

Macroeconomics II

Lecture 01 (Feb 2020)

Introduction

Concepts

Growth

Convergence and divergence

Macro 2

Objectives

Macroeconomics II is a course which aims to study **modern economic growth** by providing the conceptual elements, as well as the main theories and basic analytical tools for the research on the factors of economic growth, and to introduce students to discussion on choices for economic development.

Macroeconomics of Growth

- Concepts
- Theories / analytical tools
- Reality
- Strategies for development

Syllabus

Part I – What is economic growth?

1. Introduction. Economic growth: data and facts. Computation of growth rates. Crises.
- 2 Theories of growth: Smith, Ricardo, Rostow, Solow, Piketty, Chang, main milestones.
3. Smith, Marx and the classical view of growth.

Part II – The mainstream theories and models of growth.

4. Economic growth: stylised facts.
5. The macroeconomic production function. Growth accounting.
6. The Harrod-Domar model. Criticism by Solow.
7. The Solow model of economic growth.
8. Models of endogenous growth. The Romer approach.

Part III – Problems of sustainable development.

9. Limits to growth. Climate change. The debate Nordhaus-Weitzman on how to compute the future under climate change.
- 10 Inequality distribution and employment. The Kalecki model. The Piketty model.
- 11 Financialisation.
- 12 Innovation, crises and cycles.

Part IV – Development policies.

13. Industrial policy and investment choices. The debate Justin Lin-Ho-Joon Chang.
14. Economic development, income distribution and the Welfare State. Social security.
15. Economic development in an global economy.
16. Conclusion: choices and strategies.

A successful student of Macro 2

What is required (for a continual assessment over the semester):

1. To attend all classes, to make all preparation of practical classes, and to read the bibliography;

2. To have (and to read) the **books**:

- **Jones, C. & Vollrath, D.** (2013), *Introduction to Economic Growth*. Norton. 3rd edition. (ISEG library: **HD75.J65 201**)
- **Louçã, F.; Ash, M.** (2017), *Sombras*. Bertrand; or the English version, *Network Shadows*, Oxford University Press (2018)

and **other published material** (in Macro 2 web page);

3. To answer two (2) unannounced Short Theoretical Questiona (~20m); plus **two** short essays in the practical classes;

plus one (1) announced Intermediate Test (April);

plus a Written Final Exam (June or July)

As some of the next lectures, this one is based on previous presentations by Professor J.A. Pereirinha

Lecture 01

Economic Growth: data and facts

- what is economic growth?
- why is it important to study economic growth?
- which questions are relevant?

Reading

Jones & Vallrath (2013), cap. 1, pp. 1 – 19 “Introduction: the facts of economic growth”+ Appendix A - Mathematical Review(pp. 261-274)

Beta 1: Core Project ch 1 (in your files)

•Further reading

Barro, Sala-i-Martin(2004), chap. 1.1 (“*The importance of growth*”,1–6)

Acemoglu (2007), Chap. 1 (“*Economic growth and economic development: The questions*”, pp. 3-36)



what is economic growth?

change over time of the magnitude of an economically relevant variable

relevance: GDP, as a measure of the value of all of the goods and services produced in a country in a year

indicator of differences in *economic status* among countries

indicator of the trend of *living standards* of population in a country

indicator of *abundance* and of the *productivity* of the production factors (differences among countries and time trend for each country)

$y(t)$

what is y ? it depends of the focus of the analysis



y is GDP ... which one?

GDP	->	economic size
GDP <i>per capita</i>	->	living standard
GDP <i>per worker</i>	->	labour productivity

GDP current prices

GDP constant prices using national currency

GDP constant prices using market exchange rates (dollars)

GDP constant prices using PPP exchange rates (dollars)



we should distinguish long-term trend from short term fluctuations around the trend

the procedures:

(the relevance of looking at the data)

1. look at the growth of USA GDP per capita 1870 – 2009
2. find out the trend
3. look at the fluctuations around the trend
4. make an interpretation of what you see (and ask what it means)
5. what else is relevant for observation?



Top Ten Countries in 2017 According to Two Different Measures

2017 IMF ranking, GDP per capita

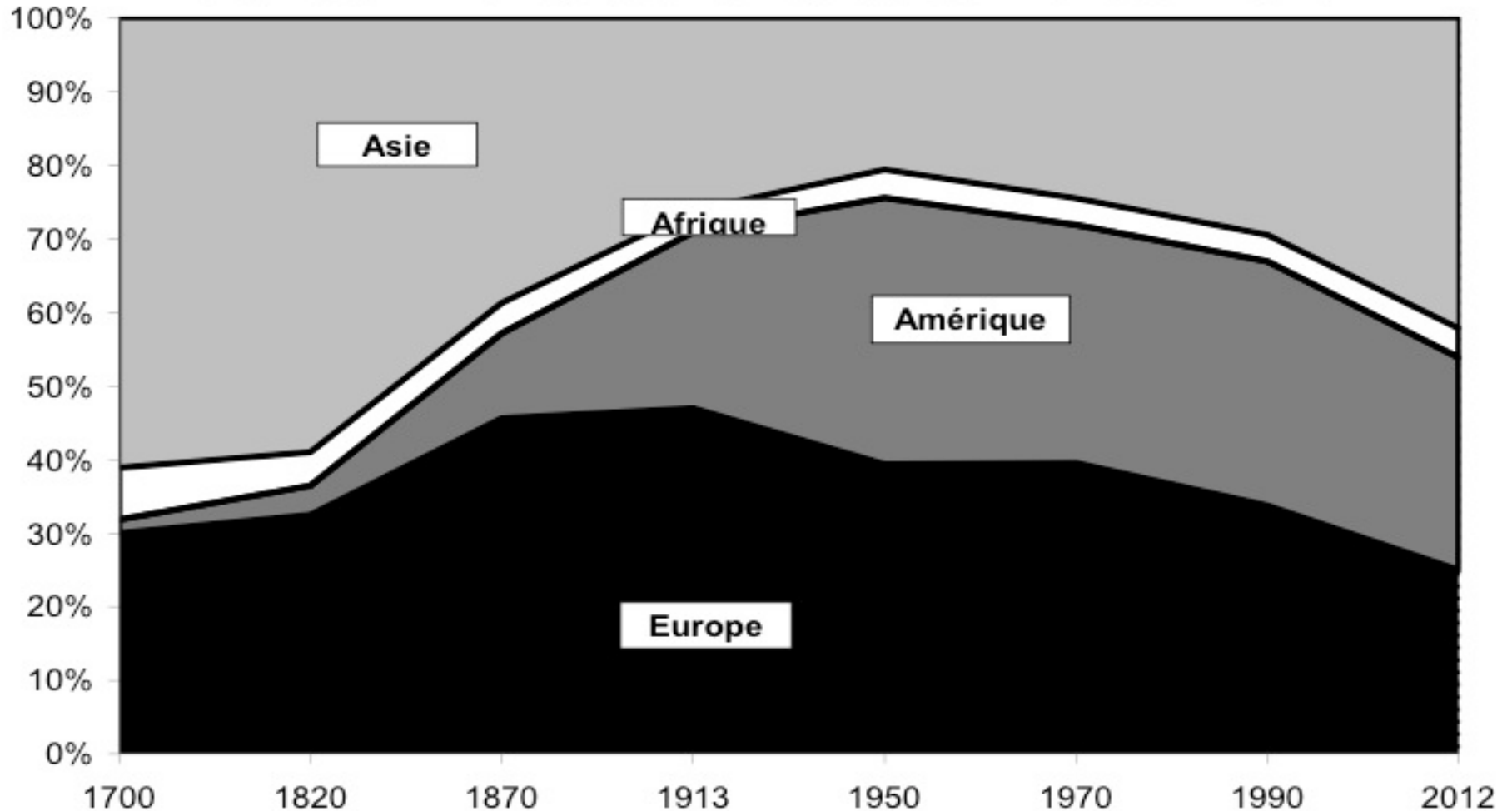
2017 Largest countries by population

1		<u>Luxembourg</u>	107,708
2		<u>Switzerland</u>	80,837
—		<u>Macau</u>	79,563
3		<u>Norway</u>	73,615
4		<u>Iceland</u>	73,092
5		<u>Ireland</u>	68,604
6		<u>Qatar</u>	60,811
7		<u>United States</u>	59,495
8		<u>Denmark</u>	56,335
9		<u>Australia</u>	56,135
10		<u>Singapore</u>	53,88

