Long-Run Effect of Emissions Trading on Green R&D

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Abstract

In this paper, we examine the long-run effect of emissions trading on a firm's R&D investment in green technology. Emissions trading schemes, also known as cap-and-trade systems have become a key policy instrument in many environmental areas today. In a common wisdom, they are considered as the most efficient mechanisms to reduce industrial pollution at least costs, since in such systems, given two fundamental choices between *reducing* their own emissions and *buying* emission credits, firms are encouraged to take an effort that is in their own interests, so that firms that can easily reduce emissions will do so, while those for which it is harder buy credits. Does this view still hold in the long run? That is, do they encourage an efficient rate of technical progress, or do they deter firms' investments in green R&D? To address these issues, we consider a firm's R&D incentives for green technology in a two-period Cournot model of duopoly under a carbon emission market. We will analytically show that the long-term effect of emissions trading on green R&D interestingly varies according to the current level of market competition. To illustrate the point, the model is also simulated numerically.

Keywords: green R&D, emissions trading, cap-and-trade system, competition
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