A Brief Introduction to the Basics of Game Theory
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I provide a (very) brief introduction to game theory. I have developed these notes to provide quick access to some of the basics of game theory; mainly as an aid for students in courses in which I assumed familiarity with game theory but did not require it as a prerequisite. Of course, the material discussed here is only the proverbial tip of the iceberg, and there are many sources that offer much more complete treatments of the subject.[1] Here, I only cover a few of the most fundamental concepts, and provide just enough discussion to get the ideas across without discussing many issues associated with the concepts and approaches. Fuller coverage is available through a free on-line course that can be found via my website: http://www.stanford.edu/∼jacksonm/

The basic elements of performing a noncooperative [2] game-theoretic analysis are (1) framing the situation in terms of the actions available to players and their payoffs as a function of actions, and (2) using various equilibrium notions to make either descriptive or

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[1] For graduate-level treatments, see Roger Myerson's (1991) Game Theory: Analysis of Conflict, Cambridge, Mass.: Harvard University Press; Ken Binmore's (1992) Fun and Games, Lexington, Mass.: D.C. Heath; Drew Fudenberg and Jean Tirole's (1993) Game Theory, Cambridge, Mass.: MIT Press; and Martin Osborne and Ariel Rubinstein's (1994) A Course in Game Theory, Cambridge, Mass.: MIT Press. There are also abbreviated texts offering a quick tour of game theory, such as Kevin Leyton-Brown and Yoav Shoham's (2008) Essentials of Game Theory, Morgan and Claypool Publishers. For broader readings and undergraduate level texts, see R. Duncan Luce and Howard Raiffa (1959) Games and Decisions: Introduction and Critical Survey; Robert Gibbons (1992) Game Theory for Applied Economists; Colin F. Camerer (2003) Behavioral Game Theory: Experiments in Strategic Interaction; Martin J. Osborne (2003) An Introduction to Game Theory; Joel Watson (2007) Strategy: An Introduction to Game Theory; Avinash K. Dixit and Barry J. Nalebuff (2010) The Art of Strategy: A Game Theorist's Guide to Success in Business and Life; Joseph E. Harrington, Jr. (2010) Games, Strategies, and Decision Making, Worth Publishing.

[2] "Noncooperative game theory" refers to models in which each players are assumed to behave selfishly and their behaviors are directly modeled. "Cooperative game theory," which I do not cover here, generally refers to more abstract and axiomatic analyses of bargains or behaviors that players might reach, without explicitly modeling the processes. The name "cooperative" derives in part from the fact that the analyses often (but not always) incorporate coalitional considerations, with important early analyses appearing in John von Neumann and Oskar Morgenstern's 1944 foundational book "Theory of Games and Economic Behavior."