Institutions, Trade & Economic Growth

Day 1: Economic growth

Summer 2025

King's College London

Summer School

Instructor: Daniele Girardi

Why are we here?

reflect & write

Write down

1. One thing you expect to learn in this module.

2. One question you would like to be able to answer at the end of the module.

Now find a person next to you & ask the following to each other:

1. Name (and what they like to be called)
2. Where they're from
3. What their academic program (or main occupation) is
4. What they wrote down

Share! **Now please tell us these 4 things *about your neighbor*.**

MY TURN...

I hope in this module we can learn what institutions are and how they might affect growth.

I hope we will be able to understand the possible historical reasons why some countries are much richer than others.

1. Economic growth
2. Coordination problems and institutions (1/2)
3. Coordination problems and institutions (2/2)
4. The government and the economy
5. Money and financial markets
6. Institutions as fundamental causes of growth
7. Geography, culture and institutions
8. Trade gravity and lost cities
9. The Atlantic trade and economic growth
10. Trade policy in developing countries.

Daniele Girardi

Pierre-Louis Vezina

What to expect from this module

- ~~Ready-made answers to questions about growth and policy.~~
- ~~Iron laws of the economy.~~
- ~~List of right vs wrong policies in absolute terms.~~
- Language & conceptual tools to understand and debate economic growth and the role of institutions & trade.
- Historical background on global economic growth and institutional evolution.
- Goal: Learn to form *your own* analysis & informed opinions.

Laptop Ban

The use of laptops, tablets, smartphones and similar devices is banned during this module's *lectures*

Research shows that the use of laptops in class harms learning and reduces students' marks.


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The New York Times

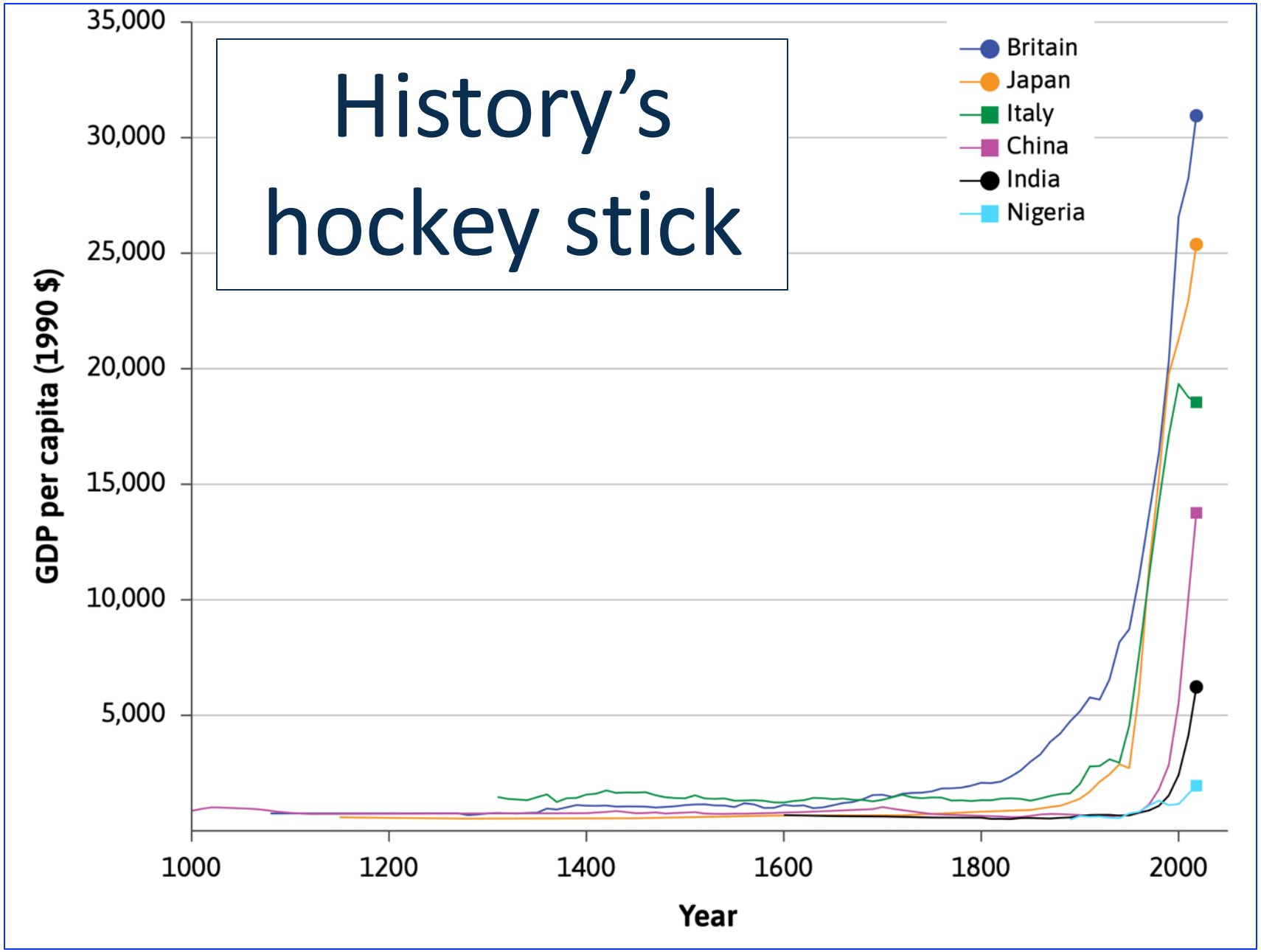
ECONOMIC VIEW

Laptops Are Great. But Not During a Lecture or a Meeting.

