

On the preference constraint for sustainable development to be optimal

Abstract: This paper defines a sustainable development path as a balanced growth path with environmental conservation. In the framework of endogenous growth theory, it is known that a sustainable development path is optimal only if the following three conditions are satisfied: 1) the engine of economic growth is clean; 2) the assimilation capacity of the environment is high enough to endure the increasing environmental load with economic growth; and 3) the population is not so greedy in the sense that the elasticity of the marginal utility of consumption is greater than or equal to one. While all of these three conditions are intuitively plausible, there are distinctions between the first two and the last one: the former can be obtained by our endeavors, whereas the latter concerns preference that is endowed rather than obtained. We show that this preference constraint can be relaxed if the production technology satisfies the condition that the elasticity of transformation to the production factor and the environmental service, after appropriate monotone transformation, is greater than one.

Keywords: Sustainable development path, Endogenous growth model, Elasticity of the marginal utility, Elasticity of transformation

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