Private property: ownership rights over possessions;
does not include some essentials e.g. air, knowledge.

Markets: a way for people to exchange products and services for their mutual benefit.

Firms:  in a business organization that uses inputs to produce outputs, and sets prices to at least cover production costs. 产出 > 成本

Inputs and outputs are private property. Firms use markets to sell outputs.

The capitalist revolution

Adopting capitalism transformed many economies because of:

- Private incentives for cost reducing innovation deriving from market competition and secure private property.
- Firms led by those with proven ability to produce goods at low cost.
- Public policy supporting these conditions, and supplying other essential goods and services.

The capitalist revolution

Capitalism led to growth in living standards because of:

- **impact on technology**: firms competing in markets had strong ^{激励}incentives to adopt and develop new technologies
- ^①**specialization** ^(Firm centered) the growth of firms and the expansion of markets linking the entire world allowed historically unprecedented specialization in tasks and production

Together with the ^②technological revolution, this increased **worker productivity**.

① + ②: worker productivity

The gains from specialization

Specialization increases productivity of labor because we become better at producing things when we each focus on a limited range of activities

- **learning by doing**
- taking advantage of **natural differences** in skill and talent
- **economies of scale**

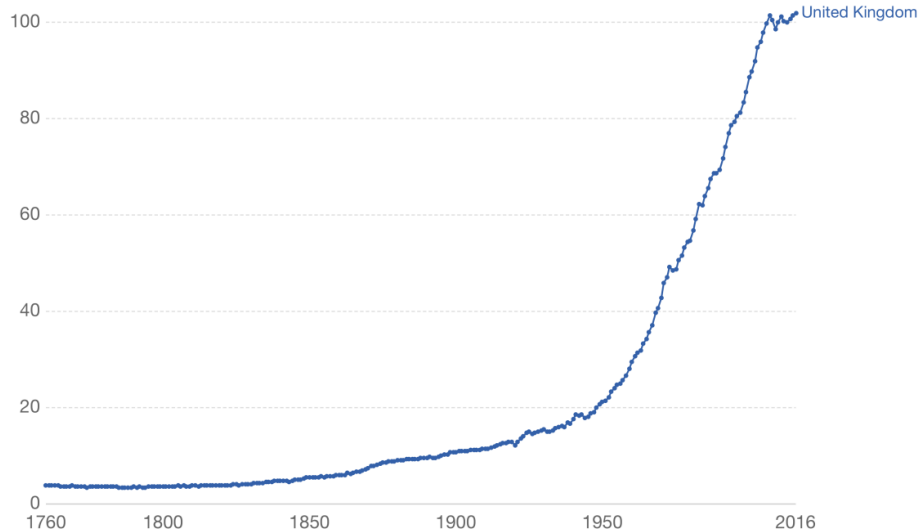
People can only specialize if they have a way to acquire the other goods they need. In a capitalist society, this is done via markets. (相互合作)

The gains from specialization

Labor productivity per hour (2013 = 100)

Labor productivity per hour, measured as gross domestic product (GDP) per hour at factor prices (total net value added in various economic activities). Labor productivity is measured relative to productivity per hour observed in 2013 (i.e. 2013 = 100).

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Source: Hill, Thomas, Dimsdale (2016), A Millennium of UK Data (2016), Bank of England

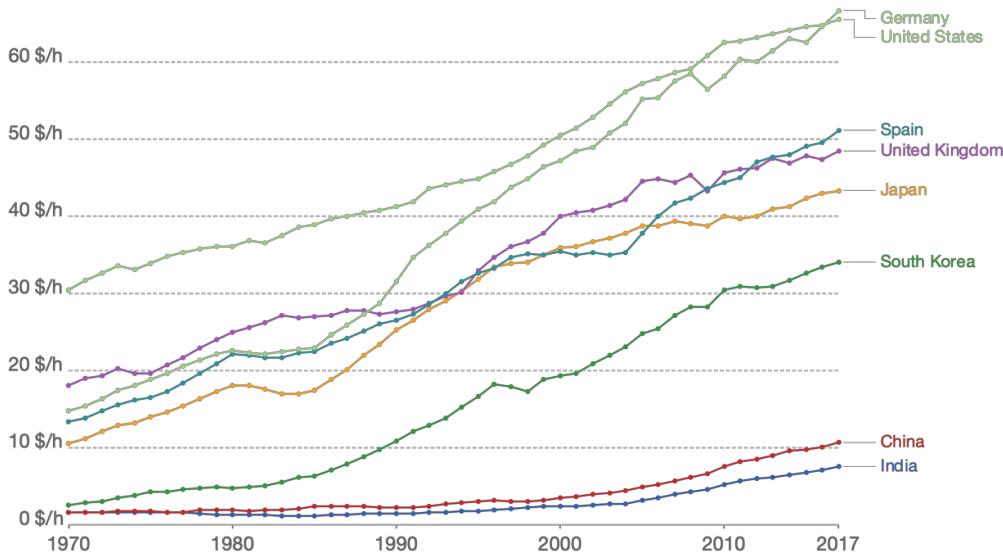
CC BY

The gains from specialization

Productivity per hour worked

Labor productivity per hour is measured as gross domestic product (GDP) per hour of work. GDP is adjusted for price differences between countries (PPP adjustment) and for price changes over time (inflation).

