

exogenous to the standard production model (capital, labour and land as inputs). Without technological progress, per capita output does not rise. In the short run, an increase in the savings rate can cause per capita economic growth to increase. But because of diminishing returns to capital, in the long run it grows only at the rate of exogenously given technological progress. Therefore, government economic policies in the steady-state economic growth model only affect the growth rate when an economy is in transition from one steady state to another. Neoclassical growth theory has been used to analyze growth patterns across a wide group of developing and developed countries.

The neoclassical model essentially focuses on capital accumulation. By increasing savings and investment, a country can increase the amount of capital that it leaves to future workers. Therefore, this will result in an increase in productivity and income. Eventually, each generation saves just enough to replace the capital that it has depleted. At this point, income per capita can only grow as fast as the technology it has access to in order to improve, i.e., the "exogenous factor". This results in the conclusion that countries with similar levels of technology will converge to a given steady-state level. However, historical experience has shown a divergence of income per capita between countries, particularly between developing, newly industrialized and modern economies.

Furthermore, Freeman⁷ in a useful review article, argues that when it comes to formal neo-classical mathematical models of growth, the "black box" takes the form of a residual factor in an aggregate production function. This residual comprises both technical and institutional change. From Solow's original study on, most of the formal neoclassical models have shown that the residual apparently accounts for a greater part of growth than the simple accumulation of capital and labour force growth. In the last two years, work of the "growth accountants" like Young⁸ at MIT, has shown that this residual is perhaps not as large as once thought, but it still remains. Neoclassical theory cannot completely explain why the growth experience of many countries has shown not just accumulation of more inputs - capital and labour - but also rapid and sustained increases in the overall productivity of these inputs.

As the Solow type model's convergence was not noted empirically, and the

⁷ Chris Freeman, "Innovation and Growth", in eds., Mark Dodgson and Roy Rothwell, The Handbook of Industrial Innovation (Edward Elgar, Aldershot, 1994).

⁸ Alwyn Young, "Growth Without Scale Effects", NBER Working Paper No. 5211, August 1995.