1	China	1.409.517
2	India	1.339.188
3	USA	324.459
4	Indonesia	263.991
5	Brazil	209.288
6	Pakistan	197.016
7	Nigeria	190.886
8	Bangladesh	164.670
9	Russia	143.990
10	Mexico	129.163

World production (1700-2012)

Graphique 1.1. La répartition de la production mondiale 1700-2012



Lecture: le PIB européen représentait 47% du PIB mondial en 1913, et 25% en 2012.

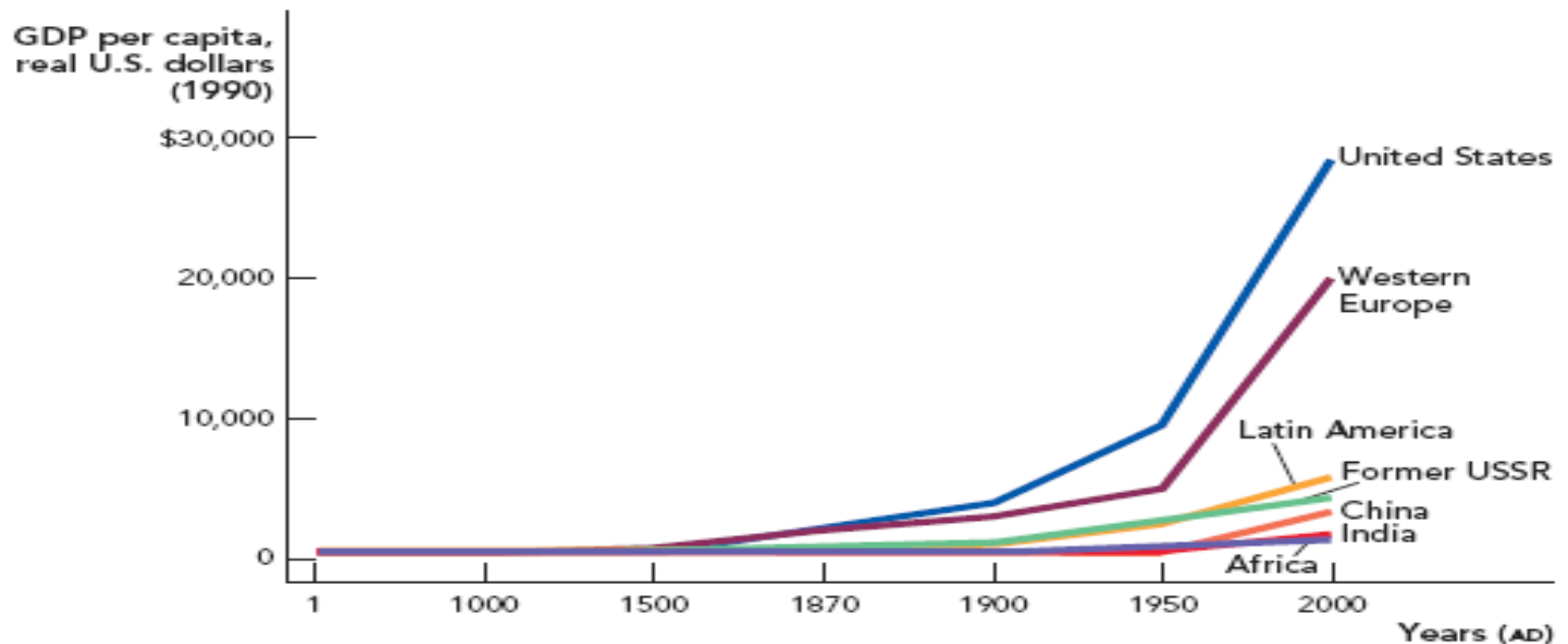
Sources et séries: voir piketty.pse.ens.fr/capital21c.



Use the graph:

https://www.gapminder.org/tools/#_chart-type=linechart

economic growth is a long-term economic trend. A quite recent divergence among regions?



