

Regulation of Aquaculture Production

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Abstract: At a global level, seafood production from the aquaculture sector is rapidly increasing with an aggregated output of 105 million tons in 2015. However, aquaculture production generates a number of negative externalities including eutrophication of lakes and streams and the spread of diseases. Thus, management of aquaculture is necessary but the existing regulation has been shown to be economically inefficient. Therefore, the purpose of this paper is to study optimal regulation of aquaculture. It is well-known that the time between releasing and harvesting fish (the rotation period) is an important decision variable. We therefore use the rotation period as a regulatory variable and, by drawing on forest economics, we construct basic models for a social planner and a private aquaculture producer with infinite rotations. In the models, we introduce quality of fish as an explicit variable and we show that an optimal Pigovian tax would be equal to the marginal damage costs arising due to the externalities (defined in relation to time). We also discuss the implications for optimal regulation of a number of factors, such as the timing of the costs, the nature of the regulatory variable and the way the quality of fish is described.