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# On the fiscal strategies of escaping poverty-environment traps towards sustainable growth

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## Abstract

We develop an overlapping generations (OLG) model with two intermediate inputs, clean and dirty, and one final output in order to consider the interplay between the environment, life expectancy, and capital accumulation, and to consider the possibilities of reallocating capital between the clean and dirty sectors to improve social welfare. We show that the multiple distinct steady states, (and even the continuum of steady state), may occur in a competitive economy. Hence, an economy may fall into a poverty-environment trap that is characterized by low environmental quality, low life expectancy, and therefore, low per capita physical capital, while the others may converge to the opposite steady state. The competitive steady states differ from the first-best steady state in the benevolent social planner's viewpoint not only because of imperfect altruism between generations in the competitive economy, but also because individuals cannot internalize the effects of their savings (capital accumulation) and capital allocation on environmental quality through producing dirty intermediate inputs, whereas the social planner can. So we propose fiscal strategies towards social planner's steady state. These fiscal strategies, which are combination of traditional Pigouvian taxes and capital income tax implemented for transition phase are quite new compared to the existing related literature. Although we focus on the transition phase, the proposed taxes are stationary. They include: (i) a set of tax and subsidy imposed on the production of dirty and clean intermediate inputs to improve environmental quality, and therefore, life expectancy and capital accumulation, in order to guarantee that an economy that is *locked in a poverty-environment trap* can escape such the stagnation; and (ii) a set of taxes (subsidies) imposed on the production of intermediate inputs and capital income in order to decentralize the transition to the first-best steady state as a competitive outcome.

**Keywords:** OLG economy, poverty-environment trap, intermediate sectors, fiscal policy.

**JEL Classification:** D62, E22, H21, H23, K32.

## 1 Introduction

We consider an OLG economy in which environmental quality is degraded by the production of dirty intermediate inputs. If the people in such an economy expect to live longer, they have incentive to save more for consumption when old. On one hand, higher savings foster economic growth through the capital accumulation channel, but on the other hand, degrade the environment through producing dirty intermediate inputs that negatively affect the longevity of the next generation, thus discouraging them to save. Therefore, as will be shown in our paper, depending on

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