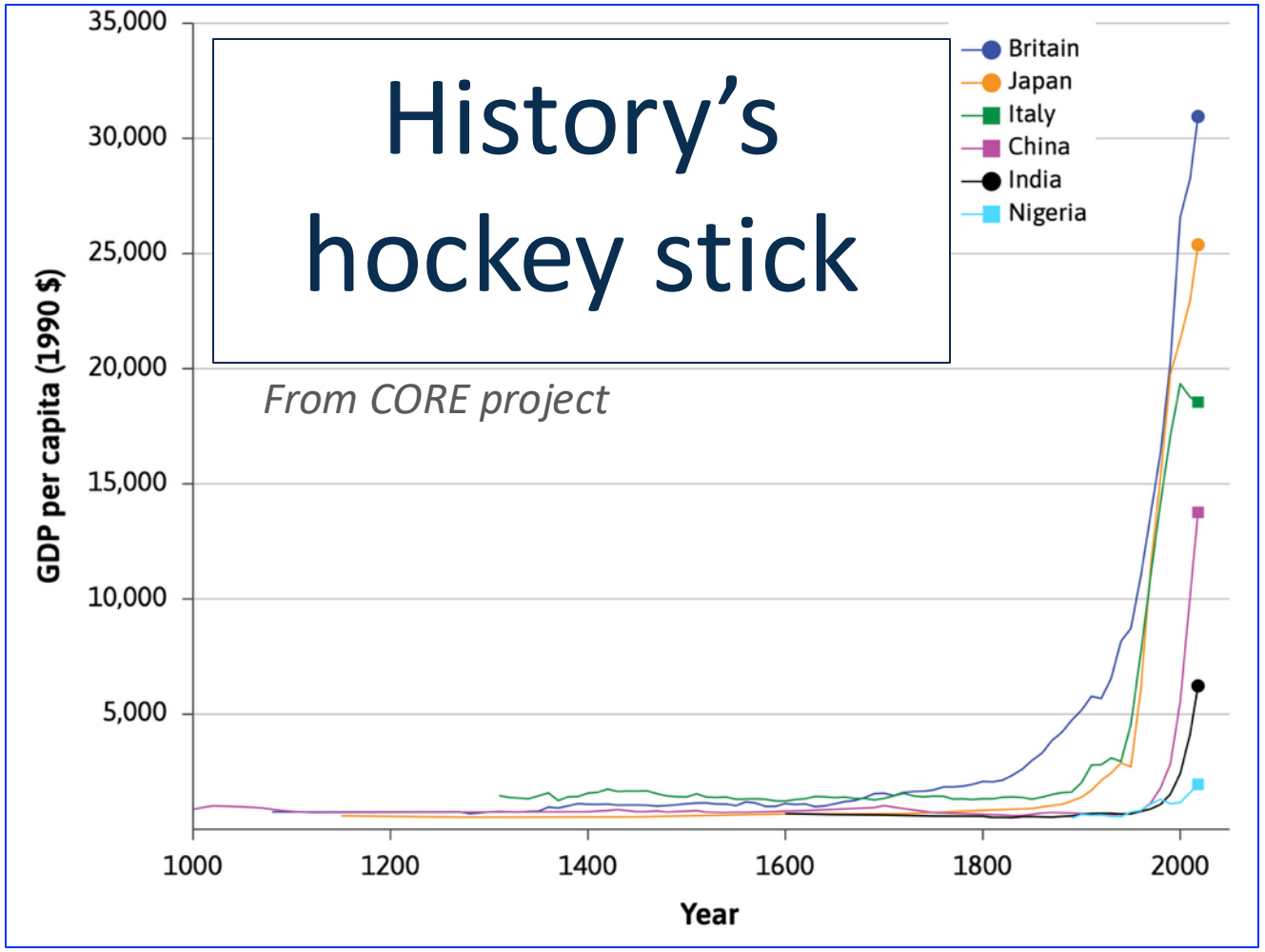
The plan for today

Topic: Economic Growth

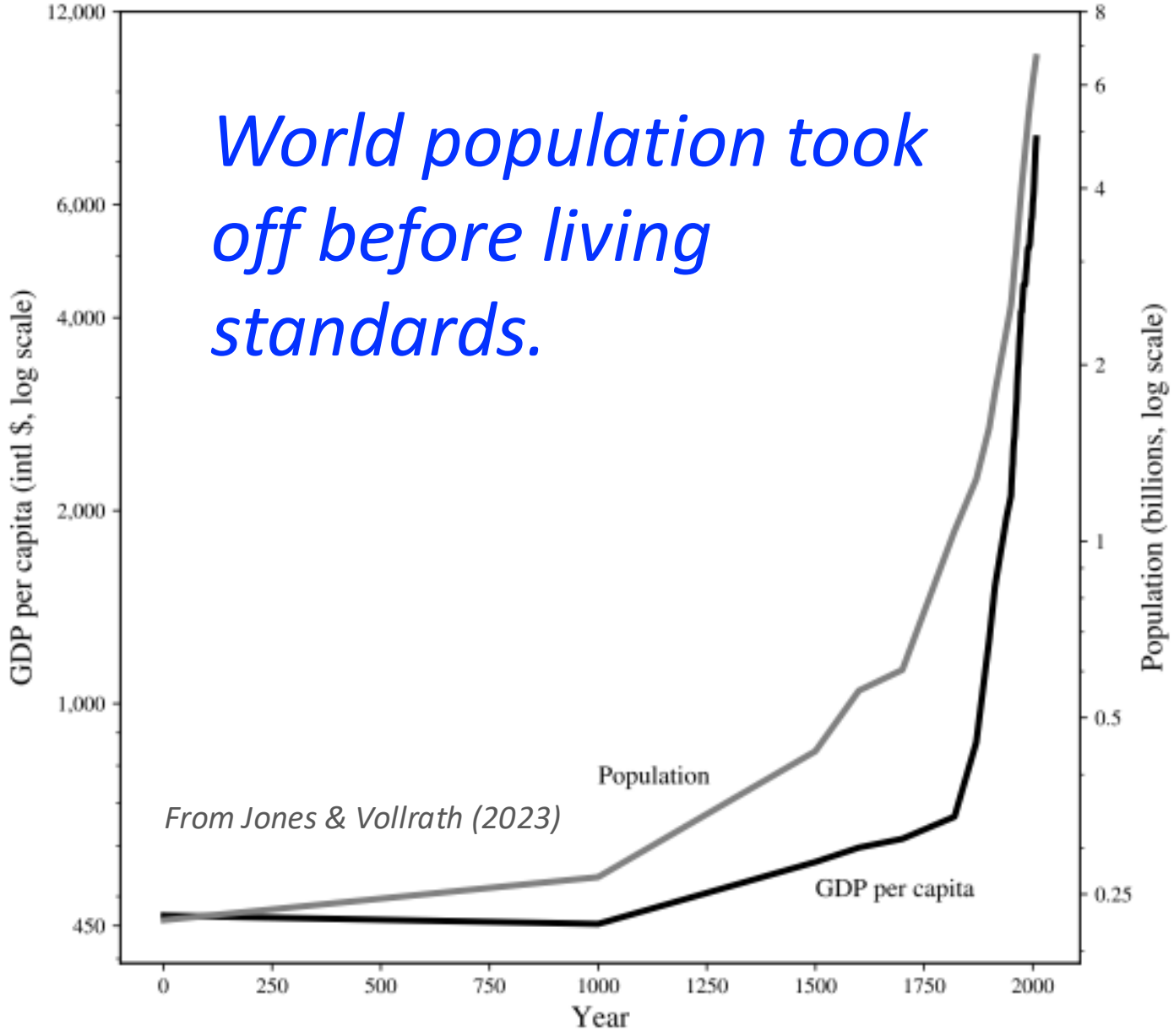
1. Introduction: History's hockey stick
2. Definitions: How do we measure economic growth?
   - Gross Domestic Product (GDP)
   - Employment and unemployment
   - Inflation: distinguishing real growth from nominal growth
3. The stylized facts of economic growth



Source: CORE project.

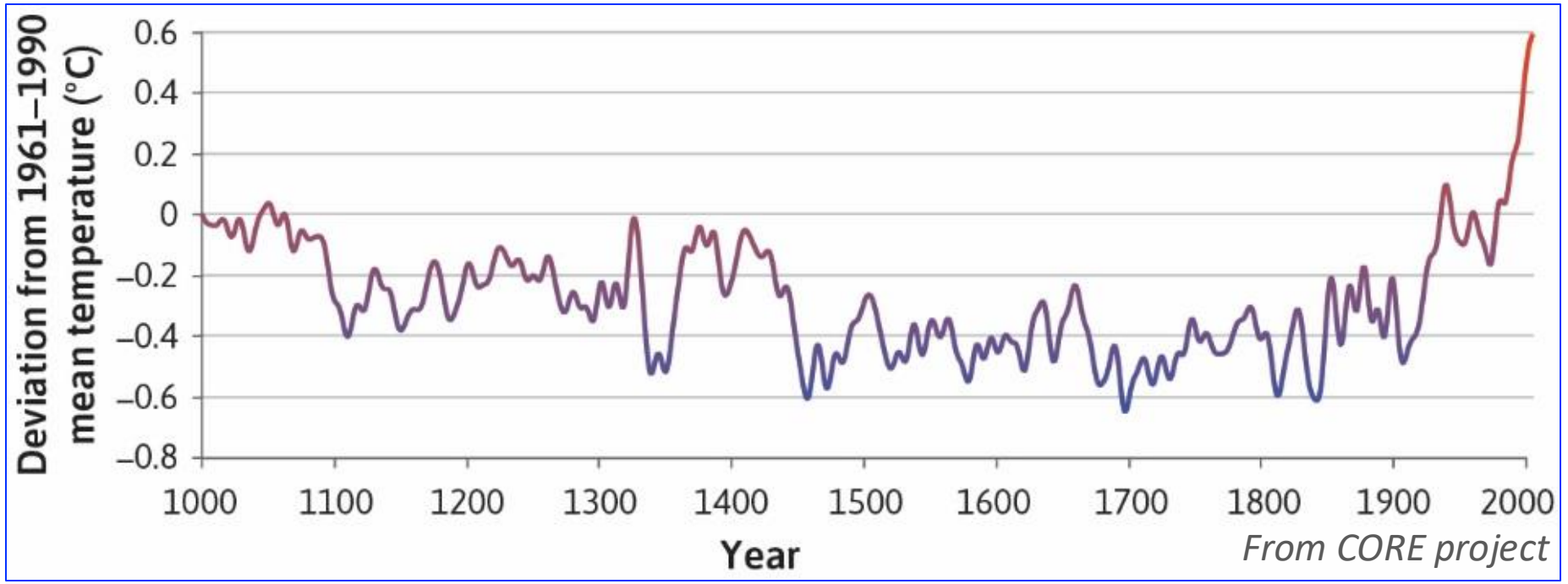


- Average living standards were stuck at the subsistence level for most of human history.
- Growth started in the West after the 1750s, accelerated dramatically after the 1850s (ushering in the *modern* world).
- Growth started later in the rest of the world.
- Inequality across countries exploded.



- World population started increasing since the late Middle Ages.
- A few centuries before the start of modern economic growth!
- So, some type of economic progress had already been in motion for centuries before the industrial take-off.
- But it was a different type of economic progress, that resulted in larger population but not higher average living standards.

Environmental consequences



Increased production and population growth affects the environment

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

Will technological progress also provide the solution?

What is economic growth? How do we measure it?

- Before we continue our exploration of the history and stylized facts of economic growth, we need to define it more precisely.
- The ‘hockey stick’ graph uses *GDP per capita* as a measure of material living standards across countries.
- Its *growth rate* is used to measure of economic growth.
- How are these defined?

Macroeconomics studies growth

- *Macroeconomics* studies the behavior of the economy taken as a whole.
- It tries to explain the evolution of some key *aggregate variables* that describe the state of the economy.
- Given our interest in growth, we will focus on defining & measuring:

1. Economic output (GDP)
2. Labor used in (or available for) production
3. Price level & inflation rate

Macroeconomic variables

- *Variable*: a quantity that changes over time and/or across space.
- Mathematical notation:
  - X_t
  - X_{t-1}
  - X_{t+1}
- Rate of change (or *rate of growth*) of x:

$$\frac{x_t - x_{t-1}}{x_{t-1}}$$

GDP: A measure of aggregate output

- Gross domestic product.
- Calculated since 1948 (at least in Western countries)
  - In USA: National Income and Product Accounts (NIPA)
  - In UK: UK National Accounts.
- How would *you* define aggregate output in the economy?

An economy with just 2 firms:

Steel Company (Firm 1)			Car Company (Firm 2)		
Revenues from sales		$100	Revenues from sales		$200
Expenses		$80	Expenses		$170
Wages	$80		Wages	$70	
			Steel purchases	$100	
Profit		$20	Profit		$30

- How do we sum up quantities of different goods?
- Is GDP the sum of values of all goods produced ($300)?
- Or just the value of cars ($200)?
- Steel = *intermediate* good, Car = *final* good.

Gross Domestic Product (GDP)

We measure economic activity (or output) using Real Gross Domestic Product (GDP): *the market value of all goods and services for final use*

- "**Value**": to sum up quantities of different goods or services, we weight them according to their market prices.
- "**Goods and services**":
  - *Goods*: cars, food, or iPhones…
  - *Services*: university lectures, doctor visits, accounting, legal work…
- "**Final use**": we count goods and services that are either consumed or accumulated as durable physical capital, not ones used to produce other goods/services in the same period.
- "**Real**": we try to ignore raw inflation in all prices over time and all currency differences across countries, to get a measure of the *actual volume* of goods and services.

Three equivalent definitions of GDP:

1. The value of final goods and services produced in the economy during a given period.
2. The sum of value added in the economy during a given period.
3. The sum of all incomes earned in the economy during a given period.

1. GDP is the value of final goods and services produced in the economy during a given period.

- We want to count only *final* goods, not intermediate goods.
- GDP in the steel & car economy is just the value of cars ($200)

⇢ production-side GDP is $200.

2. GDP is the sum of value added in the economy during a given period.

- The value added (VA) by each firm equals:

  $$value\ of\ final\ production\ -\ value\ of\ intermediate\ goods\ used\ up$$

- Steel company VA: $\$100$
- Car company VA: $\$200\ - \$100 = 100\$$
- Aggregate VA: $\text{Steel company}\ VA\ + Car\ company\ VA\ =\ \$200$

  ⇢ Value added-based GDP is $200.

3. GDP is the sum of all incomes earned in the economy during a given period.

- In the two-firms example:

labor income ($150) + *profit* income ($50) = tot. income ($200).

⇢ GDP from the income side is $200.

Review question

- Which of the following is *not* a correct definition of GDP?

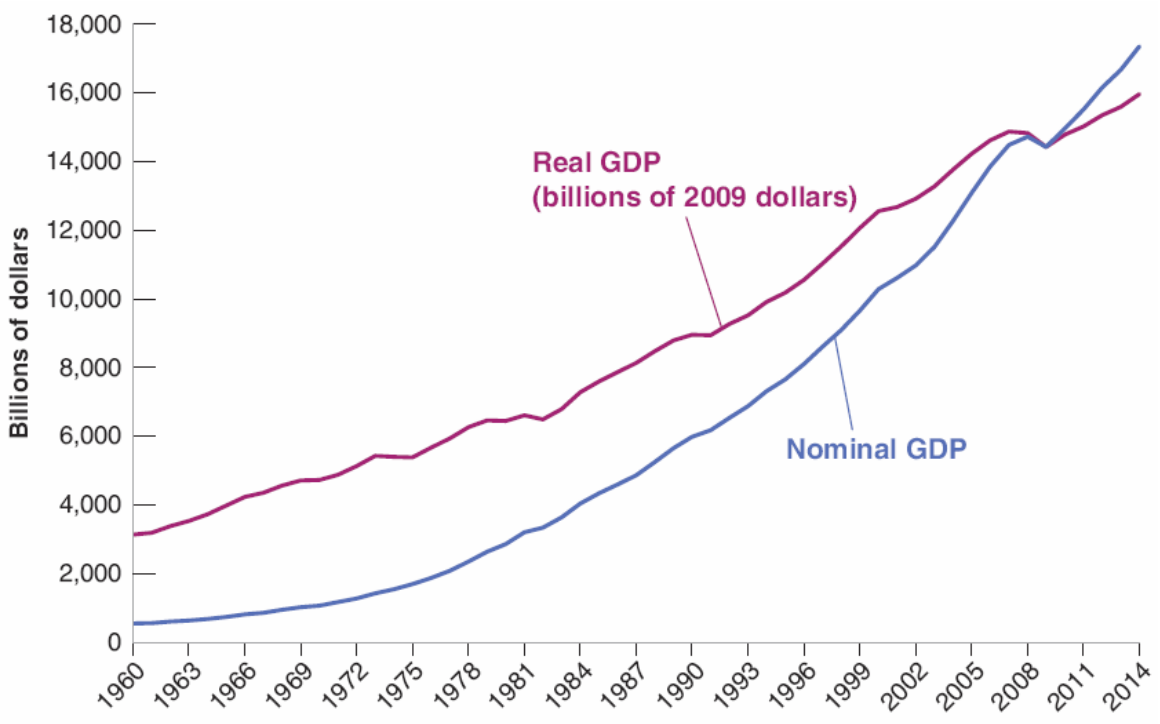
A. The value of final goods and services produced in the economy.