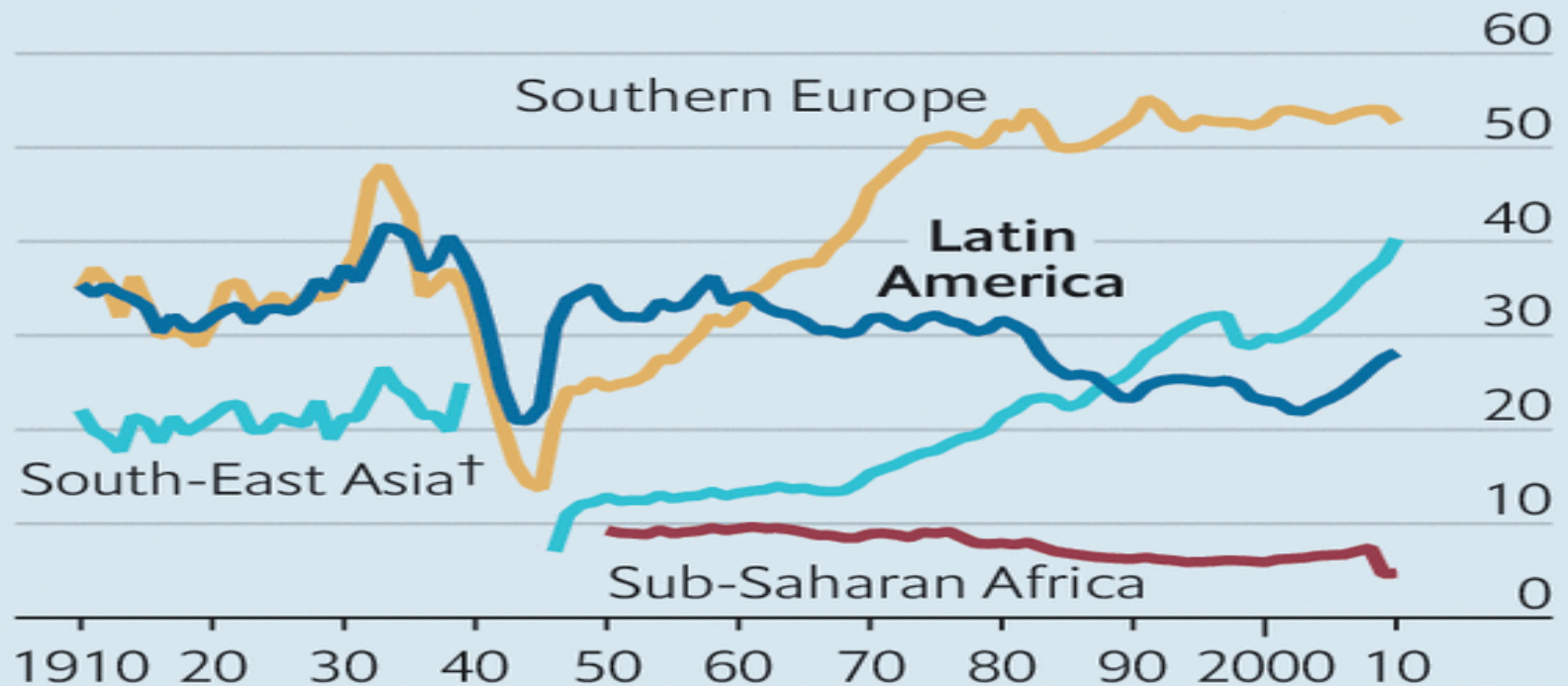
Economic Growth in Major World Regions

Source: Maddison, Angus. 2007. *Contours of the World Economy: 1-2030 AD*. Oxford University Press, Oxford.
Note: Timeline is not to scale.

But growth is very unequal

Going south

Average regional GDP per person*
As % of US GDP per person

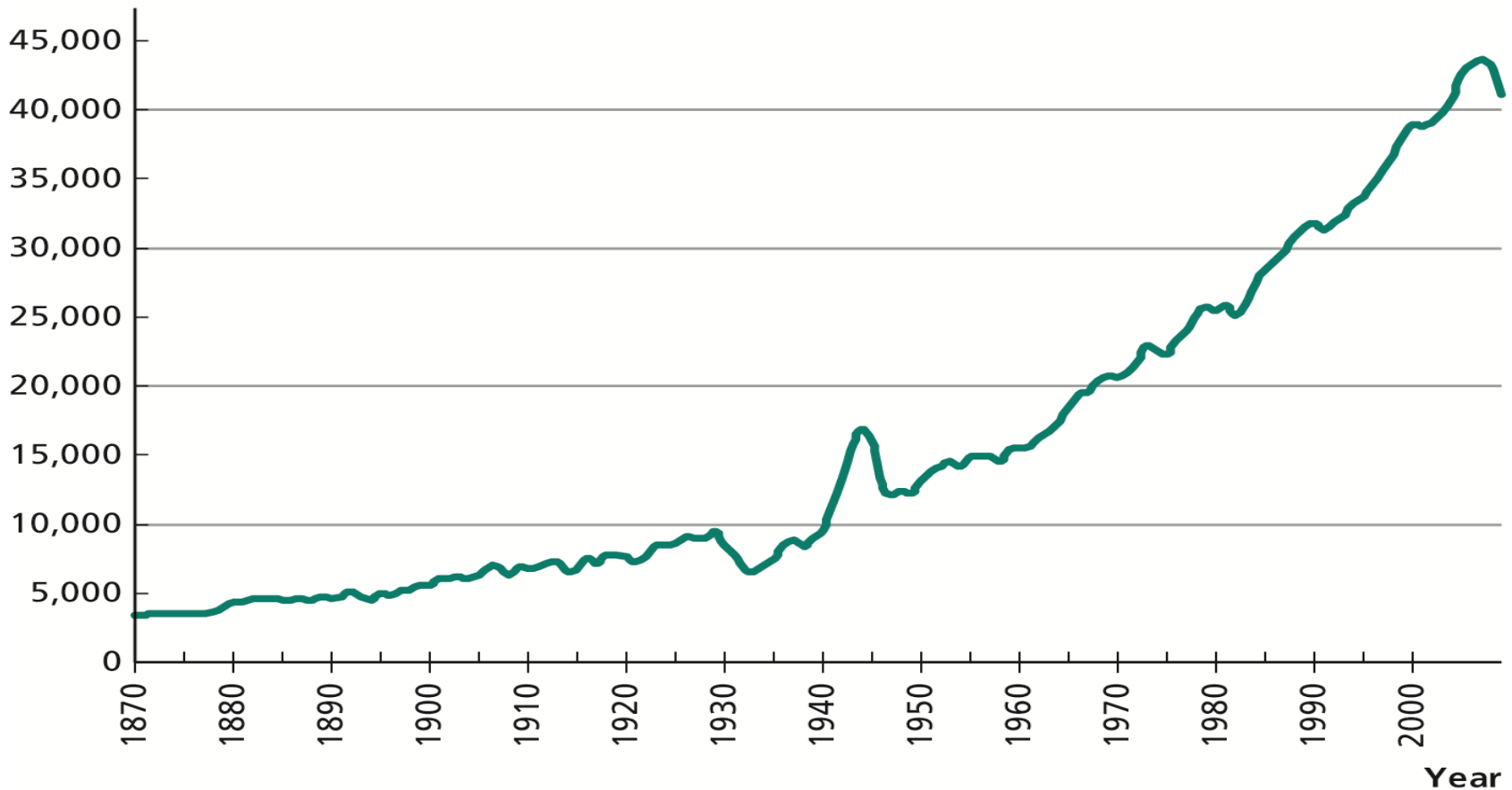


Source: Maddison
Project Database

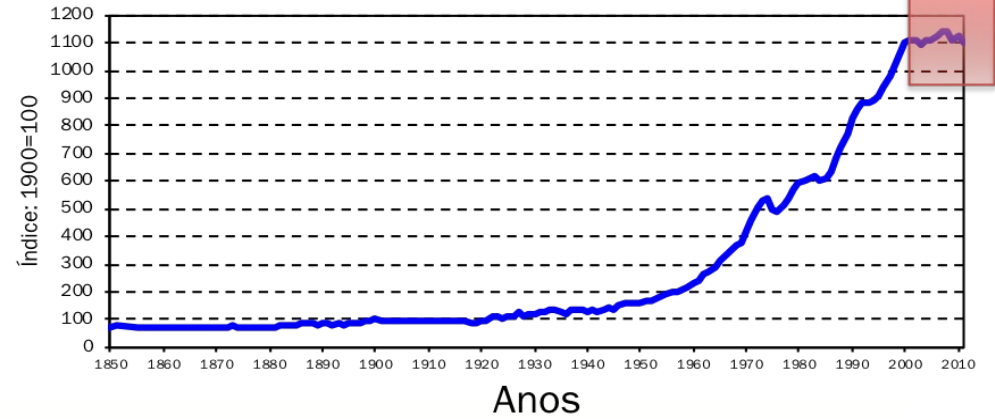
*1990 constant \$
†No data for 1940-45

look at the growth of USA GDP per capita 1870 – 2009

GDP per capita (2005 Dollars)

