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Steven J. Brams* (steven.brams@nyu.edu), Dept. of Politics, New York University, 19 West 4th St., 2nd Fl., New York, NY 10012, and **D. Marc Kilgour** (mkilgour@wlu.ca), Dept. of Mathematics, Wilfrid Laurier University, Waterloo, Ontario N2L 3C5, Canada. *Inducible Games: Using Tit-for-Tat to Stabilize Outcomes*. Preliminary report.

Assume it is known that one player in a 2x2 game can detect the strategy choice of its opponent with some probability before play commences. We formulate conditions under which the detector can, by credibly committing to a strategy of probabilistic tit-for-tat (based on its imperfect detector), induce an outcome favorable to itself. A non-Nash, Pareto-optimal outcome is inducible—that is, it can be stabilized via probabilistic tit-for-tat—in 20 of the 57 distinct 2x2 strict ordinal games without a mutually best outcome (35 percent). Sometimes the inducement is “weak,” but more often it is “strong.” As a case study, we consider the current conflict between Israel and Iran over Iran’s possible development of nuclear weapons and show that Israel’s credible commitment to probabilistic tit-for-tat can, with sufficiently accurate intelligence, induce a cooperative choice by Iran in one but not the other of two plausible games that model this conflict. (Received September 16, 2012)