B. The sum of value added by all firms in the economy.

C. The sum of the profits obtained by all firms in the economy.

D. The sum of all incomes earned in the economy.

Nominal GDP and Real GDP



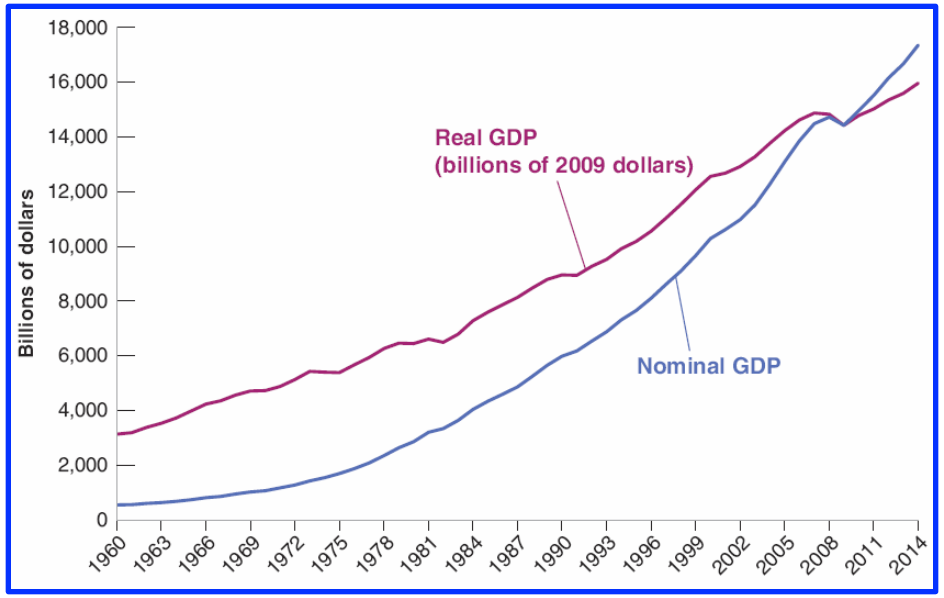
- Nominal GDP:
  quantities produced x *current* prices.
- But prices can change over time!
- Real GDP:
  quantities produced x *constant* prices.

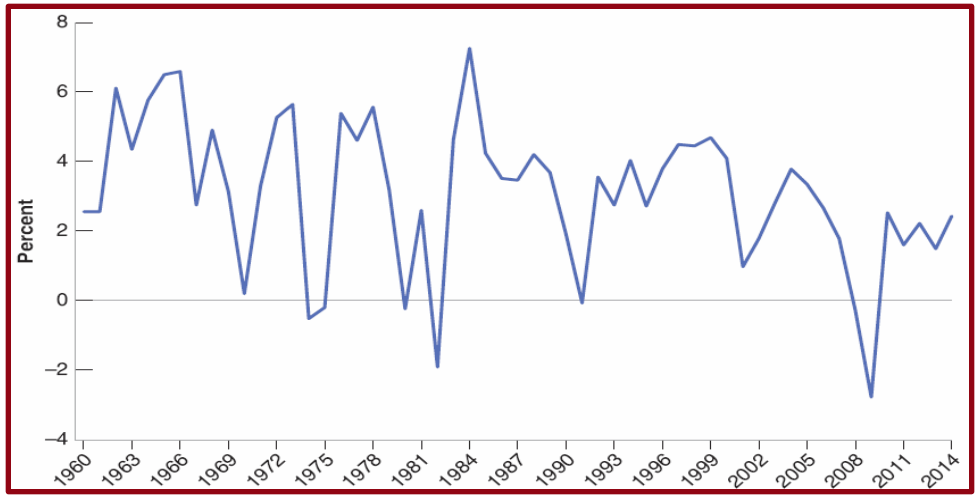
We basically fix prices in a given year, to avoid changes in GDP just due to price inflation (not actual quantities produced).

Purchasing Power Parity (PPP) adjustments

- We want to compare GDP per capita cross countries, but different countries use *different currencies* and have *different price levels*.
- We could convert GDP per capita in all countries in US dollars using market exchange rates.
- However, $10 buy much more in (for example) China than in the USA.
- *PPP adjustment*: instead of using market exchange rates, use specifically computed conversion rates that equalize *purchasing power*.
- 10 PPP dollars (or 'international dollars') have the same purchasing power in all countries.

GDP: Level versus growth





- GDP level:
  Volume of economic output produced during a given period (usually a year).
- GDP per capita = $\frac{GDP}{Population}$
  to measure living standards & make international comparisons.
- GDP growth:
  Percentage increase or decrease in GDP over the previous period.

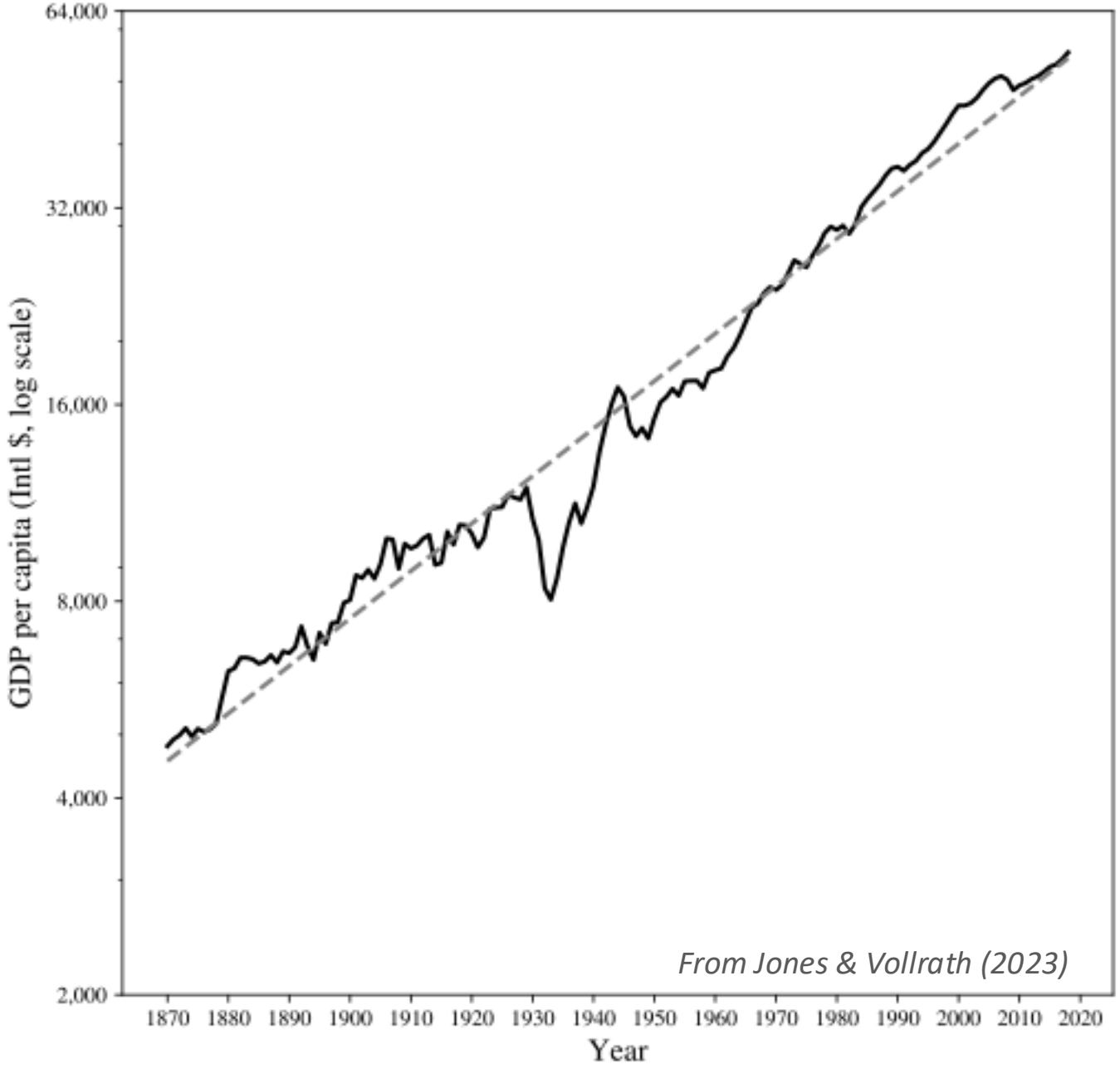
$$GDP\ growth\ at\ time\ t = \frac{GDP_t - GDP_{t-1}}{GDP_{t-1}}$$

Using logarithms to plot GDP growth

- To visualize long-run growth & differences across countries, we often use a logarithmic scale:

$$\log(GDP) \text{ or } \log(GDP\ per\ capita)$$

- Log = natural logarithm.
- With log scale:
  - A constant growth rate appears as a straight line, with slope proportional to growth rate.
  - Steeper slope = faster growth
  - Equal percentage changes appear as equal distances on the chart, facilitating comparison across countries.
  - If the GDP of country A remains 10% higher than the GDP of country B over time, their distance on the log scale remains the same too.



Using the log scale: an example

- Log of US Real GDP per capita 1870-2023
- USA average growth rate was broadly constant in the US since 1870.
- On the log scale, this results in a straight line.

Measuring labor used (or not used) in production

- **Employment** (N): number of people who have a job.
- **Unemployment** (U): number of people without a job and actively looking for one
- **Labor force** (L = N + U).
- **Working-age population**: number of people aged 15-64

Measuring labor: The key rates

- Unemployment rate $= \frac{unemployment}{labor\ force}$
  - $u = \frac{U}{L}$
- Employment rate $= \frac{employment}{working\text{-}age\ population}$
- Participation rate $= \frac{labor\ force}{working\text{-}age\ population}$

Inflation

- **Price level** (P): a weighted average of the prices of all goods & services.
- **Inflation rate** (π_t): the growth rate of the price level
  - $\pi_t = (P_t - P_{t\text{-}1})/P_{t\text{-}1}$
- **Deflation** is when inflation is negative (price level decreases).

How do we measure the price level?

