Are economic goals and goals of environmental protection compatible ?

by Helmut Maier

correspondence address: Professor Dr. Helmut Maier, Statistics and Econometrics, Berlin School of Economics, Badensche Straße 50-51,D-10825 Berlin,Germany, Telephone: +49 30 85789 136, Fax: +49 30 85789 199, e-mail: oekonom@fhw-berlin.de

Abstract

The paper analyses interdependencies between economic goals and goals of environmental protection by means of input/output theory, and in case of compatibility of these goals, it gives hints to simulate impact of these interdependencies on base of existing input/output tables. First goal of the paper is to give an answer to the question whether there are solutions in form of a set of values for the production coefficients which satisfy economic goals as well as environmental ones, and to describe conditions for such solutions. Second goal is to give the proof that there exist solutions referring to an fictitious input/output table. Third goal is to outline the design of such a solution referring to an input/output table of the European Union, and its impact on political decision processes.

The theoretical approach is: Into a system of n sectors of economic activities, we introduce a sector in addition, called environmental sector. The economic function of this sector is to deal with polluted materials of the different sectors of the economy, in this way that its output can be used as an intermediate input in different sectors of this economy. As for the mathematical description, we note that the name as well as the function of this sector in addition are not important. Basic working questions are: Are goals of environmental protection compatible with the economic goal of growth of economy? And are they compatible with the economic goal of stability of prices of products of the present n sectors of economy? By means of linear disturbance theory, we look for implications on the system of the present n sectors, and we look for conditions of compatibility of economic goals and environmental ones, and this within a simplified and open-ended Leontief model.

Results of this approach are: There may exist certain paths to future development of an economy, indeed, which do not impair the present level of production output, and which do not raise the prices of present goods (and services). Using these paths, employment as well as total production output may be raised. But basic condition to get this kind of sustainable development is that the cost for primary inputs into the environmental sector (labor etc.) are covered by the revenues of the outputs for final use. This condition is equivalent to the condition that the revenues of advance deliveries (of the environmental sector to different sector) cover the cost of advance deliveries (from different sectors to the environmental sector). Under this condition, and in case of an economy with only few sectors, feasible solutions will be demonstrated, in terms of changes within the matrix of production coefficients. Hence the design of such solutions referring to the R25 input/output table of the European Union of 1990 will be outlined. In addition, a feasible

solution derived from a real input/output table gives political hints how to control and implement such a sustainable development within an economy. This will be outlined, too.