

1. Land owners Victoria and Wantda own adjacent plots along Winding River, and the plots may sometimes be flooded. Each can choose to build a levee or not. The cost of building a levee is 1. If both build the levee then they are protected from floods, but if either of them do not build the levee they will suffer flood damage costing 5.

(a) Write down the game matrix and show that it has two equilibria, one of which is Pareto optimal.

(b) The government proposes a flood insurance program that will pay for all flood losses. The charge for the insurance is 1 if the landowner builds, 3 if the land owner does not build, but the other does, and 4 if neither land owner builds. Write down the new game matrix assuming both parties are insured. What does effect does the insurance program have?

(c) Now create a game tree in which the two players start by have an option of insuring or not. Find the equilibrium. Is it efficient? Will the insurance fund cover its costs?