

ABSTRACT

Divide the Dollar (DD) is a game in which two players independently propose a division of a dollar into cents, with each demanding a certain amount. If the sum of their demands does not exceed 100, then each receives what it bids; otherwise, both receive nothing. This game has multiple Nash equilibria, including the egalitarian division of (50, 50), but this division is not compelling except for its symmetry and presumed fairness.

Alterations in the rules of DD are proposed that give the players noncooperative reasons for choosing the egalitarian equilibrium. DD1 adds a second stage to DD, in which each player can either affirm its first-stage bid or usurp the other player's first-stage bid. An initial bid of 50 by either player makes 50 a dominant second-stage bid, and it is the only bid that does so.

This solution, however, does not work if there are more than two players, whereas DD2, which involves successively subtracting off the lowest remaining bid and awarding it to the player who makes it, does. But this procedure, in which the egalitarian equilibrium is found through the iterative elimination of weakly dominated strategies, requires many iterations. This number is greatly reduced in DD3, which combines in one procedure the second-stage bids of DD1 and the subtracting off of lowest bids of DD2.

The three procedures are compared on the basis of the rectifiability of their strategies and the computability of their solutions. Each illustrates how changing either the information structure or the payoff function of DD can facilitate rational calculations by the players. In particular, the revisions of DD enable the players to avoid DD's indeterminacy and solve the coordination problem. Above all, they render the selection of the egalitarian equilibrium not only rational but also implementable by only one player.