ECO316: Applied Game Theory

Problem Set #5 Solutions

1. **'Burn the Ships:'**

   (a) See last page.

   (b) The expected value of fighting is:

   $$2P(Win) - 2(1 - P(Win))$$

   which is greater than 0 (the value of retreating) when $P(Win) > 1/2$. Hence, they retreat against strong defenders for $q < 1/2$ and weak defenders for $q < 1/4$.

   (c) For defenders, the expected value of fighting is (Note: $P(Win)$ is the probability the attackers win, as in part b):

   $$-2P(Win) + 2(1 - P(Win))$$

   This is greater than 1 (the value of accommodating) when $P(Win) < 1/4$. Hence, defenders will fight if strong for $q < 1/4$ and if weak for $q < 1/8$.