Econ 580, Lecture Notes 1

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Review of stylized facts (see Acemoglu, chapter 1)

- Large differences in income per capita and income per worker (PPP vs market ER, 1960 vs 2000)

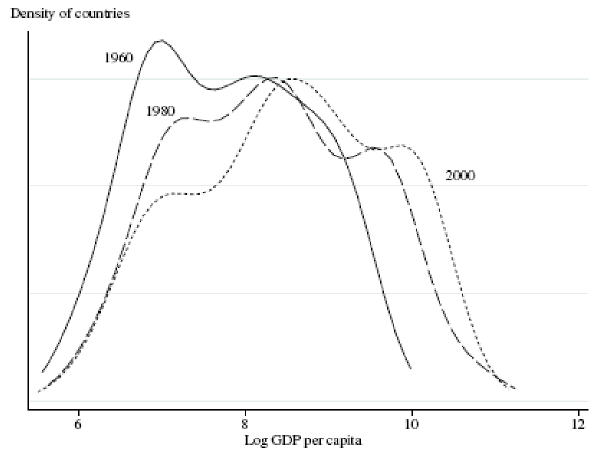


FIGURE 1.2 Estimates of the distribution of countries according to log GDP per capita (PPP adjusted) in 1960, 1980, and 2000.

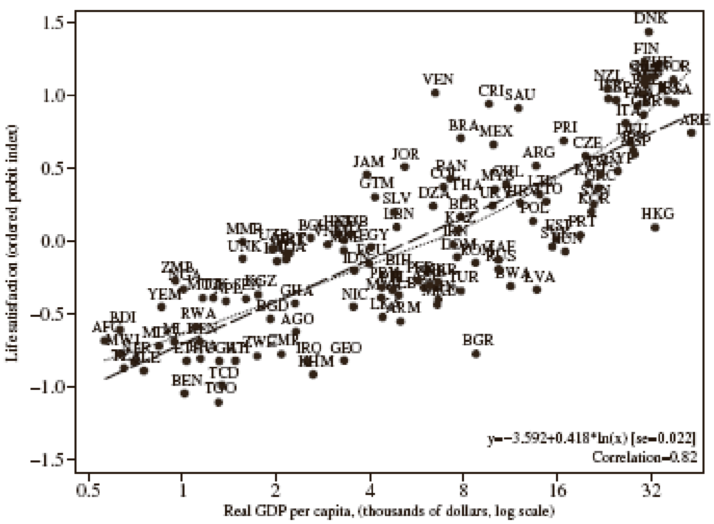
- Decrease in dispersion across individuals

- Income differences are well reflected in differences in welfare and happiness

- Large dispersion in growth rates

- Convergence among rich countries, but problem of selection

Figure 4. Life Satisfaction and Real GDP per Capita: Gallup World Poll[a]



Sources: Gallup World Poll, 2006; authors' regressions. Sources for GDP per capita are described in the text.

a. Sample includes 131 developed and developing countries. Respondents are asked, "Please imagine a ladder with steps numbered from zero at the bottom to ten at the top. Suppose we say that the top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?" Dashed line is fitted from the reported ordinary least squares regression; dotted line is fitted from a lowess estimation. GDP per capita is at purchasing power parity in constant 2000 international dollars.

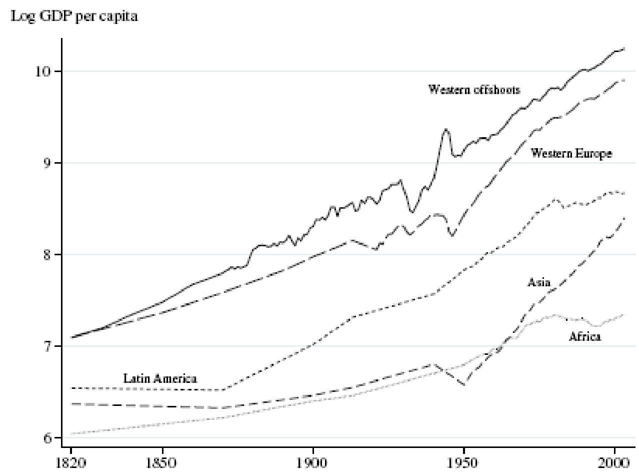


FIGURE 1.10 The evolution of average GDP per capita in Western offshoots, Western Europe, Latin America, Asia, and Africa, 1820–2000.

- No absolute convergence among all countries... but conditional convergence

- Dispersion is not new: large dispersion in 1960

- Latin America has done particularly badly

- The divergence happened mostly since 1980

- Pritchett (1997): Divergence, Big Time

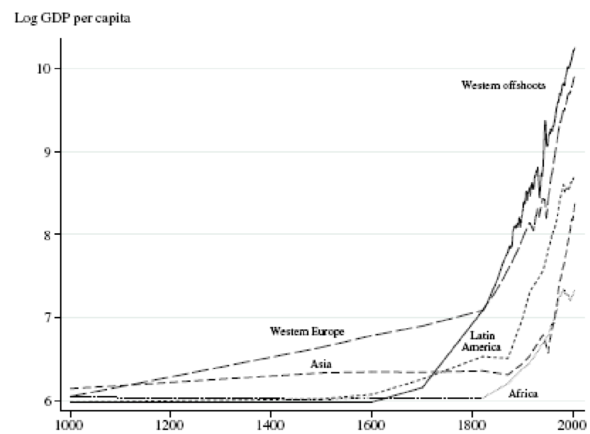


FIGURE 1.11 The evolution of average GDP per capita in Western offshoots, Western Europe, Latin America, Asia, and Africa, 1000–2000.