- Two main empirical measures of P_t:

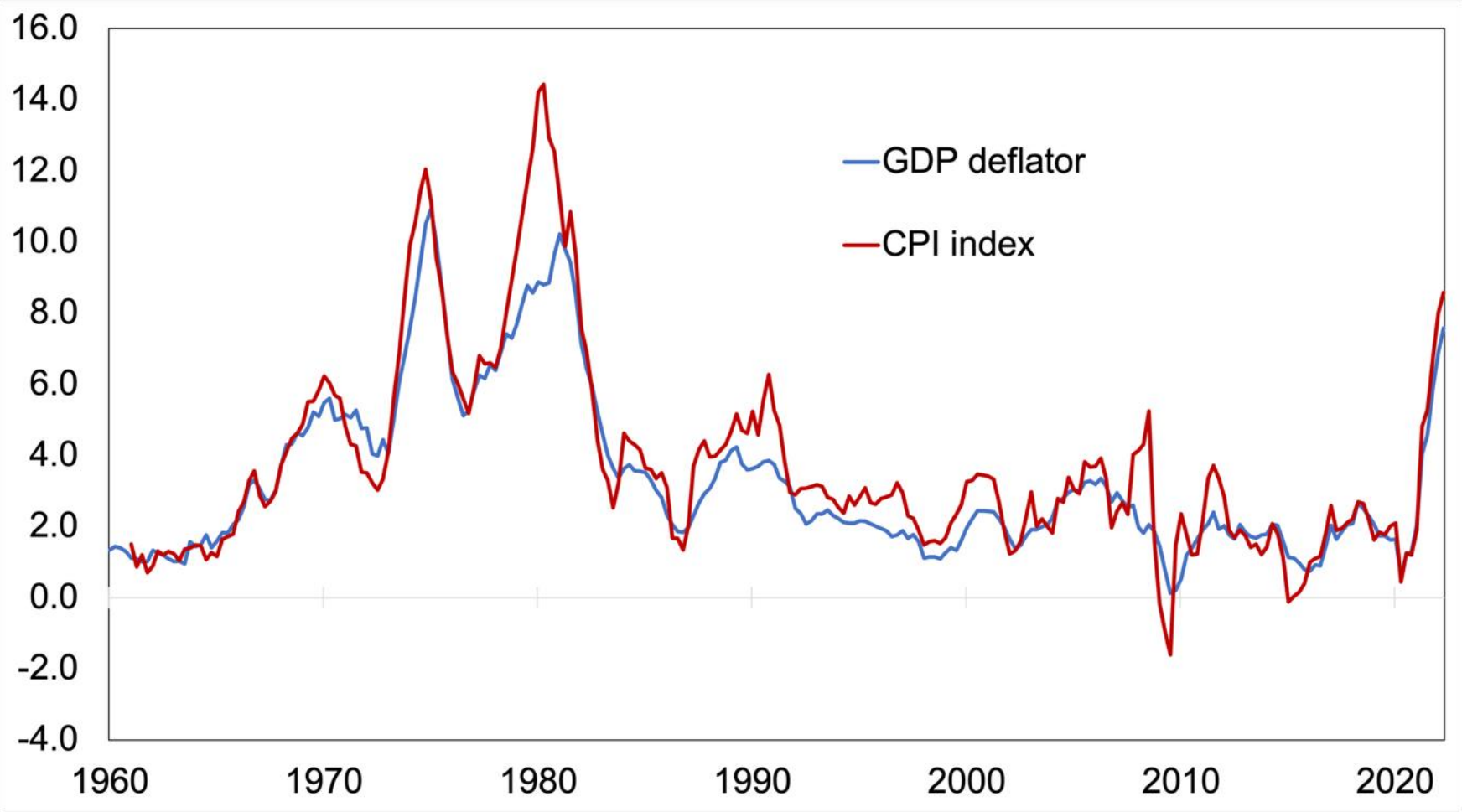
1. GDP deflator

- Measures P_t of domestically produced goods & services.
- $P_t = \frac{Nominal\ GDP_t}{Real\ GDP_t}$

2. Consumer price index (CPI)

- Measures P_t of goods & services bought by consumers.
- P_t = dollar (or pound or yuan) cost of a 'typical' basket of goods & services.

Example: Inflation in the US



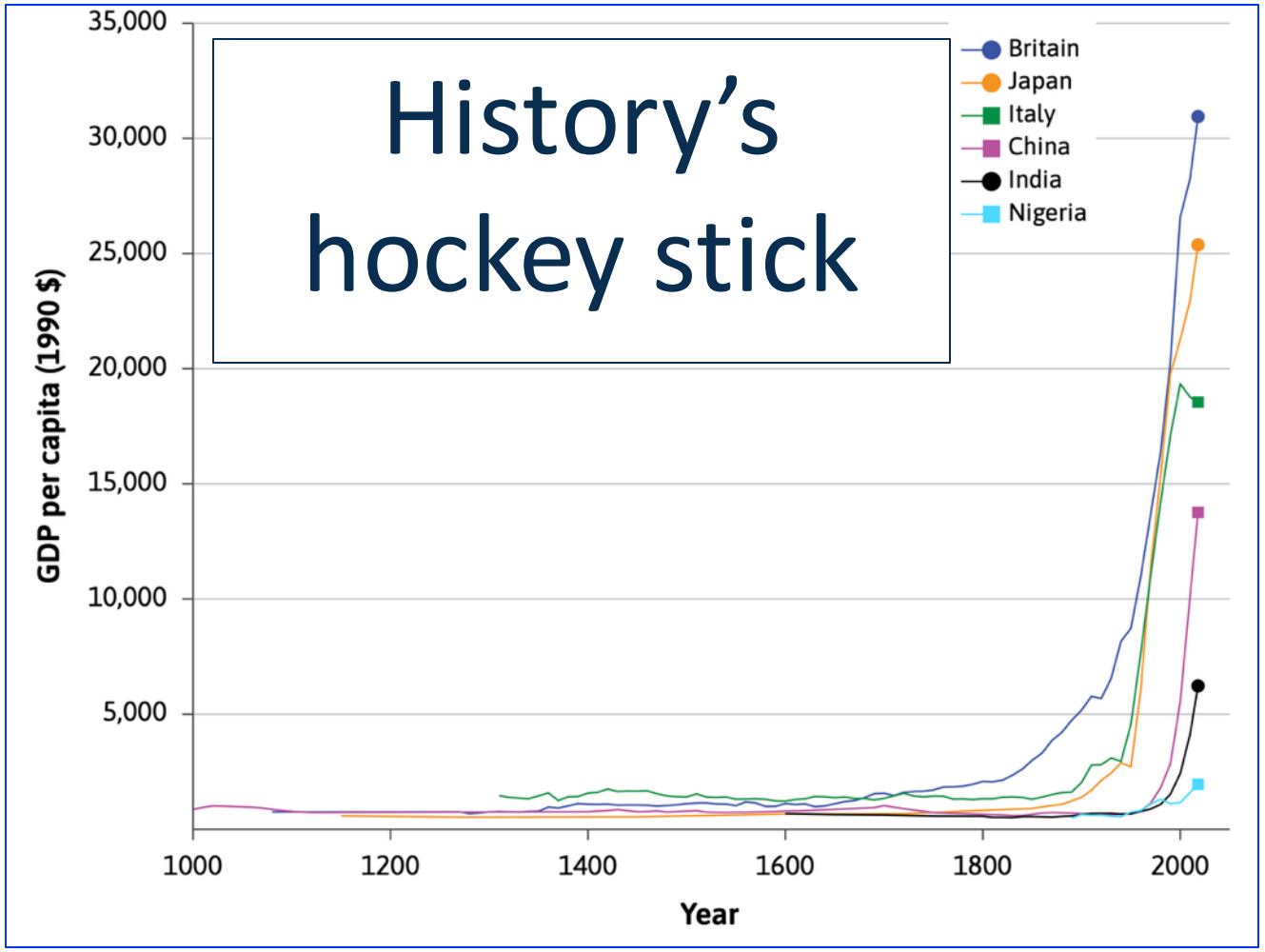
- CPI & GDP deflator generally move together.
- Exception: when the price of imported goods rises much faster than that of domestically produced goods.
- In the recent inflation surge, CPI and GDP deflator behaved similarly in the US.

Does inflation matter for growth and living standards?

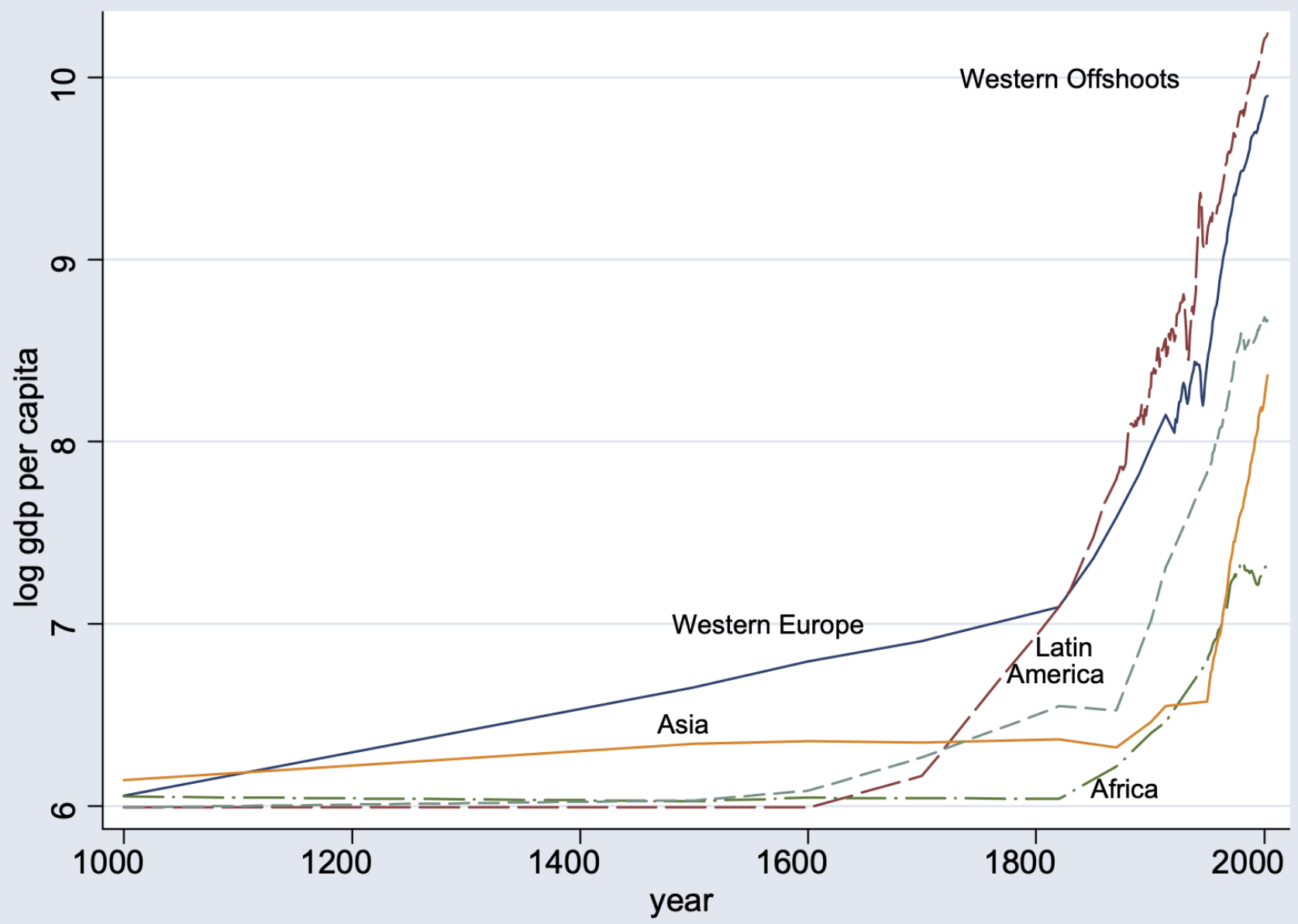
- Inflation tends to redistribute income arbitrarily.
- Creates uncertainty and instability for families and firms.
- Decreases competitiveness of a country's exports.
- Deflation is also bad, though:
  - increases real value of debts.
  - makes monetary policy less effective (you will understand how in day 5!).
  - makes people postpone spending.
- In general, low & stable inflation is consider best for growth.

