

Mahatma Gandhi Central University

ECON3020: Theory of Economic Growth

Course Code: ECON3020

Unit-iii, Growth Model with Exogenous Saving Rate

By

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Technological progress under Solow's model

- Solow treated technological progress as exogenously determined from his model. He assumed that let the rate of growth of technology be given by g .
- He further assumed that this increase in productivity is **labour-augmenting** and therefore the aggregate production function can be written as $Y = A K^\alpha (L e^{g t})^{1-\alpha}$. Such a technical progress is known as **Harrod-neutral** technical progress.
- Now the output can be thought of a function of two factors, capital and effective labour $Y = A K^\alpha (L e^{g t})^{1-\alpha}$.
- We can denote the output and capital per effective labour as y and k respectively.

Cont...

- The rate of growth of effective labour is given by rate of growth of technology and rate of growth of population,
- i.e. . The rest of the analysis for determining the steady state is same as earlier, except that now the reduction in capital is not just due to growth of labour but due to growth of effective labour.
- The figure 8 below shows a similar analysis to what we have done earlier.

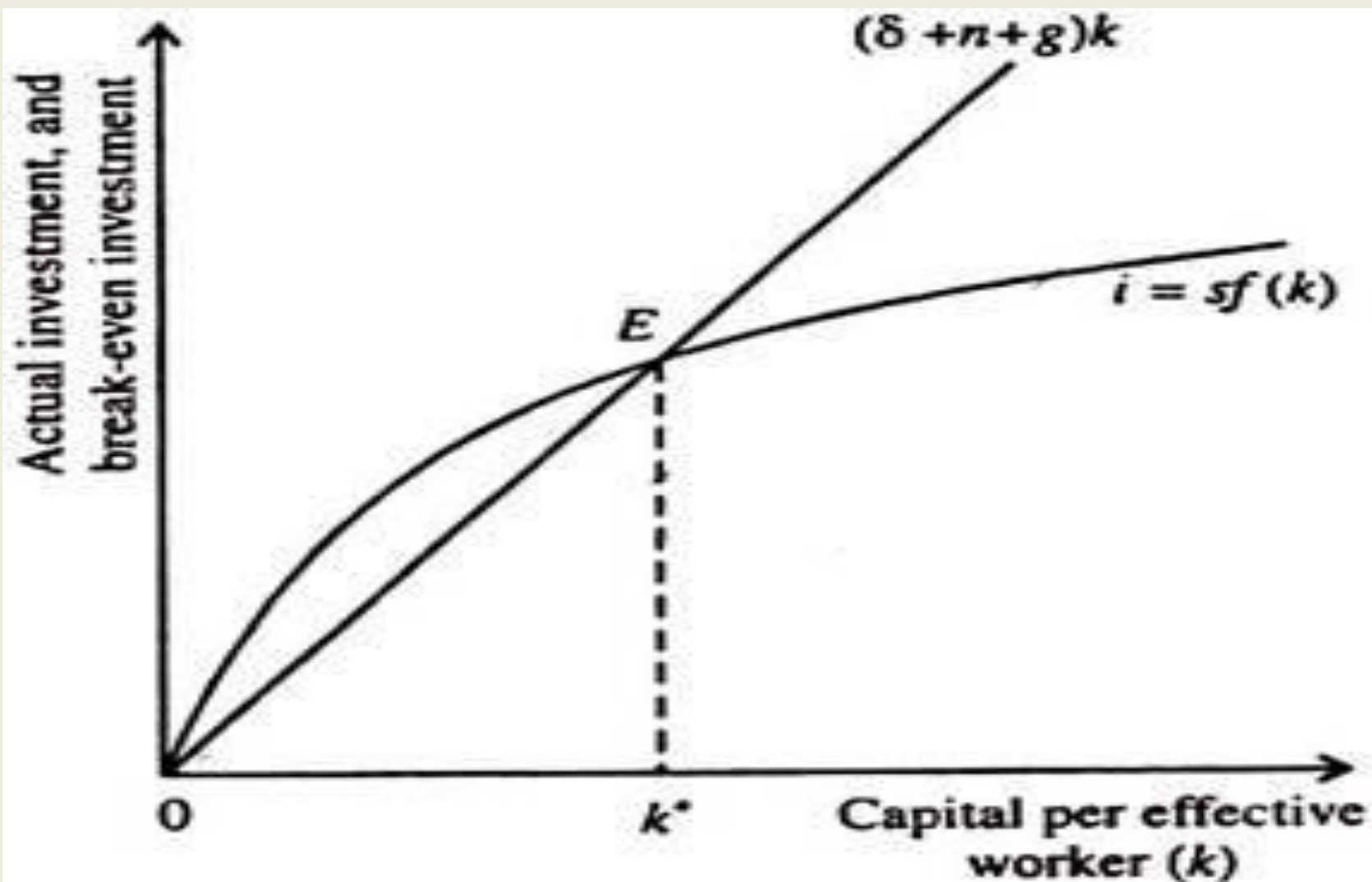


Fig. 4.13 Effect of Technological Progress in the Solow Model

- 1. In the steady state under technological progress, the capital per effective labour now remains constant at k^* and output per effective labour remains constant at y^* .
- 2. The output per unit labour however grows at the rate of exogenous technological progress g . This implies that according to Solow, the only source of sustainable growth in per capital output or income is the technological progress.
- 3. The difference in rates of technological progress will explain the persistent difference in the rate of growth of per capita output across economies.

Thank You.....