Game Theory

1 Game of Evens and Odds

The game of even's and odds is a two player game, where one player is the *row player* and the other player is the *column player*. In this game, we can discuss the concept of a *payoff matrix*, which can be used to model the game.

Consider the matrix

	Even	Odd
Even	\$1	−\$1
Odd	−\$1	\$1

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This matrix is representative of a mixed strategy. Both the row and column players have changed their choices between rounds.

Imagine that we are dealing with two competing restaurants. On any given day, restaurant A, the row player, can offer a discount to try and get more customers than restaurant B. In response, B will also offer a discount. We can consider a matrix that is representative of this:

	5%	30%
10%	\$5000	−\$8000
20%	−\$3000	\$1000

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The −\$8000 causes the row player to consider a *max*→*min* principal. Using this strategy, B will try to keep the best minimum, which is the bottom row (\$1000). A, on the other hand wants to use a *min*→*max* principal, so A will stick to the second column.