A Model of Fortification using Bayesian Persuasion

We analyze a model of communication between a Sender and Receivers using Bayesian Persuasion in the context of fortification. The government acts as a Sender and wants firms (the Receivers) with critical infrastructure to bolster their defenses. The firms benefit from bolstering only if an attack is imminent. Bolstering does not offer any benefits, otherwise. Each firm is also assumed to have a different expected return and/or costs of fortification but have identical priors about the probability of an attack. We assume that the government receives noisy intelligence about whether an attack is imminent and searches for an optimal persuasion rule that maximizes the number of firms that fortify under different types of intelligence failures. We then extend the analysis to admit firms having heterogenous priors. Finally, we derive the upper bounds for the cost of intelligence in each scenario and Pareto-rank equilibria obtained under different types of intelligence failure.