International Environmental Agreement: 
a Dynamic Model of Emissions Reduction

Marta Biancardi  
Dept. of Economics, Mathematics and Statistics, University of Foggia  
Largo Papa Giovanni Paolo II, 71100 Foggia, Italy  
e-mail: m.biancardi@unifg.it

Andrea Di Liddo  
Dept. of Economics, Mathematics and Statistics, University of Foggia  
Largo Papa Giovanni Paolo II, 71100 Foggia, Italy  
e-mail: a.diliddo@unifg.it

Abstract

We model an International Environmental Agreement as a two stages game: during the first stage each country decides whether or not to join the agreement while, in the second stage, the quantity of emissions reduction is chosen.  
Players determine their abatement levels in a dynamic setting, given the dynamics of pollution stock and the strategies of other countries.  
Players may act cooperatively, building coalitions and acting according to the interest of the coalition, or they make their choices taking care of their individual interest only. Countries can behave myopically or in a farsighted way. As a consequence, the size of stable coalition can completely change.  
A continuous time framework is chosen in the present paper and consequently the problem is studied by a differential game.