

INCOME GROWTH: INTRODUCTION

What is the Pattern of Income Growth?

1. Data

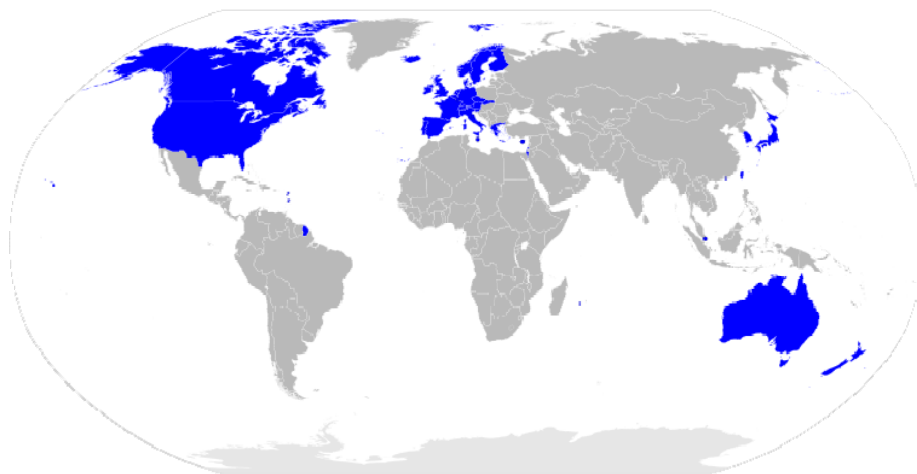
2. Findings

- Reading: Lucas (2004), “The Industrial Revolution: Past and Future,” The Region.

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DATA

FIGURE: Advanced Economies Classified by the IMF

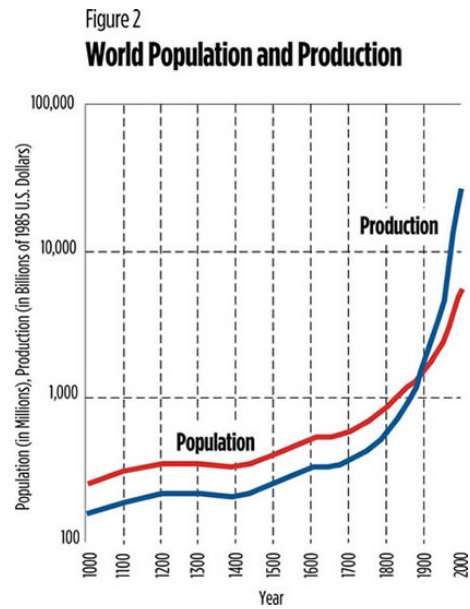


(Source: http://en.wikipedia.org/wiki/File:IMF_advanced_economies_2008.svg.)

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FIGURE: World Population and Production

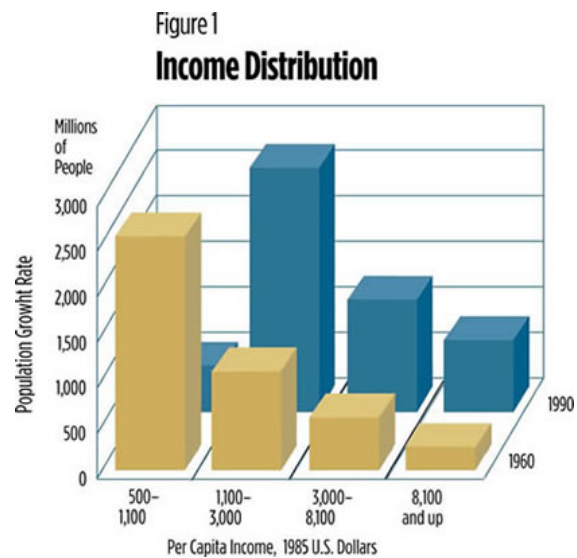


(Source: Lucas (2004).)

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Figure: World Income Distribution



(Source: Lucas (2004).)

