Trade, Capital Accumulation, and the Environment

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Abstract

To highlight the role of endogenous capital accumulation in shaping the interaction between trade and the environment, I develop a two-sector Ramsey model featuring agriculture sector impaired by pollution from both agriculture itself and manufacturing sector. Trade raises capital rental rate and encourages investment. Such scale effect necessarily leads to, under laissez faire, environmental degradation in the long run, even if the economy specializes in the relatively clean sector. The long-run specialization pattern depends upon parametrically determined pre-trade comparative advantage, which is revealed by comparing the world and the autarky steady-state relative prices. Welfare gains from trade is ambiguous. To achieve the social optimum, a dynamic version of the Pigouvian tax can be imposed, with lump-sum transfers of tax revenue to households. Under such optimal policy, trade does not necessarily harm the environment in the long run, and the long-run specialization pattern may also depend upon the initial condition.

Keywords: Capital accumulation; environmental degradation; pre-trade comparative advantage; dynamic Pigouvian tax