Our World
in Data



Source: <https://ourworldindata.org/grapher/abor-productivity-per-hour-pennworldtable?country=IND+KOR+JPN+GBR+ESP+USA+DEU+CHN>

The gains from specialization



<https://ourworldindata.org/grapher/labor-productivity-per-hour-PennWorldTable?country=IND+KOR+JPN+GBR+ESP+USA+DEU+CHN>

(De)centralisation

Capitalism is an economic system that combines **decentralization** with **centralization**

- **Capitalism decentralizes:** It limits the powers of governments and of other individuals in the process of owning, buying and selling.
- **Capitalism centralizes:** It concentrates power in the hands of owners and managers of firms who are then able to secure the cooperation of large numbers of employees in the production process.

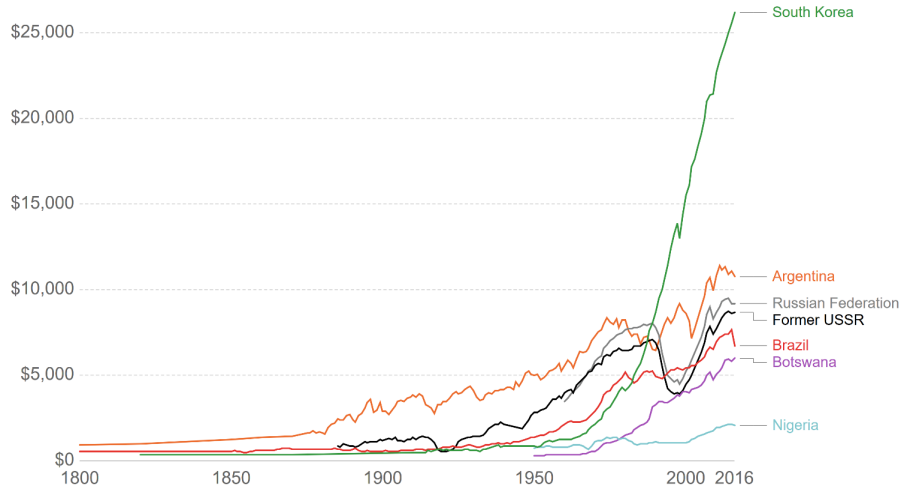
Divergence in growth

Capitalism = Private property + Markets + Firms

- Differences in growth across countries can be due to **institutions failing** (e.g., private property not secure, markets not competitive, inheritance instead of merit).
- **Political conditions:** capitalist institutions are regulated by governments, governments provide essential goods and services (infrastructure, education).

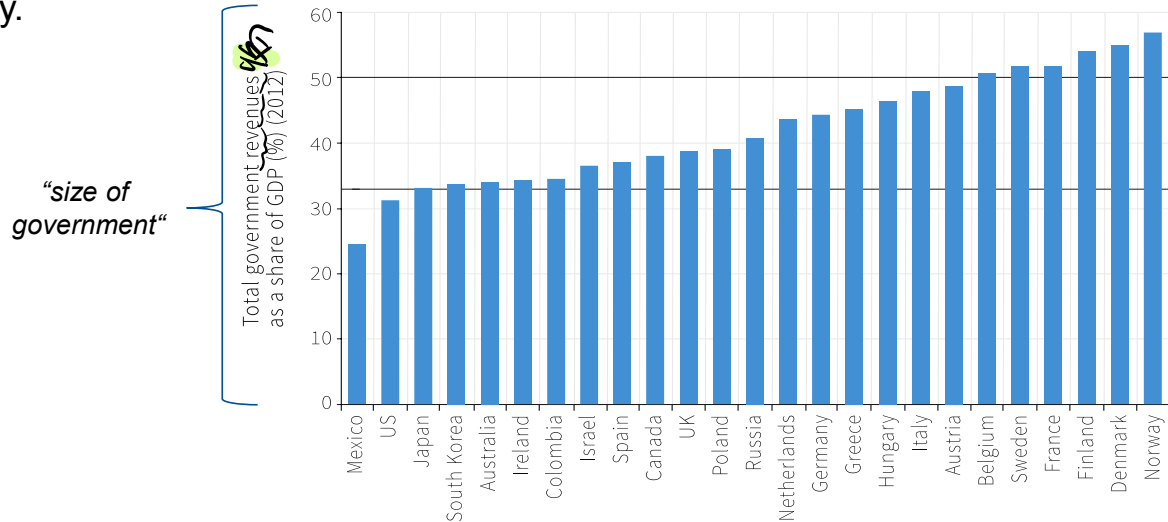
分岐 (Bifurcation)
Divergence of GDP per capita among latecomers to the capitalist revolution (1800–2016)

Unit 1 'The capitalist revolution' Section 1.10 'Varieties of capitalism: Institutions, government and the economy' in The CORE Team, The Economy. Available at: <https://tinyco.re/27937150> [Figure 1.11]



The role of governments

There are many **varieties of capitalism**, depending on the particular political system, e.g. democracy.



The government's importance in capitalist economies differs because political systems differ

Summary

1. Dramatic changes in living standards in different countries in the last 1,000 years.
2. In many countries, these living standards began to rise rapidly at the time of the **capitalist revolution**.
(南韩)
3. Important trends in economic variables over time:
 - “Hockey-stick” growth in **GDP**, **population**, **connectivity**
 - Negative effects of “Hockey-stick” growth, e.g. climate change, inequality
4. These effects resulted from **technological progress** and the move to **capitalism** (private property + markets + firms).
从工业革命到资本主义
5. The failure or success of these institutions can explain **divergence** in economic growth across countries.

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