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TABLE: Per-capita GDP

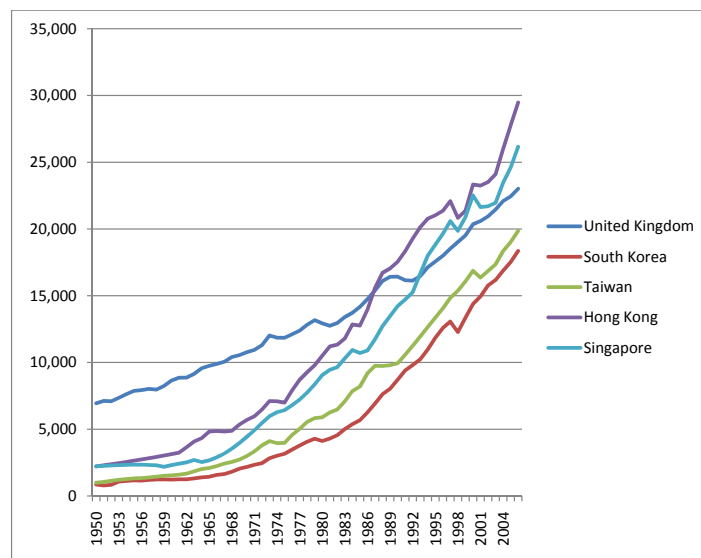
	1000	1500	1820	1870	1913	1950	1973	2001
Levels of per-capita GDP (1990 international dollars)								
Western Europe	400	771	1,204	1,960	3,458	4,579	11,416	19,256
Western offshoots	400	400	1,202	2,419	5,233	9,268	16,179	26,943
Japan	425	500	669	737	1,387	1,921	11,434	20,683
West	405	702	1,109	1,882	3,672	5,649	13,082	22,509
Asia (excluding Japan)	450	572	577	550	658	634	1,226	3,256
Latin America	400	416	692	681	1,481	2,506	4,504	5,811
E. Europe & f. USSR	400	498	686	941	1,558	2,602	5,731	5,038
Africa	425	414	420	500	637	894	1,410	1,489
Rest	441	538	578	606	860	1,091	2,072	3,372
World	436	566	667	875	1,525	2,111	4,091	6,049
Interregional spread	1.1:1	1.9:1	2.9:1	4.8:1	8.2:1	14.6:1	13.2:1	18.1:1
West/Rest spread	0.9:1	1.3:1	1.9:1	3.1:1	4.3:1	5.2:1	6.3:1	6.7:1

(Source: Maddison (2005), Table 2.)

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Figure: Four Asian Tigers

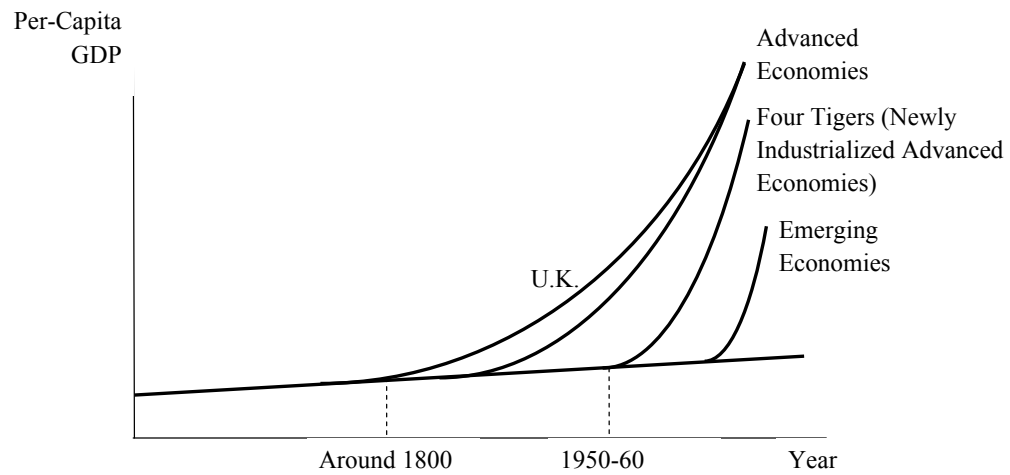


(Source: Angus Maddison.)

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FIGURE: Pattern of World Income Growth



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FINDINGS

- Growth began in England in the 18th century and continues to diffuse throughout the world today.
- What kind of mechanism makes it possible?
- U.K.: Technological advances → The wages of skilled labor (who can make use of these advances) ↑ → Stimulate other workers to accumulate skills → Workers become more educated.
- “Catch-up Economies”: From interactions with advanced economies, they learn already existing technologies. (E.g., they export manufacturing products in global market, learning to play in a “big league”.)
- Autarchic economies are rarely successful.
- Our goal in this class is to try to understand this entire mechanism.

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FINDINGS

- (Net) Growth Rate: If something grows from X_t to X_{t+1} , and if the net growth rate is g ,
 - $X_t \times (1 + g) = X_{t+1}$.
 - (Gross Growth Rate) $= (1 + g) = \frac{X_{t+1}}{X_t}$.
 - (Net Growth Rate) $= g = \frac{X_{t+1}}{X_t} - 1$.
- **Example 1:** If income grows from \$10,000 to \$11,000 in one year, a (net) growth rate is 10% $(= \frac{11000}{10000} - 1)$. (Excel Command: $=11000/10000-1$)

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FINDINGS

- **Example 2:** If income grows from \$10,000 to \$12,000 in 10 years,
 - $10000 \times \underbrace{(1 + g) \times (1 + g) \times \dots \times (1 + g)}_{10 \text{ times}} = 12000.$
 - $\therefore 10000 \times (1 + g)^{10} = 12000.$
 - $\therefore (1 + g)^{10} = \frac{12000}{10000}.$
 - $\therefore 1 + g = \left(\frac{12000}{10000}\right)^{1/10}.$
 - $\therefore g = \left(\frac{12000}{10000}\right)^{1/10} - 1.$
 - (Excel Command: `=(12000/10000)^(1/10)-1`)
- **Example 3:** What is the average U.S. per-capita GDP growth between 1950 and 2006?