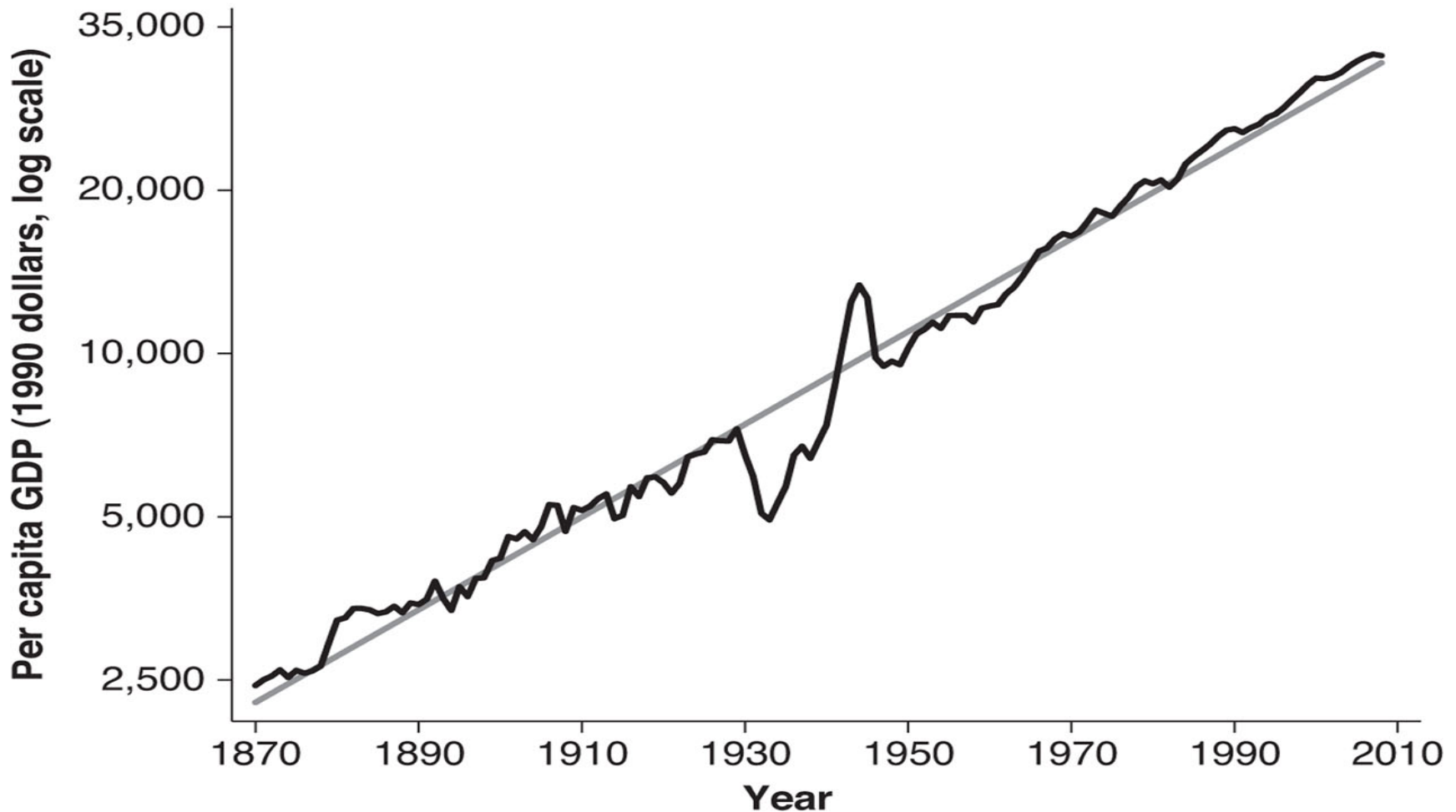


PIB Real Anual por Habitante em Portugal: 1850-2011



the trend

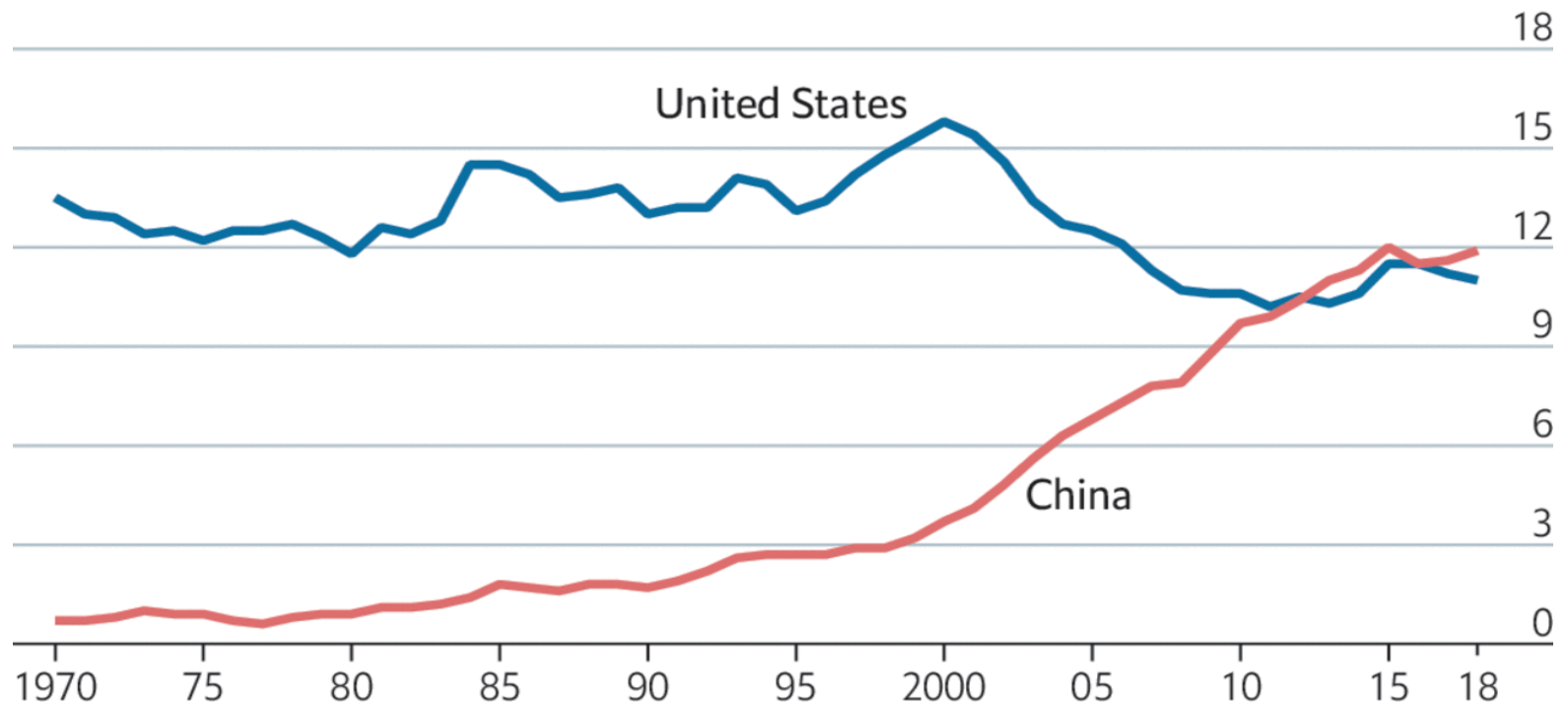
FIGURE 1.4 REAL PER CAPITA GDP IN THE UNITED STATES, 1870-2008



Another look at inequality of growth: USA and China in the world trade (1970 – 2019)

