

Dematerialization as a necessary condition for unbounded economic growth

This paper aims at providing a unifying reading to the economic literature on the environmental limits to growth since the 70s. The starting point is the question “are there limits to growth?”. It is firstly argued that such a question arises from two contrasting experiences, the economic growth in rich countries and the limits to growth observable in natural processes. To reconcile this puzzle means answering the question.

The economic literature on the issue shows, as well known, two phases. At the beginning (70s), because of the major focus on exhaustible resources, a narrow view of the environment was adopted. Then, because of an increased attention to its multiple functions, economists started to model the environment mostly as a (slowly!) renewable resource. After describing these different interpretations, the paper set out intuitive solutions to the puzzle.

The main analytical structures of the literature on the “environment-economic growth” issue are then analysed, first the Dasgupta-Solow-Stiglitz framework, then the endogenous growth archetypal models. The respective conditions for growth are outlined.

The comparison of those conditions with conditions suggested by intuition allows identifying a unifying interpretative element. The necessary condition for indefinite growth results to be in a progressive de-linking between matter and income. In other words, it is necessary for income to become increasingly dematerialised, where de-materialisation must occur globally, i.e. in absolute terms. What rich countries have experienced since now is some improvement in material efficiency (relative dematerialization) contrasted by an increasing total material use. Whether these economies will be able to invert this trend is an open question. Even an affirmative answer, however, would not solve the “limits to growth” puzzle, as this would require dematerialization strong and persistent enough to make the matter content of a unit of income approaching to zero. As a final comment, some doubts are raised on the general research strategy adopted by the reviewed literature.