Stylized facts about growth

- Armed with these definitions, we can go back to our study of the stylized facts of growth!

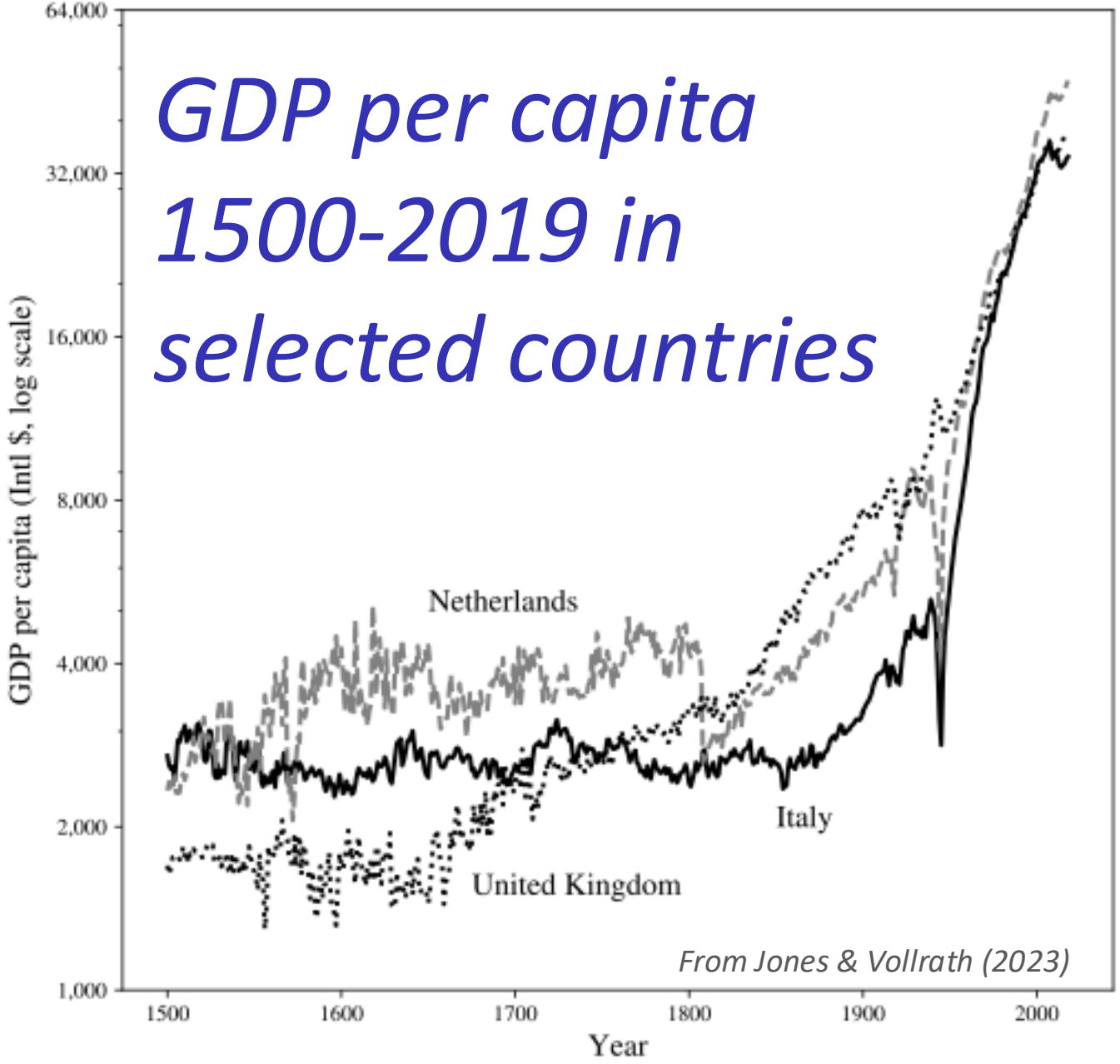


- Initial waves of economic growth in 18th & 19th century only enjoyed by a few countries
  - *Western Europe + Western 'offshoots'*
- Rest of the world was left out of economic development (or its development actively blocked by colonization).
- → Huge gap opened up between a small number of industrialized Western countries and the rest of the world: Great Divergence.
- This gap in large part persists today.
- A huge gap still exists between (for example) Britain and China/India…
- …although in the late 20th Century China and India have started growing too.



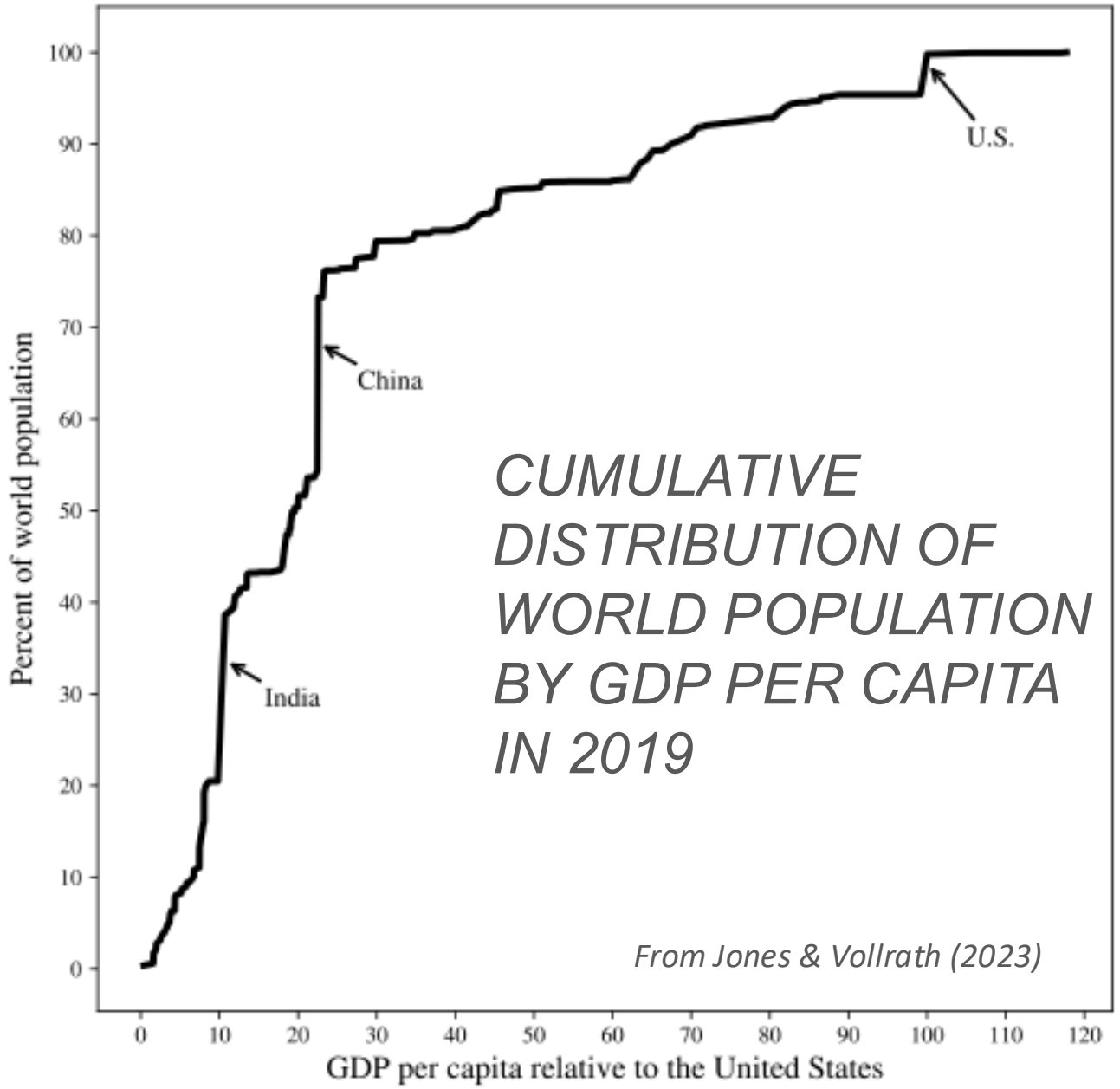
- Hockey stick, but by world region.
- 1,000 AC: Asia was richer than Western Europe, but differences were small.
- "Great Divergence": During the 1800s, huge gap develops between the West and Africa+Asia (with Latin America somehow in the middle).

Source: Acemoglu "Introduction to modern economic growth"

