09.20 notes Econ 274

Growth: go through Fukao paper quickly

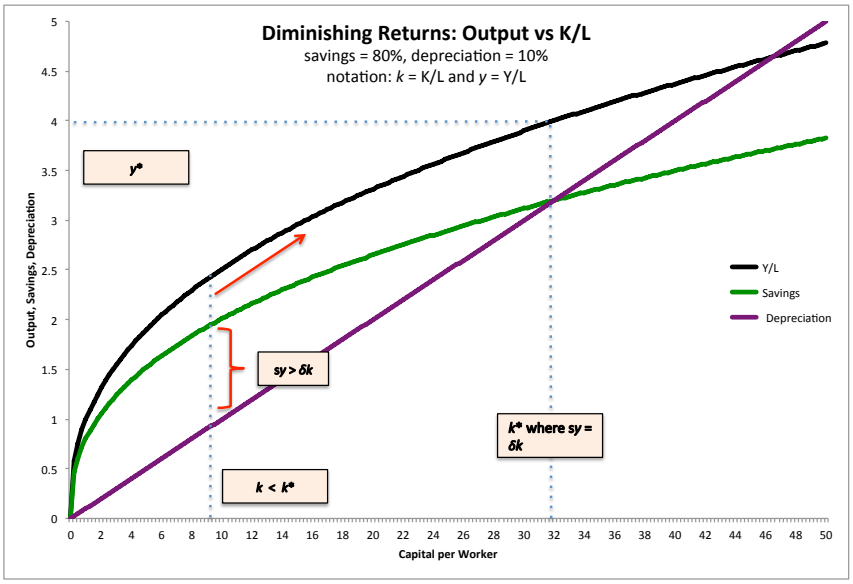
- growth models, more slowly

diminishing returns: Y = f (K) big push industrialization via capital accumulation

= graph → diminishing returns

if we recognize that capital wears out = depreciation, then

= even more rapid diminishing returns: more and more resources have to be devoted to the upkeep of the existing capital stock, rather than to growing the capital stock



Formalization with Solow growth function: two factors of production, both with diminishing returns

$$Y_t = A_t K_t^{\alpha} L_t^{1-\alpha}$$

- graph as above

- now we know that L is shrinking in China, at least when measured by headcount and not human-capital adjusted hours of work.

= papers with examples of growth accounting

$g_{Y/L} = g_{TFP} + \alpha g_{K/L}$ to which we can keep adding factors

- TFP total factor productivity is our measure of technology. not great, but no one has figured out a way to do better.

SUM: diminishing returns!! only TFP provides a way to continue growth

Technology: what is it?

- patents aren't a direct measure: most aren't used, their value varies. using a patented process without permission is theft (which normally means either paying a license fee or swapping for one of your patents)

- cell phone: off-the-shelf components, free operating system → no stealing involved

= for assembly China is the gold standard (or more narrowly, the China-based management / worker / physical setup of the Taiwanese company Foxconn [Hon Hai Precision Equipment 鸿海精密工业 is actually a subsidiary of Foxconn 富士康科技集团]

- so if components are off-the-shelf, and China represents the leading edge of factory management, then there's no technology being stolen.
- it's hard to reverse engineer a modern chip – blueprints might be useful. but (for another class) is the the margin along which companies compete?