Now it gets complicated

Global merchandise trade, % of total



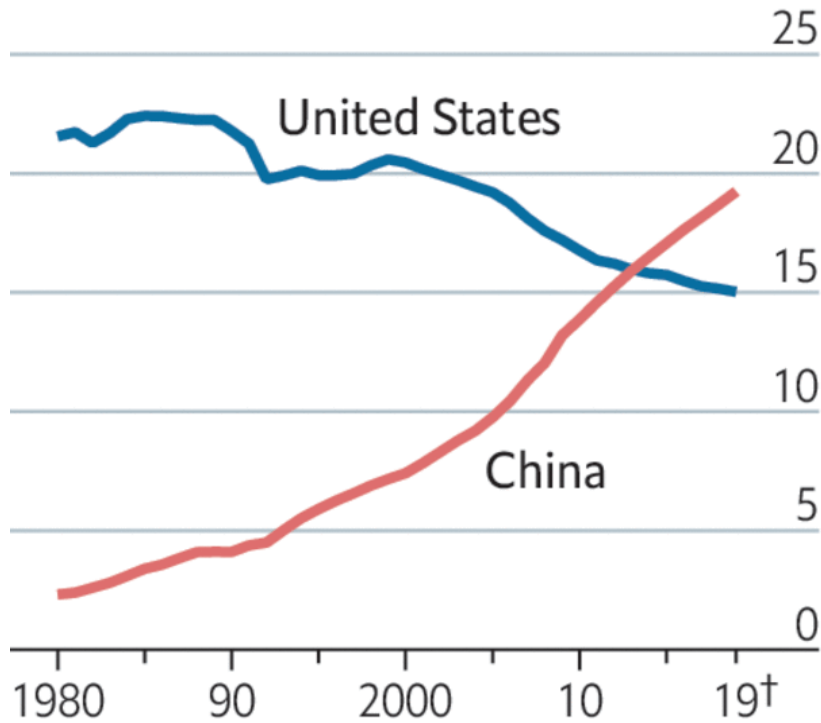
Source: UNCTAD

The Economist

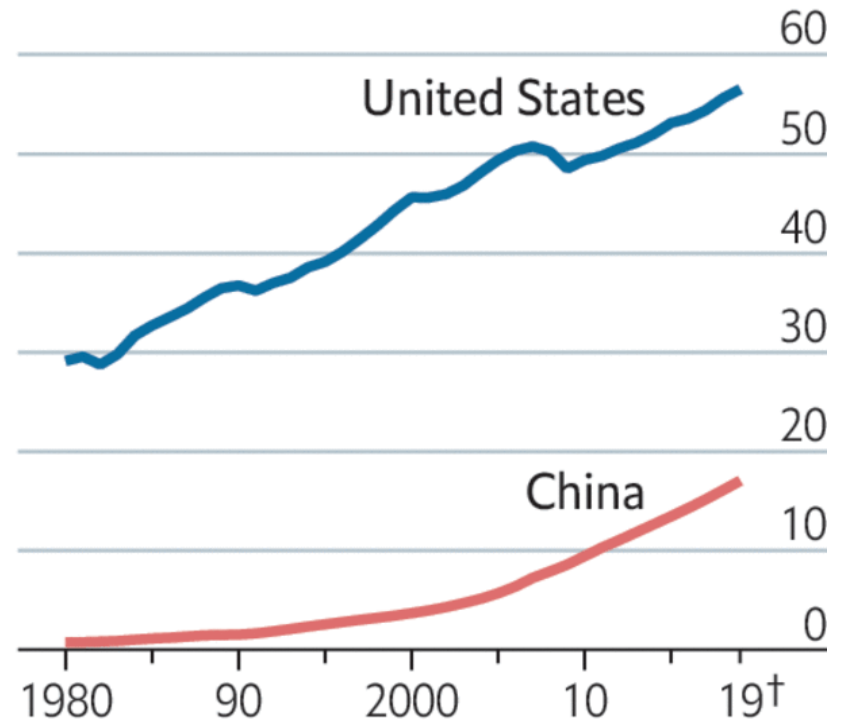
Are USA and China converging or diverging?

Pedalling fast

Global GDP*
% of total



GDP per person*
\$'000, 2011 prices



Source: IMF

The Economist

*At purchasing-power parity †Forecast



PPP Exchange Rates

Country	GDP per Capita in 2009 Using Market Exchange Rates (dollars)	GDP per Capita in 2009 Using PPP Exchange Rates (dollars)
United States	41,099	41,099
Japan	36,651	30,008
Germany	36,702	32,488
Argentina	6,519	11,961
Mexico	7,257	11,629
India	1,041	3,239

exchange rates based on the prices of a standardized basket of goods and services.

how do the various countries compare in economic growth?

