

# A Game Theoretic Analysis on Transboundary Pollution Problem

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## Abstract

Some previous researches dealing with transboundary pollution problem suggested the side payment from the pollutee to the polluter as a way to achieve environmental cooperation. But when considering the matter from the viewpoint of game theoretic analysis, the above-mentioned suggestion had the limitation of not removing the prisoner's dilemma on transboundary pollution problem. In working out this limitation, this thesis presents the pollutee's strategy of entrance into the polluter's environmental market as another option.

This strategy gives improvement on both environmental quality and economic benefit compared to a no-action strategy by both parties. Further, there exist conditions that the strategy suggested in this thesis gives better benefit than the previously suggested solution. This benefit becomes bigger when there are wider difference in environmental technology level, more damage to the pollutee and less damage to the polluter.

The characteristics of this strategy are as follows: First, it is a Nash equilibrium. Second, it is a Pareto superior strategy. Third, its informational requirement is less than the previous strategy. And finally, it is an integrative solution to both environmental and economic problem.

Consequently, this strategy can contribute to solve the transboundary pollution problem by extending the feasible set of strategy of the governments involved. It is expected that this result could be easily applied to the case where pollution moves from developing to developed country.

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