Pollution Externalities and Corrective Taxes in a Dynamic Small Open Economy

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Abstract

This study examines the effects of environmental tax policies in a dynamic model of a polluted small open economy in which there are two sources of flow pollution, consumption and production, controlled by consumption and income taxes, and accumulated pollution affects a negative effect on household's utility. In a decentralized dynamic competitive equilibrium under exogenous tax rates, we show that whereas a permanent increase in each of the consumption and income taxes unambiguously reduce the steady-state stock of pollution, a temporary increase in these taxes may lead to more pollution in the long run, suggesting that more stringent environmental policy might be ineffective if the regulation is only temporary. We also derive the social optimal solution and examine the optimal tax paths to achieve the social optimum. If distaste and leisure effects are sufficiently strong, tax rates decreases along the optimal path as pollution increases over time, and if these effects are not so strong, the opposite occurs.

Keywords: Pollution externalities, Small open economy, Permanent and temporary environmental policies, Optimal tax paths

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