Abstract

My dissertation contains three individual chapters. Chapters 1 and 2 are in the same area of the theory of lattice games, and they establish new techniques for characterizing useful properties of games which allow for both players with strategic complements and players with strategic substitutes (unlike games with strategic complements, or games with strategic substitutes). Chapter 3 is an application which makes use of oligopoly techniques to introduce the notion of smuggling into the setting of an international trade model. This chapter bridges the theoretical and the applied by embodying strategic interactions, between competing firms as well as between rival nations, in the same manner as is addressed in chapters 1 and 2.

Chapter 1, "A non-robustness in the order structure of the equilibrium set in lattice games", is joint work with Professor Tarun Sabarwal. We demonstrate the order and lattice structure of the equilibrium set in games with strategic complements do not survive a minimal introduction of strategic substitutes: more generally, in a lattice game, if either (1) just one player has strict strategic complements and another player has strict strategic substitutes, or (2) just one player has strict strategic substitutes and has singleton-valued best-responses, then without any restrictions on the strategic interaction among the other players, no two equilibria are comparable. This conclusion provides the first insight into a more general class of games, and utilizes techniques which are simpler and more intuitive than those typically used in games with strategic complements or games with strategic substitutes.

In **Chapter 2**, "Monotone Comparative Statics for Parametrized Lattice Games", I characterize conditions under which equilibria are nondecreasing and increasing with an increase in parameter, within the setting of a more general class of parametrized lattice games which allows for the presence of both strategic complements and strategic substitutes simultaneously (as in Chapter 1). The results are demonstrated for 2-player and more-than-2-player games, allow for strategy spaces which can be linearly ordered or more general lattices, and allow for best responses to be either functions or correspondences.

Chapter 3, "Smuggling in international markets", is less directly related to the first two chapters. Using the model of Haufler and Wooton (2010) as a benchmark, I give the implications of introducing the decision of internationally competing firms to smuggle output across the border. Smuggling avoids the cost of legitimate exporting, which may include a tariff, transportation costs, or transaction costs associated with passing customs; however, smuggling a costly endeavor, both in monetary terms and in terms of potential criminal penalties. The model demonstrates the important role of differences in smuggling costs across nations, since it may be attractive to a firm to pursue less costly smuggling activity. To this end, I show the impact of introducing potential smuggling on the variables of interest in the model, which include firms' location decisions, optimal levels of taxation, and welfare.