

The Viability of Collusive Arrangements

Hans Carlsson and Håkan Holm

Department of Economics

University of Lund

14 September 2005

Abstract: We consider a collusive arrangement as an agreement by the players of a game to restrict their choices to certain subsets of their strategy sets. A (collusive) *scheme* is the Cartesian product of such strategy subsets. We require schemes to be *closed under sequential rationality*. Using this solution concept, we apply the global game approach (Carlsson and van Damme, 1993) to the infinitely repeated Prisoners' Dilemma (IRPD). After a preliminary stage, where players are assumed to agree on a collusive scheme, Nature selects a discount factor δ . Each player makes a slightly noisy, private observation of δ and then chooses a strategy for the IRPD.

For a given scheme we look for the smallest δ at which collusive behavior is upheld. This critical discount factor is never smaller and typically larger than the traditional criterion provided by the smallest discount factor for which the collusive strategies constitute a subgame perfect equilibrium of the unperturbed IRPD. We show that a scheme based on the *Penance* strategy (the cheater punishes himself in the next period) outperforms a scheme based on the *Grim* (trigger) strategy whenever the Prisoners' Dilemma stage game is characterized by strategic complements.