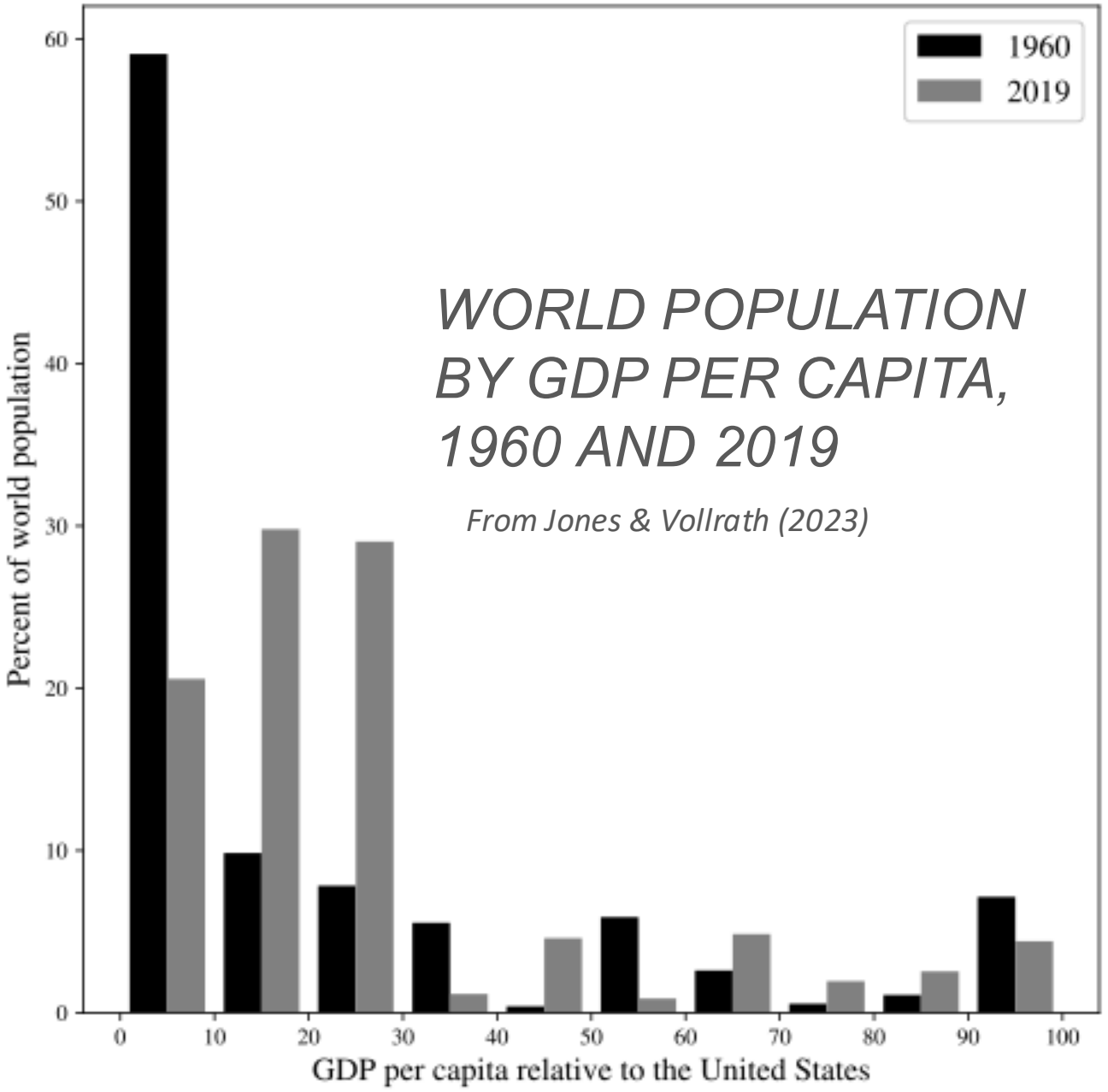


Substantial variation in growth patterns also within the West:

- 1500-1700: Netherlands and Italy richest countries in Europe
- Mid-1750s: UK first country to experience sustained industrial growth and overcomes them.
- Italy falls behind until its 1950s-60s "growth miracle".
- In 20th Century, USA surpassed Great Britain to become the greatest economic (and political) power.



- The huge inequalities that opened up during the Great Divergence largely persist today.
- What is the share of the world population with GDP per capita less than 1/3 of the USA level?
- ~ 80% of the world population lives in countries with GDP per capita less than 1/3 of the USA.



- Another way to see differences in GDP per capita, and how they changed between 1960 and 2019.
- Thanks to rapid growth in India and (especially) China, there was a substantial drop in the % of world population which income is less than 1/10 that of rich countries.
  - Extreme poverty has decreased
- GDP per capita in India vs UK:
  - 8.6% of UK in 1960,
  - 9.4% of UK in 2008
  - 15.2% of UK in 2019.

Summing up – Some facts about growth

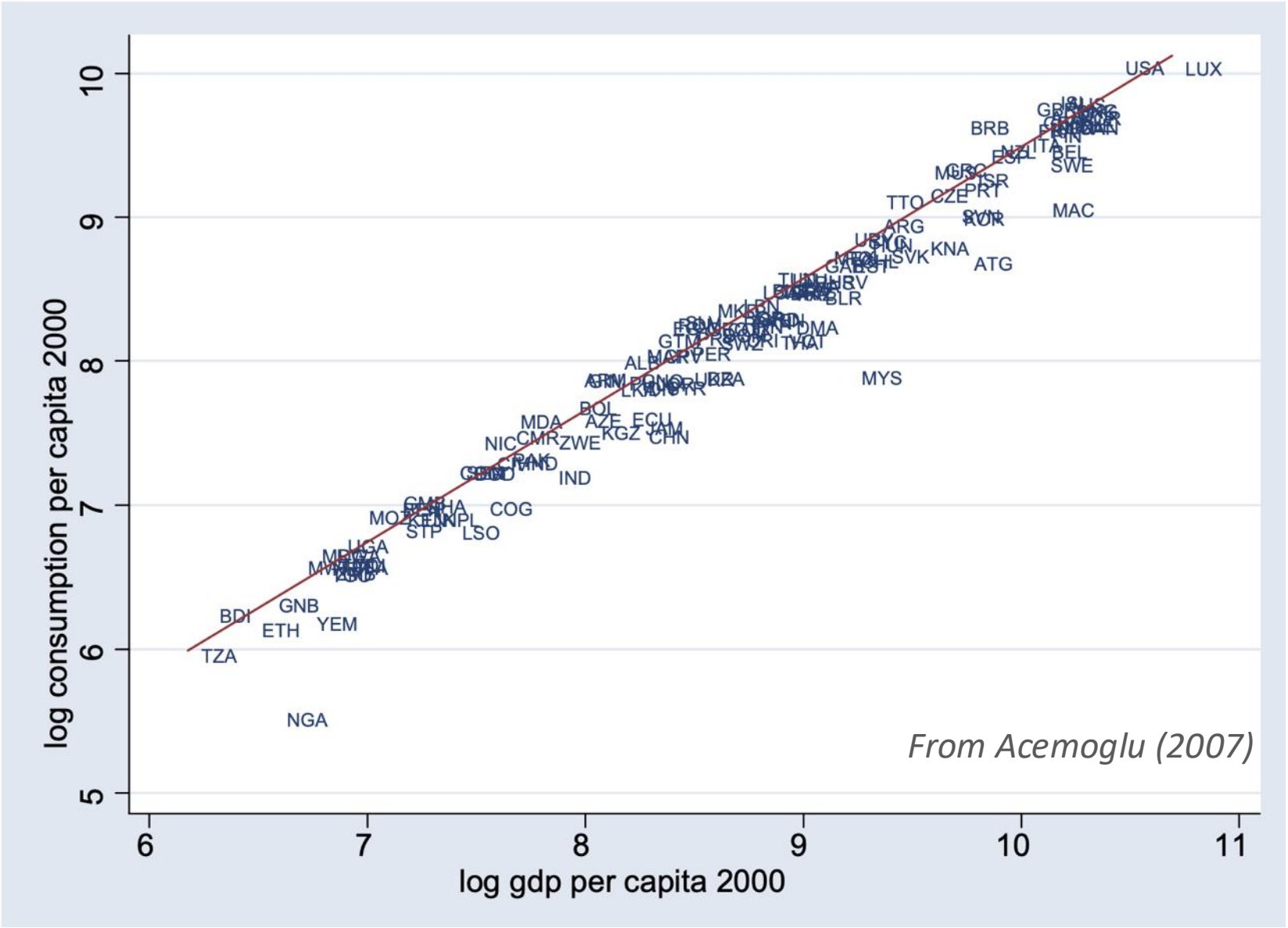
1. The rate of economic growth has not been constant in human history.
   - For most of human history, growth rates were essentially zero, but increased sharply in the 19th and 20th centuries.
   - There is also large variation in growth rates between different countries.
2. First waves of growth only involved a few nations in the West, opening up a big gap with the rest of the world, which largely persisted.
3. As a result, today there is enormous variation in GDP per capita across economies.
   - GDP per capita in the poorest countries is around 20 times smaller than in the richer ones.
4. However, many countries outside the West have started growing in the 20th Century.

Do cross-country differences in GDP per capita matter?

- GDP p.c. is a *very imperfect* indicator of material living standards
  - It ignores many of the things that make life worth living.
  - It ignores how income is distributed within the country.
  - In a given country, a positive rate of growth alone is not guarantee that life improved for most people.
- However, GDP per capita differences between rich & poor countries do reflect similarly large differences in quality of life, living standards & health.

Higher GDP per capita → higher *consumption* per capita.

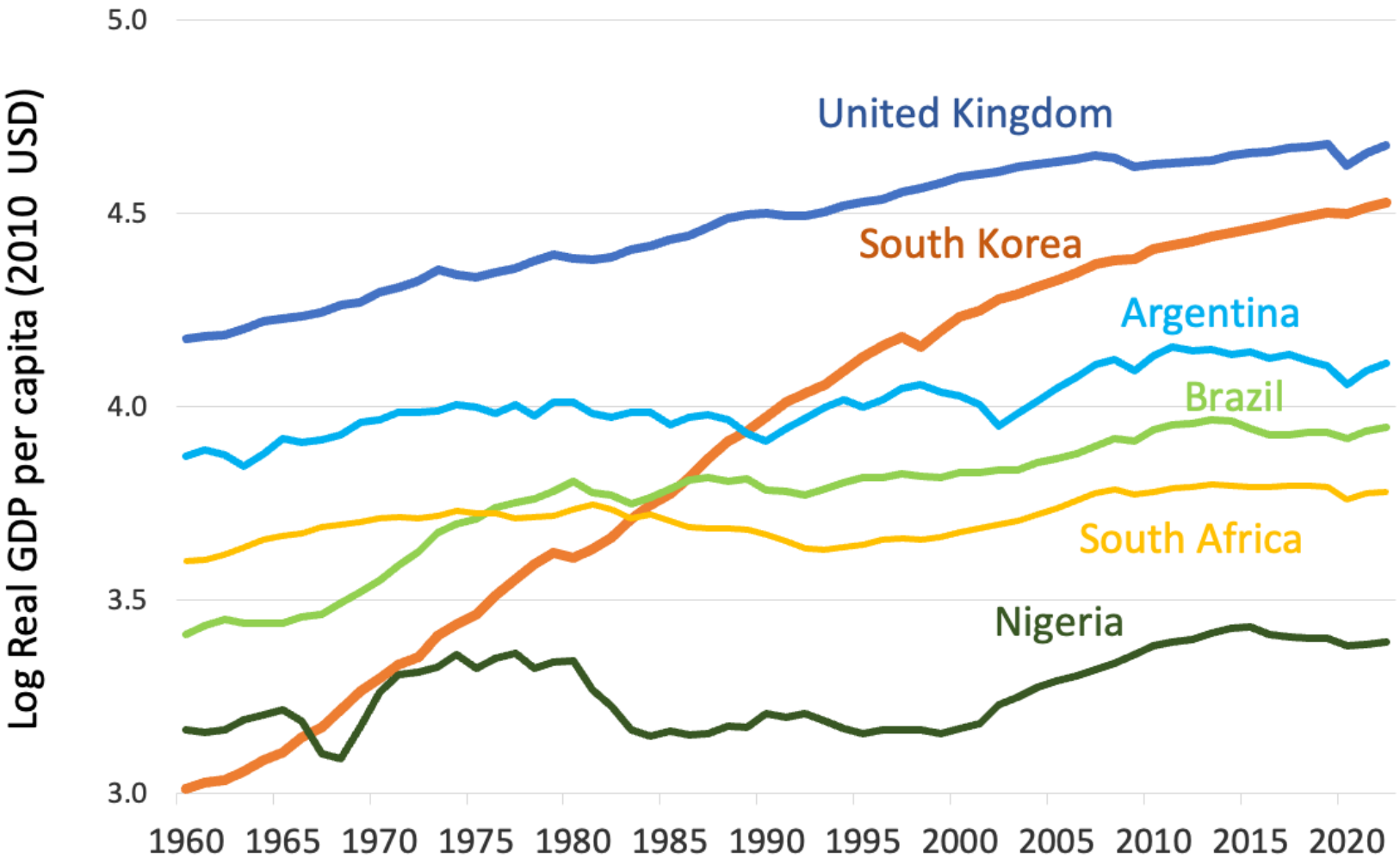
People in the richest countries are not only *producing* more than 30 times as much as in the poorest ones, but they are also *consuming* 30 times as much.



