

Recycling and illegal wastes: A role of Extended Producer Responsibility

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Our paper introduces illegal wastes into Gaskin-Swan-Martin(GSM) model. Researches on recycle systems in terms of the industrial organization are insufficient and there still remains a wide unexplored domain. The relation between new good markets and secondhand markets was studied livelily from the 1980s to the 1980s through the Aluminum Company of America (Alcoa) case of 1945 by Gaskin (1974), Swan(1980), Martin(1982). Gaskin-Swan-Martin(GSM) model are assumed that new goods are monopolized by a single firm and recycling firms are competitive. This assumption is quite realistic when we consider the illegal waste problem in the developed country because, comparing with competitive recycling firms, the monopolistic producer seldom throws away illegally because of its reputation. We compare the two models: the complete monopoly model and the incomplete monopoly model (Swan's model). The complete monopoly model is the model where the monopolistic producer is also monopoly in the secondhand market. On the other hand the incomplete monopoly model (Swan's model) is the model where the monopolistic producer does not enter the second hand market and recycling firms are competitive. Since under Extended producer responsibility monopolistic producer must dispose of used goods in any way, the complete monopoly model is one of the concrete forms of EPR. Since under the environmental slogan based on EPR producers must hold responsible for goods that it has produced before until they are disposed properly, it promotes the unification of production, disposal, and reuse or recycling and therefore the government admits the producers to be monopolistic to some degree in the recycling market as a temporary strategy. For example, in Japan producers of air-conditioner must collect more than 70 percent of their used goods. Since the reduction of illegal wastes is actually an urgent need, for the first step governments in many countries follow such a temporary strategy. However, we show in this paper whether such an acceptance of monopolizing reduces illegal wastes depends on circumstances. Moreover, one important thing to consider the proper social infrastructure of recycling is that such a system functions properly when producers make an effort to improve the production cost of new goods. During the rapid economic growth, illegal dumping was increasing partly because the process innovation was successful and enabled them to produce on a large scale at a low cost. It is highly desirable that producers improve the cost of production because it makes its price fall. However, at the same time it can increase illegal wastes. We design the social recycling system where such an effort of cost reduction by firms doesn't increase illegal wastes.