ABSTRACT

Each of two players independently draws a number at random from [0, 1]. After observing its number, each player can then choose to offer or not offer to exchange its number for the other player's number. A player's payoff is the number it holds after the players have made their choices and a possible exchange has occurred. Four different games, which assume different conditions for an exchange, are analyzed:

1. AND. Both players must offer to exchange for a trade to occur.
2. OR. One player's offer is sufficient for a trade to occur.
3. MIX. Both players must offer for a trade to occur with certainty; if only one player offers, a trade occurs with probability p.
4. PLUS. Same as AND, except the payoff to the loser if a trade occurs is a number between the lower and the higher numbers drawn.

Games (1) - (3) are constant-sum, whereas game (4) is nonconstant-sum. The Nash equilibria in each of these games are:

1. Neither player ever offers, no matter now low its number is.
2. Both players always offer, no matter how high their numbers are.
3. The players select some common threshold--below which they always offer--that is monotonically increasing in p.
4. Neither player ever offers, no matter how low its number is.

The equilibrium in (4) highlights a possible conflict between the criterion of stability and the criterion of maximization of expected value, which calls for the players to offer under certain conditions. On the other hand, if PLUS is altered so that the players choose each other's thresholds, both will always offer. The unraveling downward in AND and PLUS, upward in OR and the alteration of PLUS, and the intermediate results in MIX are discussed.