Table 2
Estimates of the Divergence of Per Capita Incomes Since 1870

	1870	*1960*	*1990*
USA (*P*$)	2063	9895	18054
Poorest (*P*$)	250 (assumption)	257 (Ethiopia)	399 (Chad)
Ratio of GDP per capita of richest to poorest country	8.7	38.5	45.2
Average of seventeen "advanced capitalist" countries from Maddison (1995)	1757	6689	14845
Average LDCs from PWT5.6 for 1960, 1990 (imputed for 1870)	740	1579	3296
Average "advanced capitalist" to average of all other countries	2.4	4.2	4.5
Standard deviation of natural log of per capita incomes	.51	.88	1.06
Standard deviation of per capita incomes	*P*$459	*P*$2,112	*P*$3,988
Average absolute income deficit from the leader	*P*$1286	*P*$7650	*P*$12,662

Notes: The estimates in the columns for 1870 are based on backcasting GDP per capita for each country using the methods described in the text assuming a minimum of *P*$250. If instead of that method, incomes in 1870 are backcast with truncation at *P*$250, the 1870 standard deviation is .64 (as reported in Figure 1).

Lucas (2000)

All countries at \$600 in 1800, $y_0 = 0.6$

Date of "take-off" for each country, s, is stochastic

Leading economy has $s = 0$, and

$$y(0, t) = y_0(1 + \alpha)^t$$

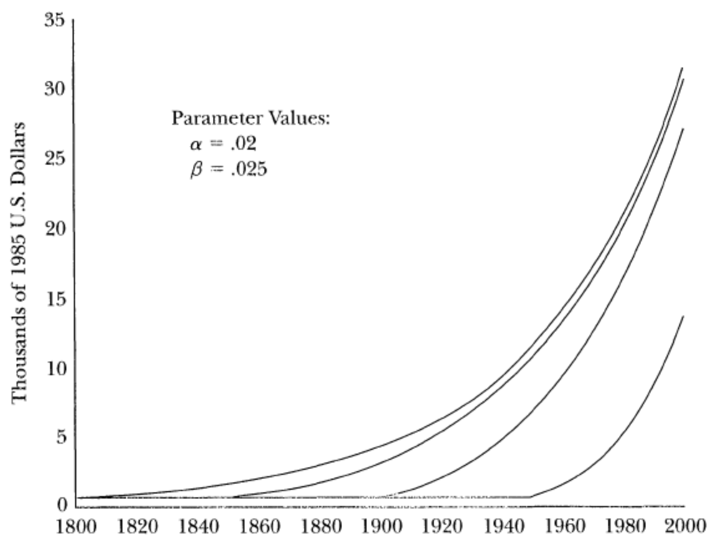
For economies $s = 1, 2, ...$ assume that

$$\frac{y(s, t+1)}{y(s, t)} = (1 + \alpha)\left(\frac{y(0, t)}{y(s.t)}\right)^\beta$$

This implies that for $s = t = 0$ the growth rate is approximately $\alpha + \beta$

Assume $\alpha = 0.02$ and $\beta = 0.025$, then for $s = 0, 50, 100, 150$ ...

Figure 1
Income Paths, Selected Economies



If a country has not taken-off at date t , probability that it starts to grow at that date - its hazard rate - increases from $\lambda_m = 0.001$ in 1800 to $\lambda_m = 0.03$

Let $\pi(t)$ and $\lambda(t)$ be the unconditional and conditional probabilities that an economy begins to grow at date t, then

$$\pi(t) = \lambda(t) \left[1 - \sum_{s<t} \pi(s) \right]$$

Let $x(t)$ be average world income at t,

$$x(t) = \sum_{s \leq t} \pi(s) y(s,t) + \left[1 - \sum_{s<t} \pi(s)\right] y_0$$

Assume

$$\lambda(t) = \lambda_m \exp(-\delta(x(t) - y_0) + \lambda_M \left[1 - \exp(-\delta(x(t) - y_0)\right]$$

Note that at $t = 0$ we have $\lambda(t) = \lambda_m$ but as $\tau \to \infty$ we have $\lambda(t) \to \lambda_M$

Two spillovers...

Using $\delta = 0.5$ Lucas gets...

and

Is there conditional convergence?

How about unconditional convergence?

Figure 2
Fraction of Economies Growing, by Year

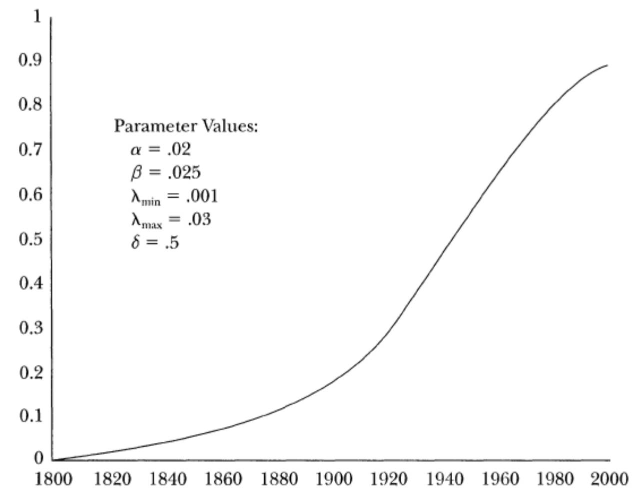


Figure 3
World Growth Rate and Income Variability