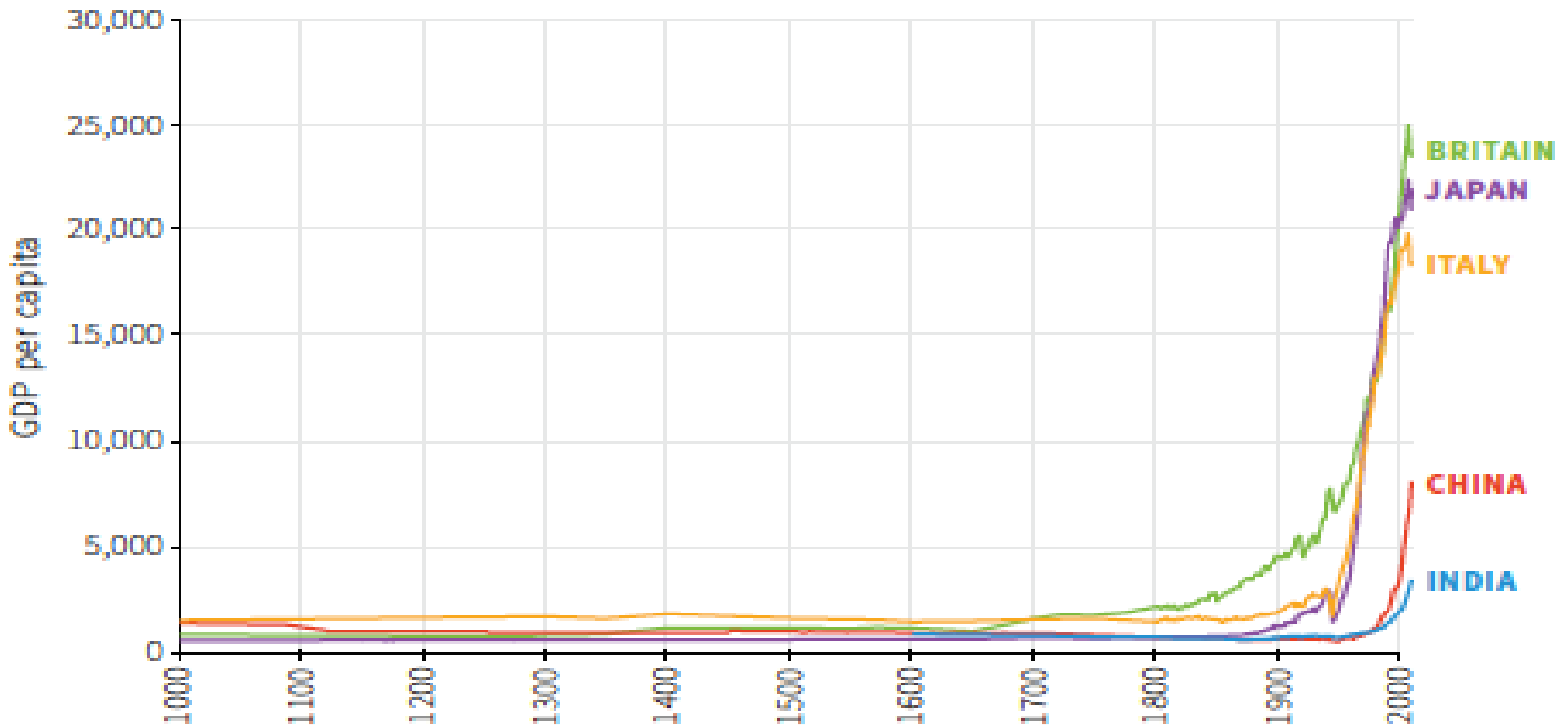
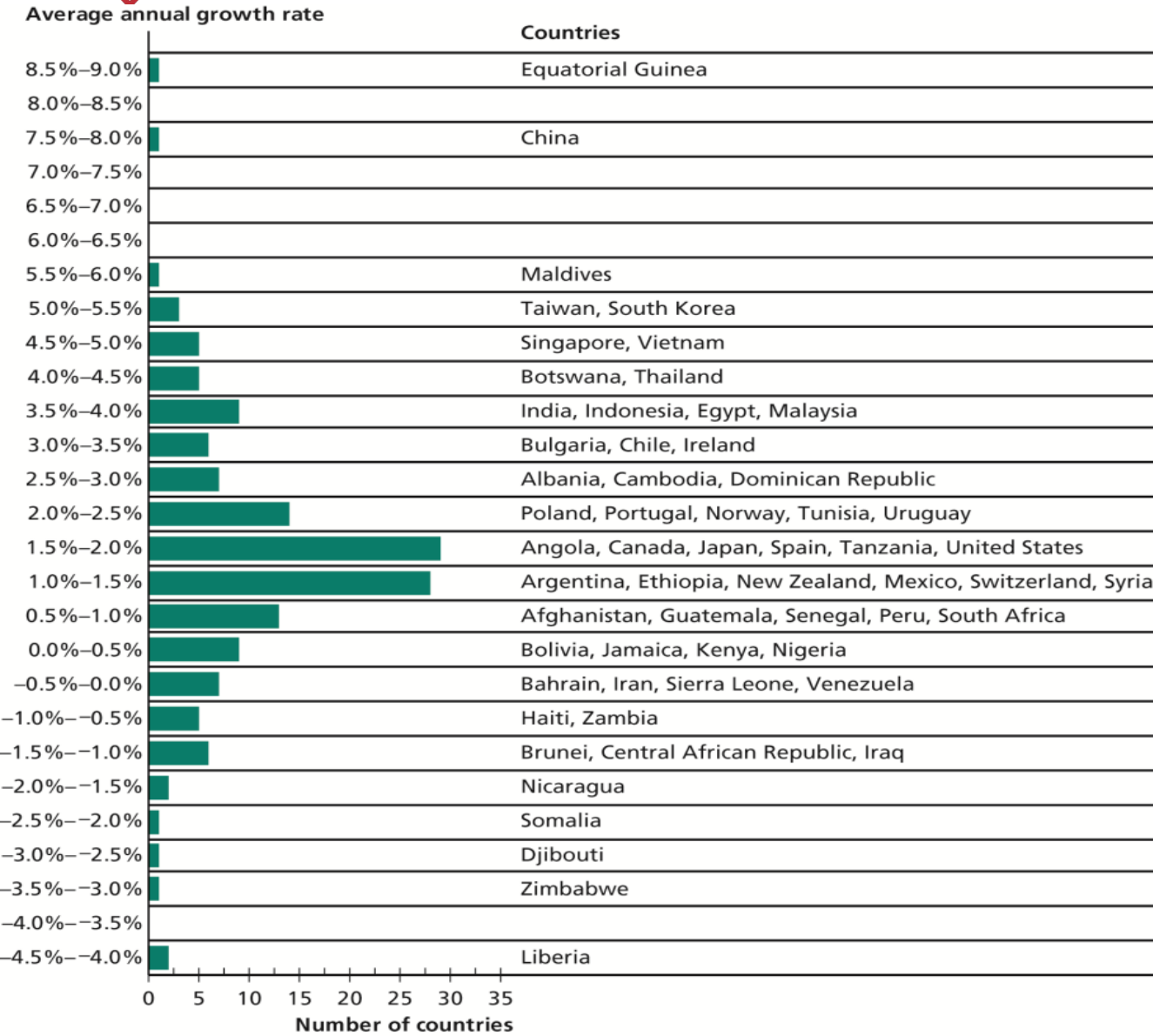


Figure 1.1a *History's hockey stick: Gross domestic product per capita in five countries (1000-2013).*

Source: Bolt, Jutta, and Jan Juiten van Zanden. 2013. 'The First Update of the Maddison Project Re-Estimating Growth Before 1820.' Maddison-Project Working Paper WP-4. Broadberry, Stephen. 2013. 'Accounting for the Great Divergence.' London School of Economics and Political Science. November 1.



... and wide differences (too) in the growth rate of GDP *per capita* ...



The Distribution of Growth Rates, 1975–2009, until the last recession

Source: Heston, Summers, and Aten (2011).