Higher GDP per capita → higher life expectancy.

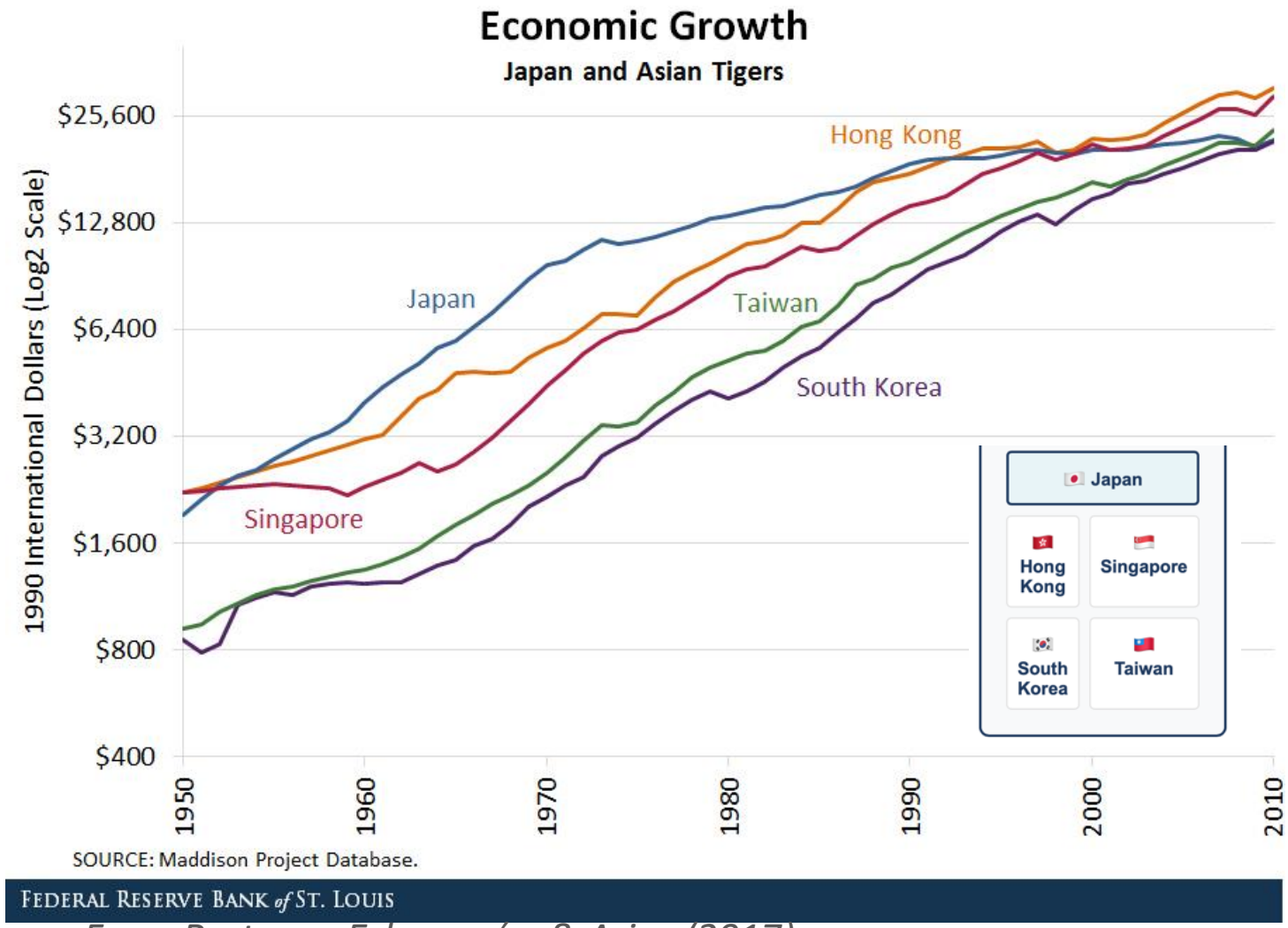
Life expectancy at birth is around 80 y.o. in the richest countries, but only between 40 and 50 yo in many sub-Saharan African nations.

Growth convergence & growth divergence



- *Convergence*: when poorer countries catch up with the richer ones.
- Requires a favorable growth differential for long periods.
  - Any example here?
  - *South Korea 1960-2020*
- But for many countries, the gap with the West persisted
  - Brazil, SA, Nigeria, …
- In some cases, even *divergence*: an income gap that keep increasing
  - *Argentina 1960-2020*

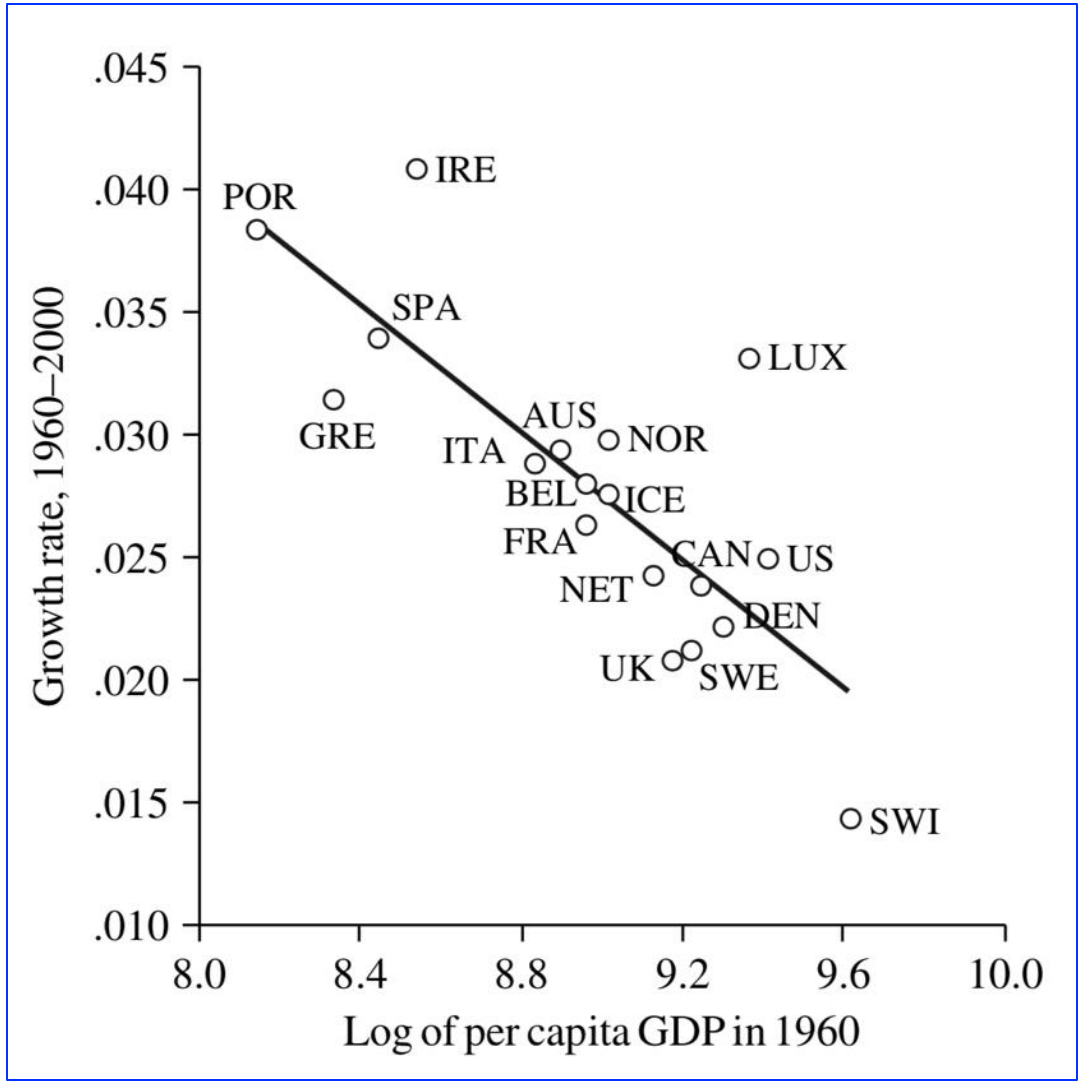
Convergence: Japan & the Asian Tigers



From Restrepo-Echavarría & Arias (2017)

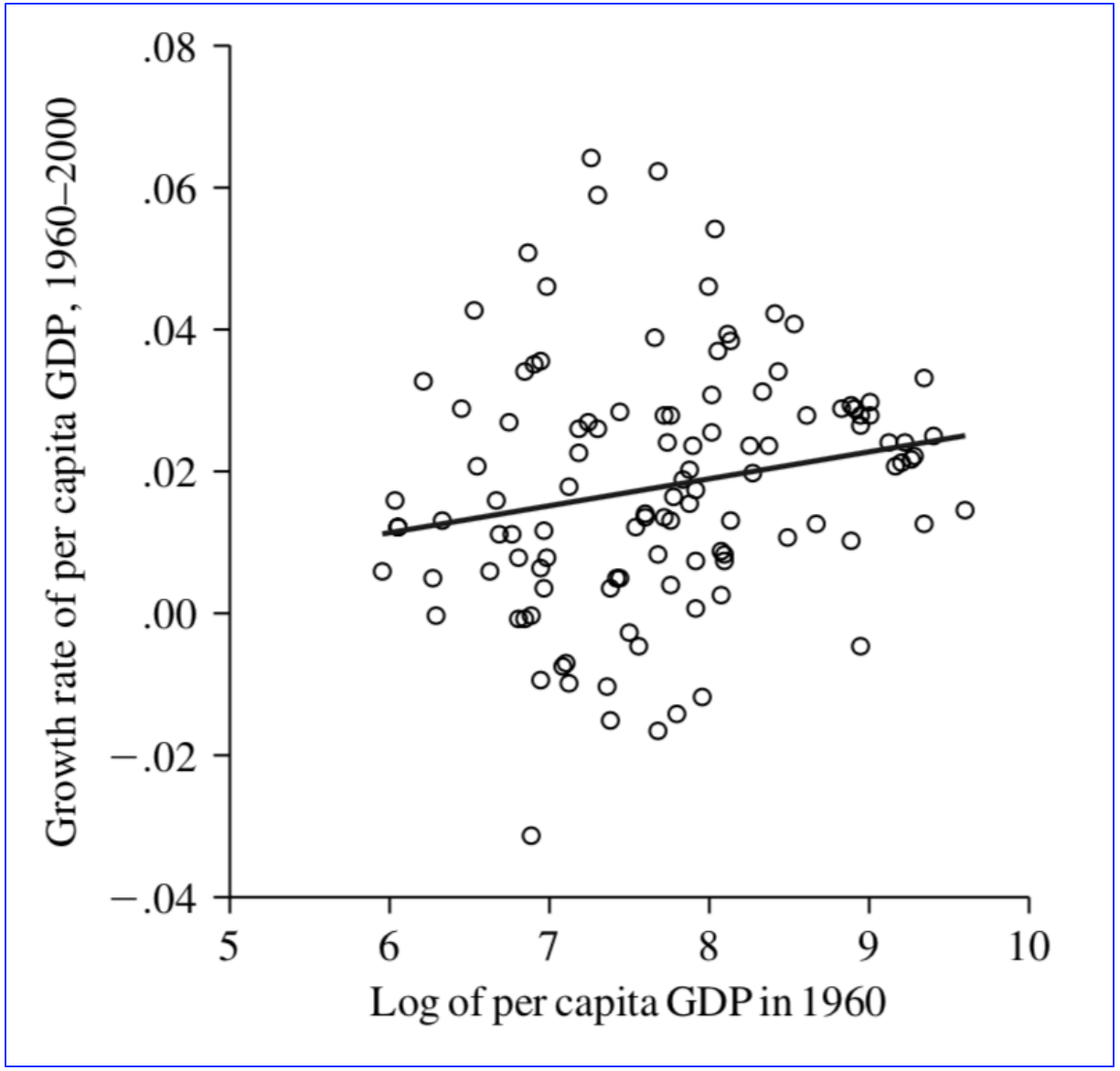
- *Rapid GDP Growth*: 7-10% annually for a few decades
- By the 1990s they had essentially caught up with the West
- Led by *manufacturing exports.*
- *Human capital:* Heavy investment in education and skills.
- *Government role*: Targeted intervention and planning, industrial policy (debate on its precise role)
- *Technological progress* and gradual shift from labor-intensive to high-tech sectors.

