

Optimal privatization and environmental regulation in a differentiated mixed oligopoly

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The purpose of this paper is to analyze the effect of the privatization of the public sector on market equilibrium, environmental damage, and social welfare in a differentiated mixed oligopoly.

Fujiwara (2007) applied a quasi-linear utility function, which was also applied in Ottaviano, Tabuchi, and Thisse (2002), to a mixed oligopoly market and determined the number of firms endogenously in the long run. Naito and Ogawa (2009) analyzed the relationship between each environmental regulation and the privatization of the public firm and showed that direct environmental regulation is desirable. In this work, we construct a model that synthesizes the models of Fujiwara (2007) and Naito and Ogawa (2009) and analyze the relationship between the optimal privatization and environmental regulation in a differentiated mixed oligopoly market.

We analyze a mixed oligopoly that produces differentiated products, in which one public firm and n private firms produce these products and emit pollution during the production processes. Moreover, we consider three types of environmental regulation regimes and firm behavior, environmental damage, and the optimal privatization level of the public firm under each regime.

The main results of our analysis are as follows. Assuming that the government imposes direct environmental regulation on firms, neither full nationalization nor full privatization minimizes the environmental damage. Moreover, the privatization level to maximize social welfare is partial privatization. Partial privatization is optimal under the indirect environmental regulation, although the privatization of the public firm decreases the environmental damage.

References

- Fujiwara, K, 2007, "Partial privatization in a differentiated mixed oligopoly," *Journal of Economics*, Vol.92, 51-65.
- Naito, T and Ogawa, H., 2009, "Direct versus indirect environmental regulation in a partially privatized mixed duopoly," *Environmental Economics and Policy Studies*, Vol.10, 87-100.
- Ottaviano, G., Tabuchi, T., and Thisse, J.F., 2002, "Agglomeration and trade revisited," *International Economic Review*, Vol.43, 409-435.