

The War of Attrition

A prize is worth \$10. Two players each period must decide whether to maintain a claim to the prize or let the other player have it. It costs \$1 to stay in the game. The game continues until one player claims the prize or both drop out.

Pure strategy equilibrium: one player takes the prize in every period. The other player gives in in every period.

Symmetric mixed strategy equilibrium: let p be the probability of continuing. Let V be the expected utility from continuing.

In equilibrium each player indifferent between claiming prize or give in.

Expected payoff from claiming the prize today:

$$V = -1 + (1 - p)10 + pV \text{ so}$$

$$V = -\frac{1}{1 - p} + 10$$

Expected payoff from giving in is 0, so indifference means $V = 0$. Solve to find $p = .9$