Divergence among latecomers

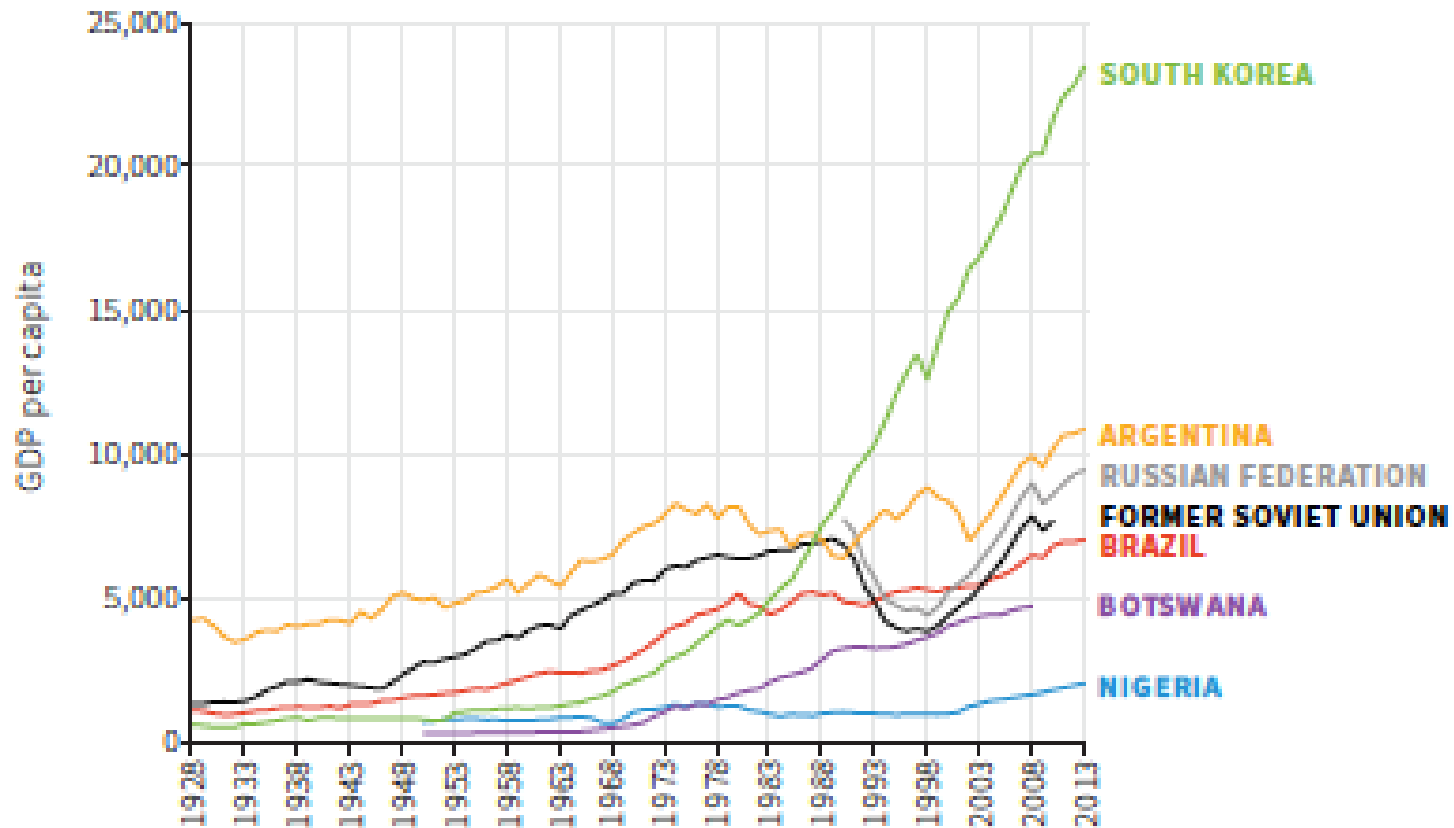


Figure 1.12 Divergence of GDP per capita among latecomers to the capitalist revolution (1928-2013).

Source: Bolt, Jutta, and Jan Juiten van Zanden. 2013. 'The First Update of the Maddison Project Re-Estimating Growth Before 1820.' Maddison-Project Working Paper WP-4, January.

FIGURE 3.5 CONVERGENCE IN THE OECD, 1960–2008

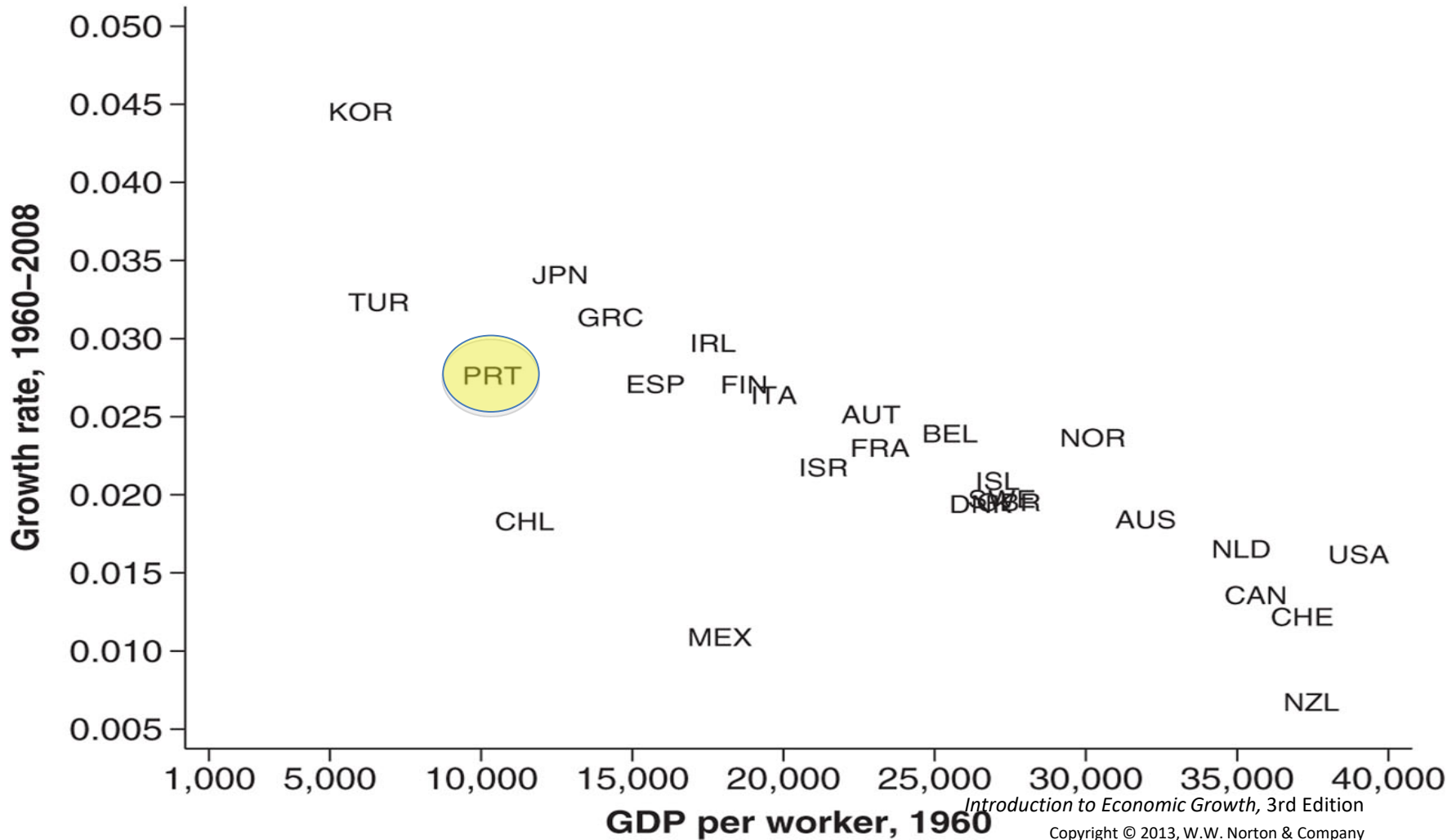
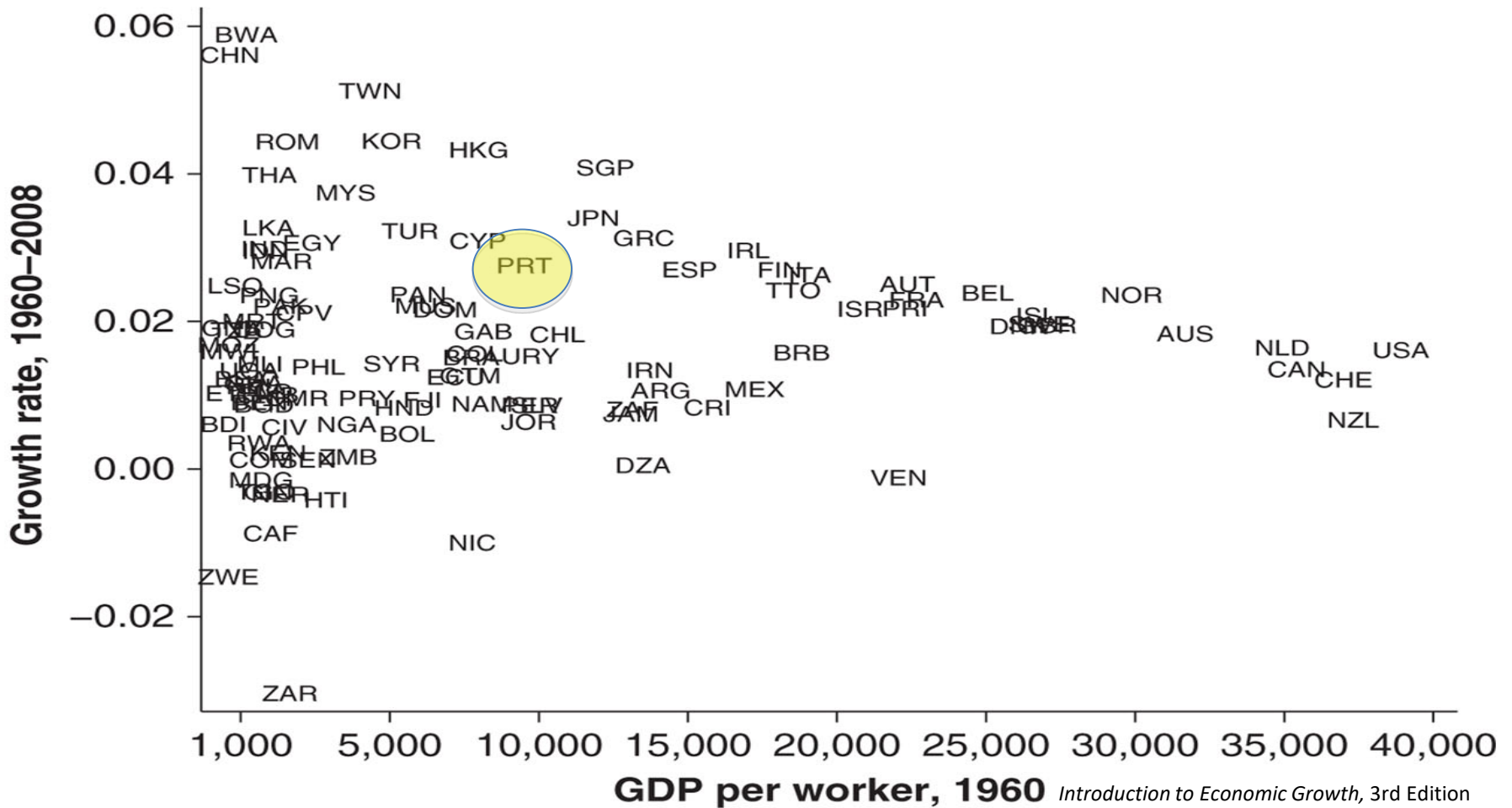


