Recycle Content Standard, Environmental R&D and Firm Competition

Honma, Satoshi *, Kyushu Sangyo University, Japan

Chang, Ming-Chung, Department of Risk Management, Kainan University, Taiwan

Abstract We analyze an oligopoly model with R&D for recycling. The model is essentially two-stage. First, firms invest on R&D to reduce recycling cost with or without cooperation for given recycling rate. Second, firms engage Cournot competition. Our theoretical results are as follows; (1) a virgin material tax policy decreases both of R&D expenditure and the equilibrium output. R&D subsidy increases both of R&D expenditure and the equilibrium output; (2) if environmental damage is relatively small (large), environmental R&D is under- (over-) investment under both duopoly case. Our numerical examples shows that target recycling rate and spillover are both lower or higher, cooperative R&D lead to higher welfare. In contrast, higher target and lower spillover, or vice versa, lead non-cooperative R&D lead to higher welfare.

* Corresponding author. Faculty of Economics, Kyushu Sangyo University 2-3-1 Matsukadai, Higashi-ku Fukuoka 813-8503, Japan. E-mail: honma@ip.kyusan-u.ac.jp; Tel: 092-673-5280.