ABSTRACT

Final-offer arbitration (FOA) is extended to allow participants to update their incomplete information--described by a probability distribution, which is common knowledge--about the position of an arbitrator. Under FOA, the arbitrator is restricted to choosing one or the other of the players' so-called final offers; the winner is the player whose offer is closer to the arbitrator's position. Sequential arbitration procedures extend FOA to allow the players, after simultaneously making their initial bids, to make new offers, starting with the player who loses initially (i.e., is farther from the arbitrator's position) and strictly alternating thereafter.

Thus, under two-stage FOA (FOA2), the initial loser is allowed to respond with a counteroffer. If closer to the arbitrator's position, the loser's counteroffer may be selected, or averaged with the original winner's offer, to obtain the settlement, and the game ends. On the other hand, if the initial winner's original offer remains closer to the arbitrator's position than the counteroffer, then the original offer becomes the settlement.

FOA2 is generalized to procedures in which the sequence of offers and counteroffers is not limited to two stages. The number of stages may be fixed, or the alternating offers may continue indefinitely until one side loses twice in a row. These games all have unique optimal strategies corresponding to a subgame-perfect Nash equilibrium. The optimal offers at each stage are found iteratively for the case in which the players' incomplete information is described by a uniform distribution. The convergence and other properties of these sequential arbitration procedures are compared with those of different nonsequential arbitration procedures.

(ARBITRATION; GAME THEORY; INCOMPLETE INFORMATION; BARGAINING)