Convergence within the West



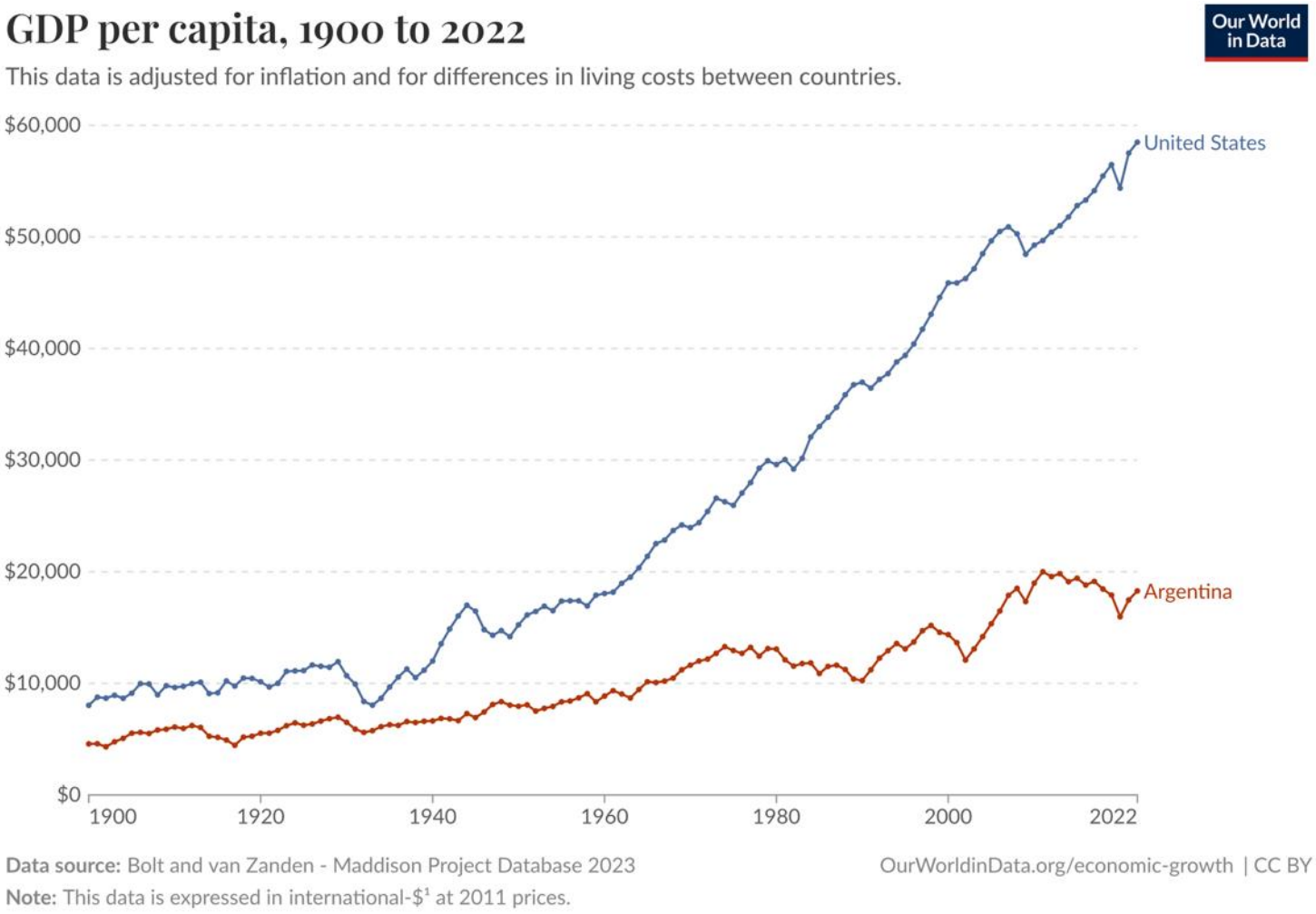
- *Convergence plot:*
  - initial (log) income on the horizontal axis
  - subsequent average yearly growth rate on the vertical.
- Negative relation = convergence.
- A clear example of convergence: Western countries post World War II
- *Within the West*, countries like Italy and Spain that were behind, grew faster and caught up with leaders like UK/USA post World War II.

(Lack of) global convergence



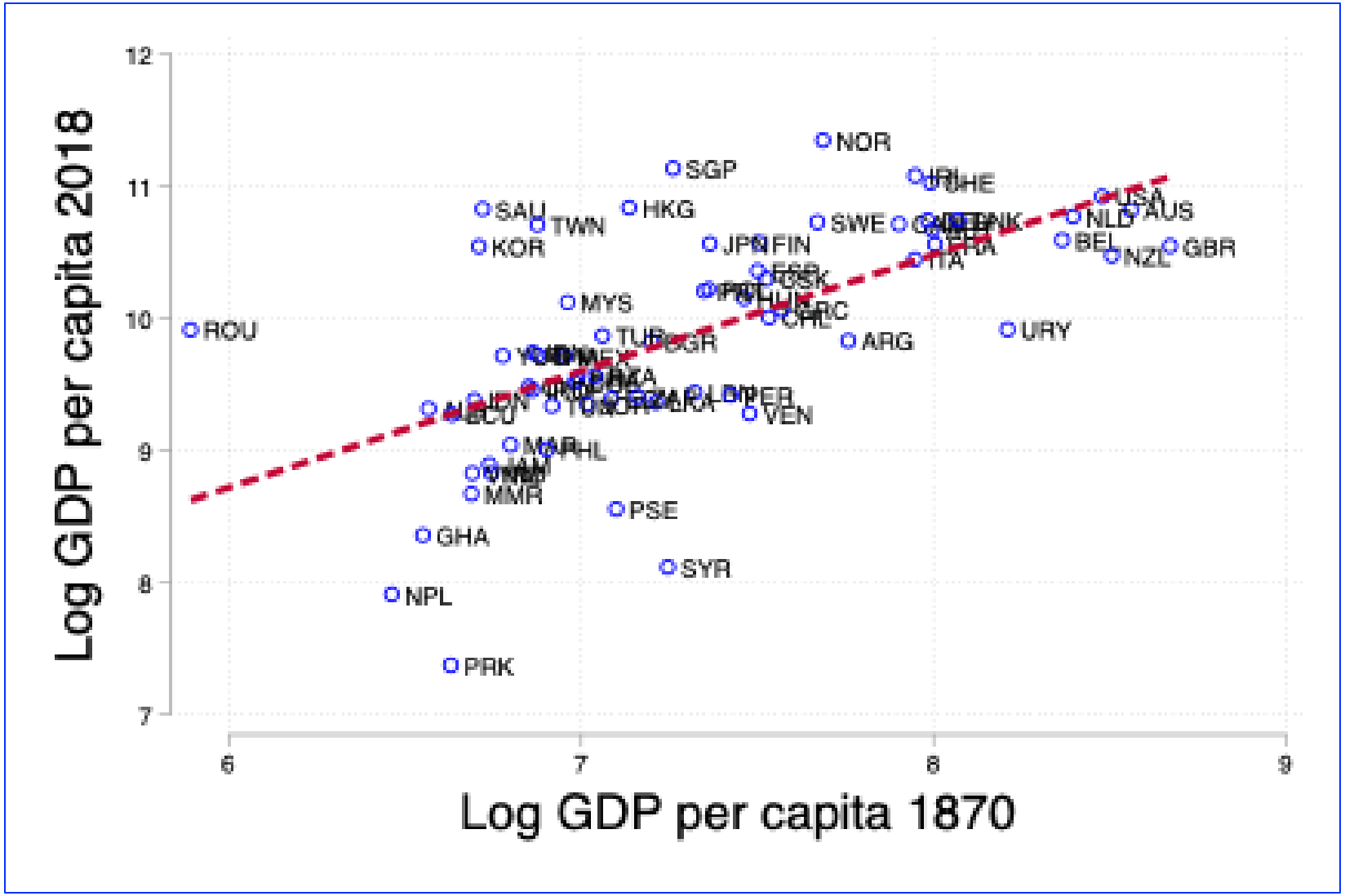
- Same convergence plot for all world countries.
- No sign of convergence.
- No clear relation between initial GDP level and subsequent growth.
- And average slope is positive: poorer countries tended to grow *slower*.
- Clearly, South Korea & the other 'Asian Tigers' were an exception.
- China & India might be converging since the last 2/3 decades.
- But they are still far from Western income levels – too early to say.

Divergence: Argentina's growth disaster



- 1913: 10th richest country, 80% of US GDP per capita.
- 1960: 50% of US GDP per capita.
- 2022: 30% of US GDP per capita.
- What went wrong in Argentina?
- Political instability: Military coups, institutional breakdowns.
- Protectionist policies.
- Hyperinflation episodes.
- Financial crises & debt defaults
- Failure to transition to *advanced* manufacturing.

Persistence in GDP per capita



- Few countries (like South Korea) converged.
- Few countries (like Argentina) diverged.
- But in the history of economic development so far, the most important force has been persistence.
- Income in 1870 strongly predicts income today.
- The countries that were richest in 1870 are on average still the richest today.

Thank you for your attention