A model of Fortification using Bayesian Persuasion

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Abstract

In this paper we analyze a model of communication between a Sender and multiple Receivers using Bayesian Persuasion. The government acts as a Sender and wants firms (the Receivers) with critical infrastructure to bolster their defenses. The firms may benefit from bolstering only if the state of the world is aggressive. Bolstering does not offer any benefits, otherwise. Each firm is also assumed to have a different prior so they interpretation of the governments signals are different. The government is risk averse and wants the firms to bolster their defense regardless of the state. In this context, we search for the existence and nature of signals that the government can send to persuade firms to undertake investments to protect critical infrastructure. Further, we explore the probability of an attack and its consequent welfare implication under three different scenarios a) when the government sends uninformative signals b) when it sends fully informative signals and finally c) when it sends optimally informative signals.

KEY WORDS: Fortification, Signals, Bayesian Persuasion, Informativeness.

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