

Port Emissions and Abatement Investments in an International Oligopoly: A Tale of Three Policies

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Abstract

This paper investigates three different port air emissions abatement measures—i) emission taxes, ii) subsidies on abatement technology investments and iii) emission standard—in a reciprocal trade model, where two firms (one firm located in each country) compete choosing the quantity to export and the quantity of domestic market. To export, firms need two ports located in each country and each country's government chooses a policy to regulate pollution produced by its port. We aim at investigating how shipping costs and the port ownership shape the incentives towards exports and abatement of both the port and government in each country. The analysis points out the relative effectiveness of alternative policies in achieving environmental sustainability and society's welfare objectives. Specifically, the environmental damage is minimized under emission standard regardless of any degree of port privatization. However, emission standards turn out to never dominate the other policies in the perspective of consumer surplus and overall domestic welfare. Depending on the degree of port privatization, either environmental taxes or abatement subsidies result as the domestic welfare maximizing policy, but only environmental taxes emerge as endogenous choice by governments.

Keywords: international oligopoly, port privatization, emission tax, abatement subsidy, environmental standard, welfare

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