

7 Convergence and the World Income Distribution

The Convergence Hypothesis

- Fact: Enormous variation in incomes per worker across countries
- Question: Do poor countries eventually catch up?
- Convergence hypothesis: They do, in the right sense!
- Main prediction of convergence hypothesis: Poor countries should grow faster than rich countries.

Solow Model and Convergence

Countries with same s, n, δ, α, g

- eventually same growth rate of output per worker and same level of output per worker (*absolute* convergence).
- countries starting further below the balanced growth path (poorer countries) should grow faster than countries closer to balanced growth path.
- seems to be the case for the sample of now industrialized countries.

Countries with same g , but potentially differing s, n, δ, α

- countries have different balanced growth path.
- countries that start further below *their* balanced growth path (countries that are poor relative to their BGP) should grow faster than rich countries (relative to their BGP). This is called *conditional* convergence.
- data for full sample lend support to conditional convergence.

Figure 1.a: Growth Rate Versus Initial Per Capita GDP

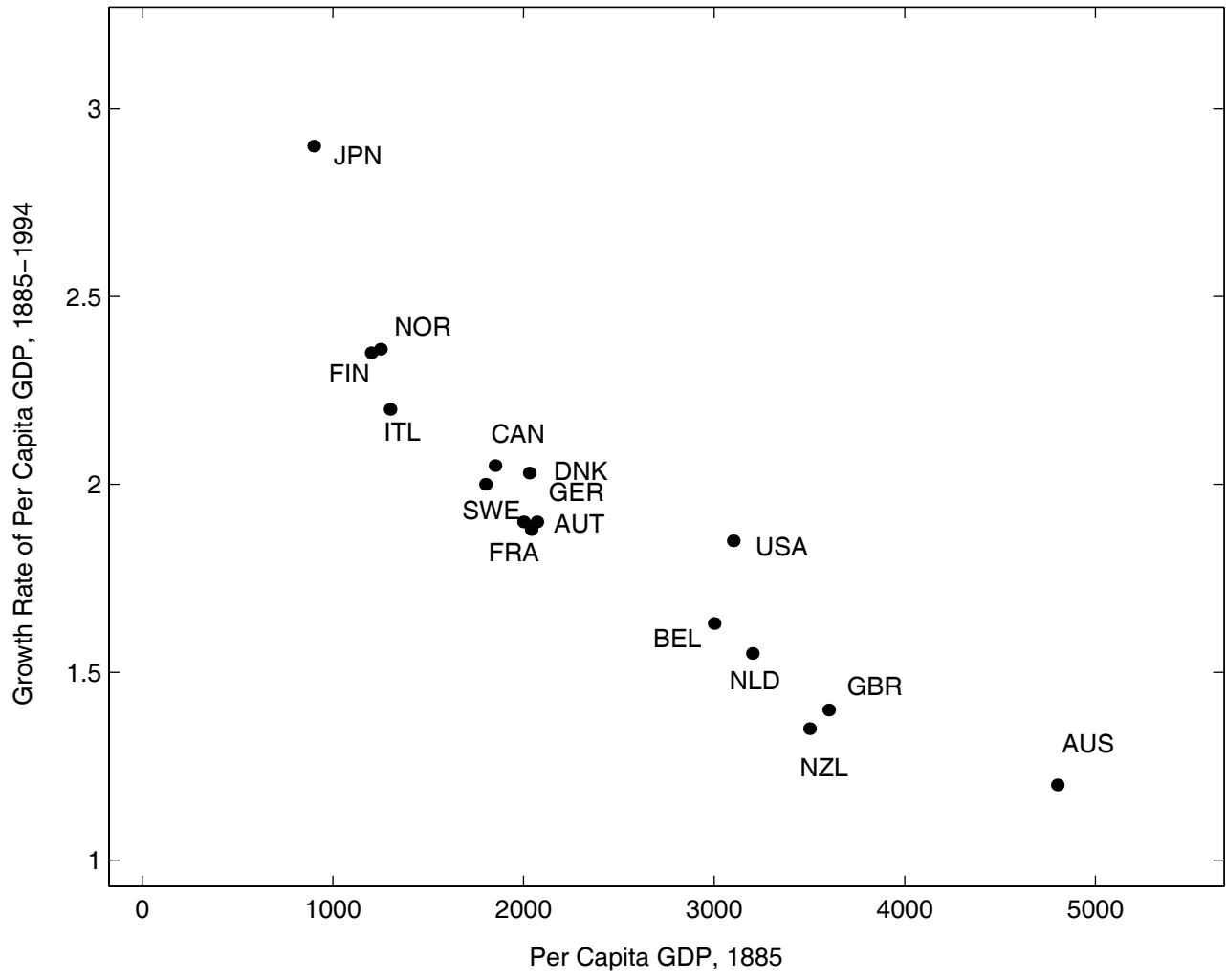


Figure 1.b: Growth Rate Versus Initial Per Capita GDP

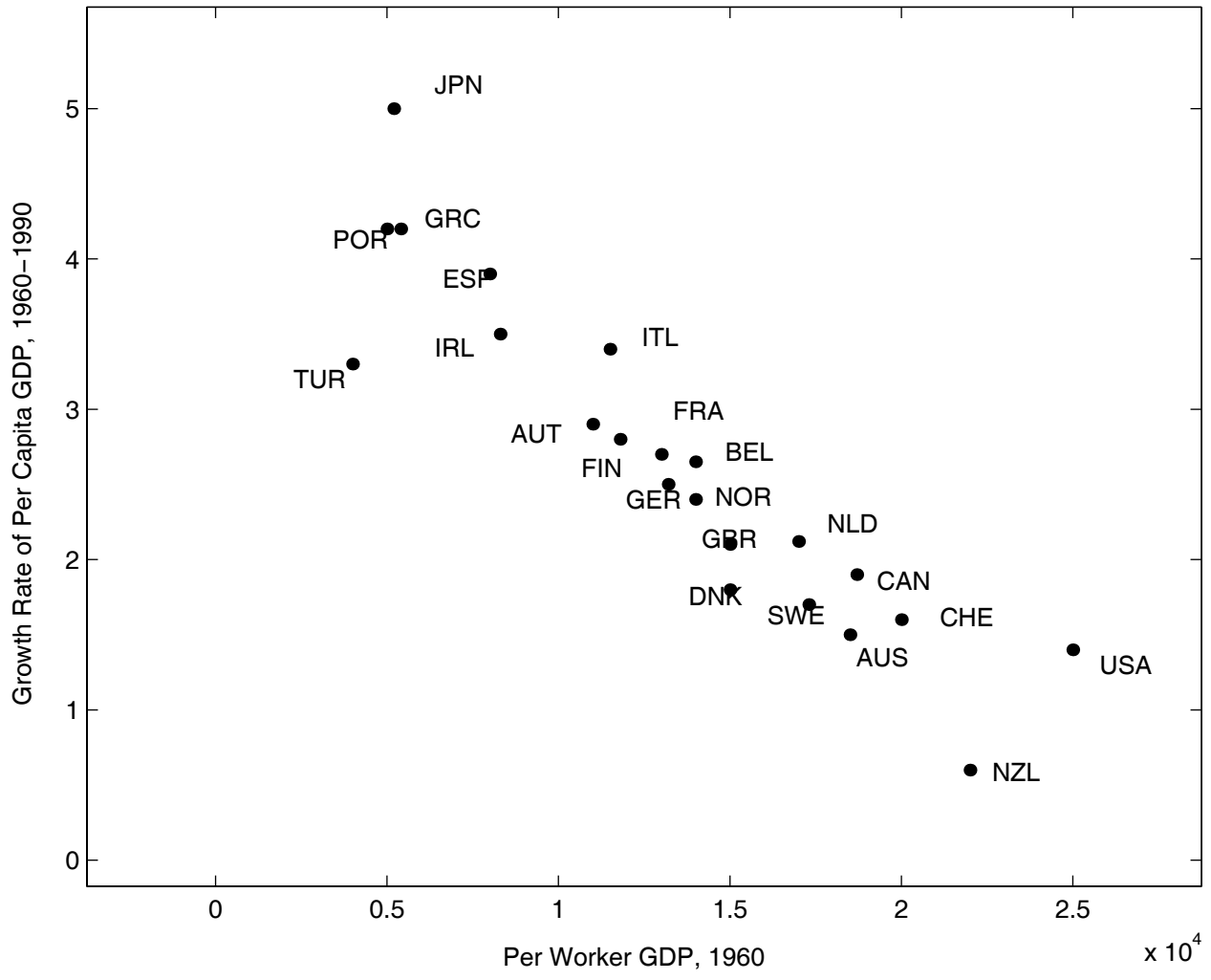


Figure 1.c: Growth Rate Versus Initial Per Capita GDP

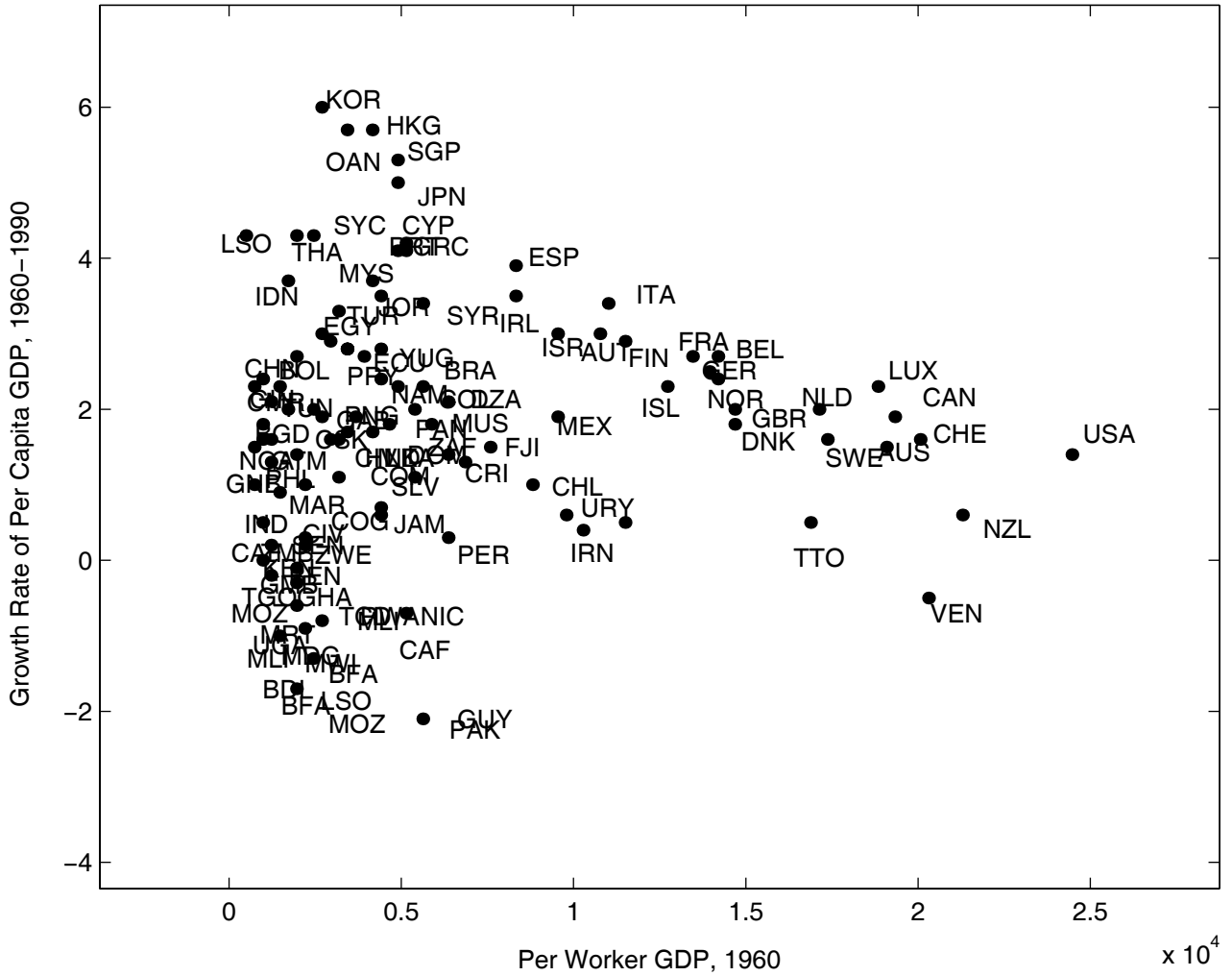
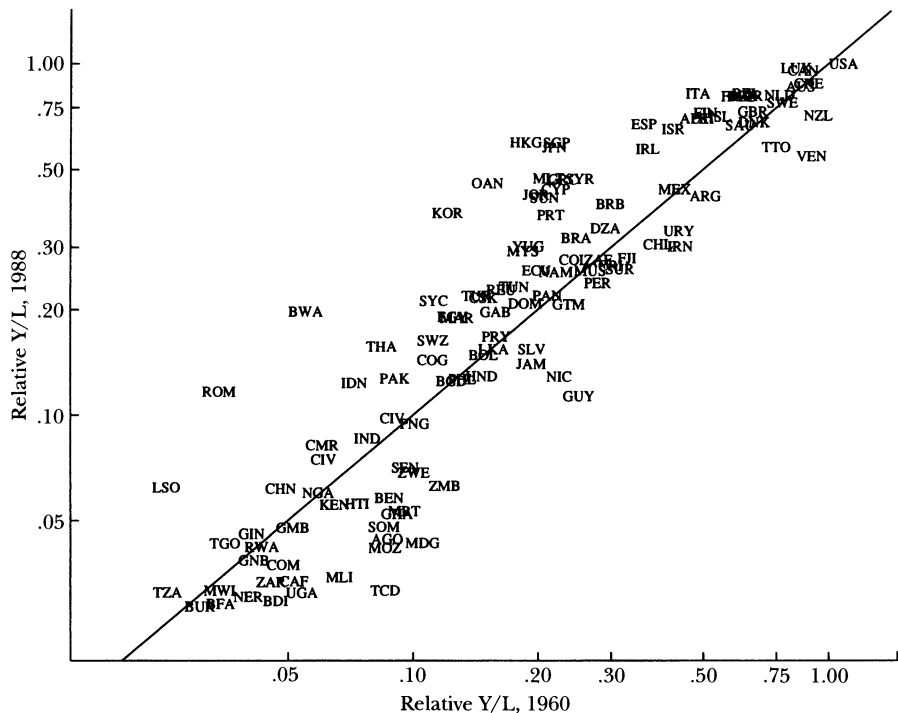


