Growth and Development

Lecture 4

Readings

- Michael Todaro and Stephen Smith (2014) Economic Development- Pearson Publishing (Chapter 3, various parts)

Growth theory and growth models

- Motivated by the question what drives the process of economic growth and formulate a mathematical growth path based on social and economic parameters
- Modern growth theory starts with the Harrod- Domar model based on a broadly Keynesian formulation (mid 1940s). Taken up by newly developing countries as a policy guiding formulation in the 1950s
- Followed by neoclassical growth model credited to Solow and Swan (separate papers both published in 1956)
- The modified neoclassical models called endogenous growth models starting from the late 1980s

Basic structure of the Harrod-Domar model

- Savings function $S = sY$ (1) $0 < s < 1$

  Total savings is a proportion of total income

- Investment $I = \Delta K$ (2)

  Investment is change in capital stock (K)

- $K/Y = \Delta K/\Delta Y = c$ (3)

  Assuming production to be based on capital only (simplification) with constant returns to scale

- $S = I$ (4)
- $sY = c\,\Delta Y$ (5)
- $\Delta Y/Y = s/c$ (6)

Implications of the growth equation

- Growth rate is a function of s, the savings propensity and c = K/Y or the capital output ratio.
- 1/c can be thought of as the efficiency of capital in producing output.
- A plausible g with s = 15 % and c = 4 is only 3.75 %
- Growth rate can be pushed up from both ends- higher savings rate or higher efficiency of capital use
- However, these are unlikely to be independent channels
- The key implication is the necessity of augmenting savings rate continuously to ensure higher growth rates
- Any deficit in domestic savings (and therefore investment) to achieve a ‘desired’ rate of growth can be met in principle by foreign sources

FIGURE A3.2.1 Equilibrium in the Solow Growth Model

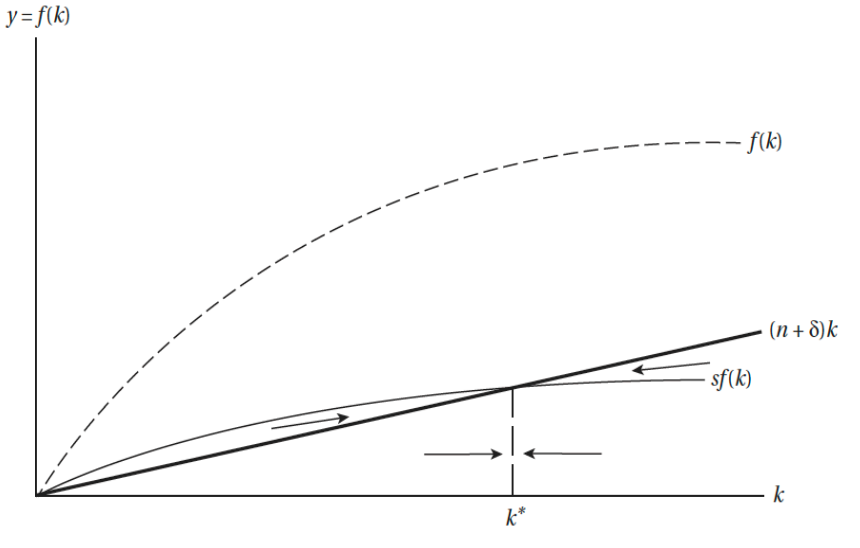
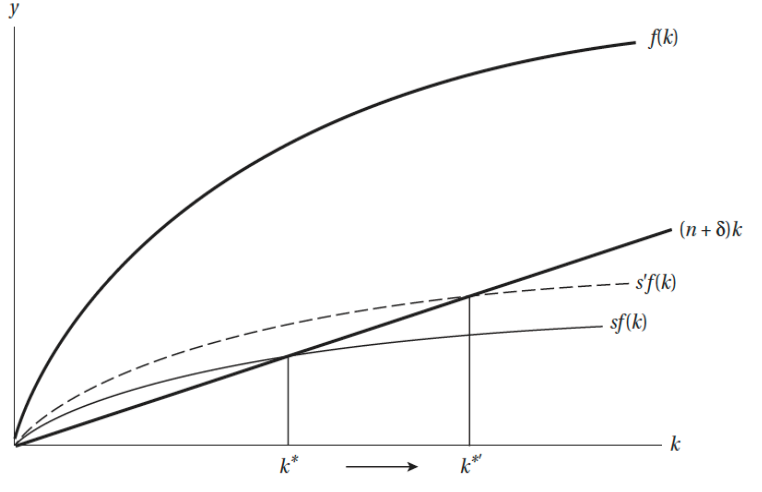


FIGURE A3.2.2 The Long-Run Effect of Changing the Savings Rate in the Solow Model



Some concerns from the Solow model

- What happens when population growth rate increases?
- What is the idea of convergence coming out of the Solow model?

Solow residual and the idea of endogenous growth

- The Solow(neoclassical) model has limited capacity to explain the sources of growth in reality
- Only 50 percent of historical growth is accounted for adjustments in K and L (or k). The rest is clubbed together as the Solow residual i.e. not assigned to any explicit source of growth
- The understanding was that the Solow residual is a result of technological progress
- But this progress is not endogenous to the Solow model
- Also, the Solow model has no room to understand long-term growth (which is 0)
- Lastly, the thorny issue of convergence that the Solow model predicts