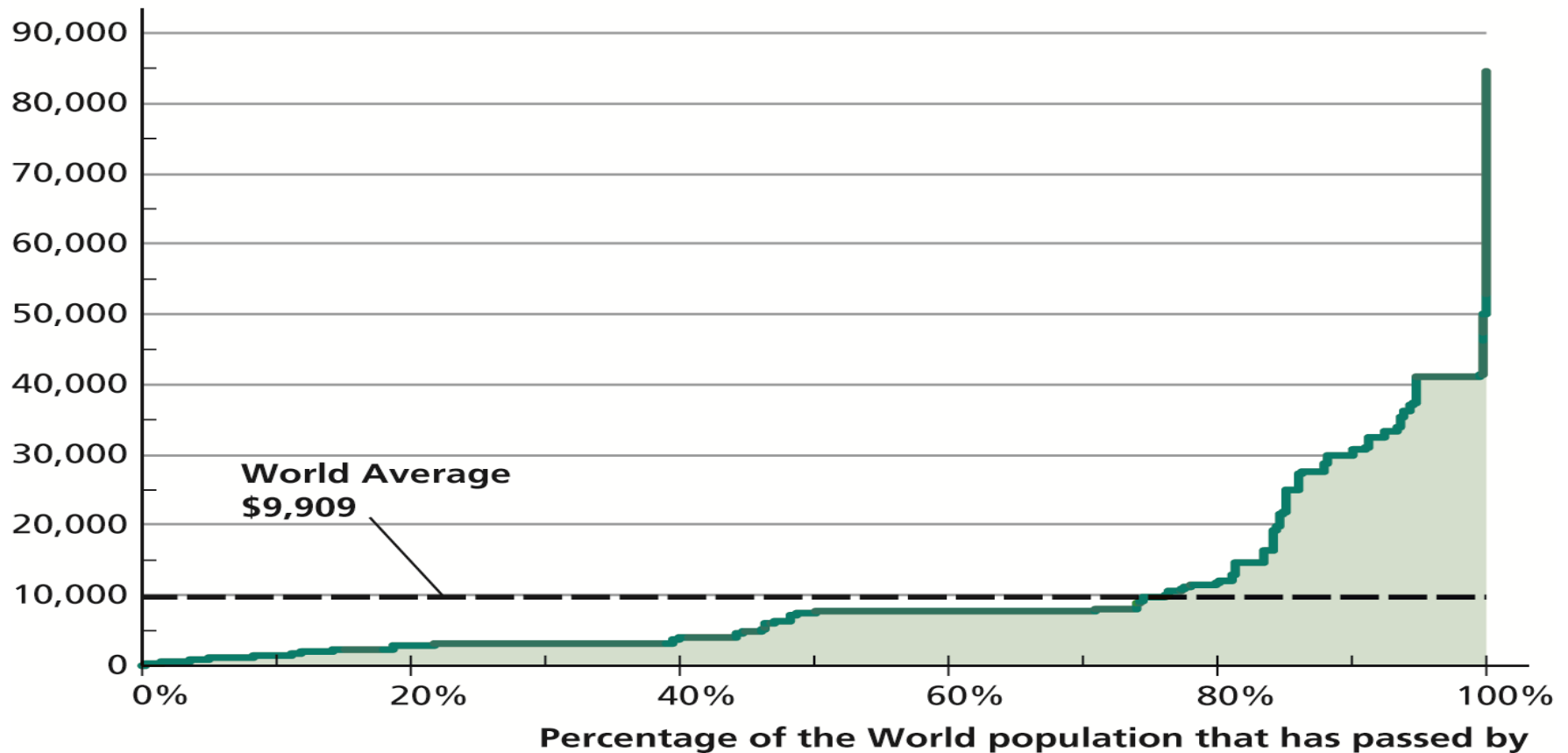
FIGURE 3.6 THE LACK OF CONVERGENCE FOR THE WORLD, 1960–2008





wide differences in the world on the level of GDP *per capita* ...

GDP per capita, 2009
(2005 Dollars)



Source: Heston, Summers, and Aten (2011).

and what it means – a simple mathematical formulation

$$\ln y(t)$$

$$\frac{d \ln y(t)}{dt} = \frac{dy(t)/dt}{y(t)}$$

the slope of $\ln y(t)$ is the average growth rate of $y(t)$

$$y(t) = y_0 \cdot e^{gt}$$

$$\frac{dy(t)/dt}{y(t)} = \frac{y_0 \cdot e^{gt} \cdot g}{y_0 e^{gt}} = g$$

g is the average growth rate of y
the slope of $\ln y(t)$

$$y(t) = y_0 \cdot e^{gt}$$

GDP per capita in the present (y_t) depends on the GDP in the past (y_0) and the growth rate of GDP per capita till the present (g)

this is the theoretical formulation of the subject in this unit

$$g_d = \left(\frac{X_i}{X_0} \right)^{\left(\frac{1}{n} \right)} - 1$$

$$g_c = \frac{\ln \left(\frac{X_i}{X_0} \right)}{n}$$

X = GDP in years i and 0 ; n = number of years;
(d and c = methods of calculating discrete and continuous growth rates, respectively); \ln = natural log; g = growth rate

major questions for research in modern growth theory

- why some countries grow faster than others? (level)
- are the various nations converging? (convergence)
- what are the prospects (the future) of economic growth? (factors of growth)
- What type of growth is sustainable?

World Inequality

THE ELEPHANT CURVE OF GLOBAL INEQUALITY AND GROWTH, 1980-2016