Figure 2

Relative Y/L, 1960 vs. 1988

(log scale)



Conclusion: The Basic Solow Model

- Offers a nice account of a number of growth facts. However:
 1. leaves unexplained factors that make countries leave (or not attain) their BGP.
 2. leaves unexplained why certain countries have higher s, n than others.
 3. leaves unexplained technological progress, the source of growth.
 4. More importantly it insufficiently accounts for long run per capita differences in output.

So what could be missing?

- There are insufficient differences in inputs to account for the huge differences in outputs that we observe.
- So what is needed is a theory of differences in A . Institutions, taxation, corruption, red tape, inefficient use of technologies.
- Imagine (in the context of the Solow model without technical progress) that all countries share the same technology but they they differ in τ how much of output is wasted.

• Now output is $Y = (1 - \tau) A K^\alpha L^{1-\alpha}$.

• Do your algebra and see that

$$y^* = \left[\frac{(1 - \tau) s}{n + \delta} \right]^{\frac{\alpha}{1-\alpha}}$$

• If $\alpha = \frac{1}{3}$, $s = .2$, $\delta = .08$, $n = .02$ then $\frac{\alpha}{1-\alpha} = \frac{1}{2}$ and

$$y^* = [2 \cdot (1 - \tau)]^{\frac{1}{2}}$$

If $\tau = 0$, $y^* = 1.4$. If $\tau = .5$ then $y^* = 1$. So large differences in τ are needed to account for the data.