Information gatekeepers: theory and experimental evidence

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Abstract We consider a model where two adversaries can spend resources in acquiring public information about the unknown state of the world in order to influence the choice of a decision maker. We characterize the sampling strategies of the adversaries in the equilibrium of the game. We show that as the cost of information acquisition for one adversary increases, that person collects less evidence whereas the other adversary collects more evidence. We then test the results in a controlled laboratory setting. The behavior of subjects is close to the theoretical predictions. Mistakes are relatively

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They occur in both directions, with a higher rate of over-sampling (39%) than under-sampling (8%). The main difference with the theory is the smooth decline in sampling around the theoretical equilibrium. Comparative statics are also consistent with the theory, with adversaries sampling more when their own cost is low and when the other adversary’s cost is high. Finally, there is little evidence of learning over the 40 matches of the experiment.

**Keywords** Experimental design · Search · Information acquisition · Adversarial system

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## 1 Motivation

The literature on the economics of information has devoted considerable effort to understand the strategic use of private information by agents in the economy. However, less is known about the strategic collection of information, yet economic examples of this situation abound. For example, lobbies and special interest groups spend substantial resources in collecting and disseminating evidence that supports their views. The US legal system is based on a similar advocacy principle: Prosecutor and defense attorney have opposite objectives, and they each search and provide evidence on a given case in an attempt to tilt the outcome toward their preferred alternative. Finally, firms reveal through advertising the characteristics of their products. This information affects the fit between the product and the preferences of consumers. In this paper, we build a theoretical model to understand the incentives of individuals to collect information in strategic contexts. We then test in a controlled laboratory setting whether subjects play according to the predictions of the theory.

We consider a simple theoretical framework where two agents with opposite objectives (the adversaries) can acquire costly evidence. When both adversaries choose to stop the acquisition of information, a third agent (the decision maker) makes a binary choice. Formally, there are two possible events. Nature draws one event from a common prior distribution. The adversaries can then acquire signals that are imperfectly correlated with the true event. Information affects the belief about the true event and is public, in the sense that all the news collected by one adversary are automatically shared with the other adversary and the decision maker. The mapping between the information and the decision maker’s choice is deterministic and known: It favors the interests of one adversary if the belief about the relative likelihood of states is below a certain threshold, and it favors the interests of the other adversary if the belief is above that threshold.

The main reason to assume public information is simplicity. Indeed, with private acquisition of information, the incentives to acquire and transmit information are interrelated. This complicates both the theoretical and the experimental analyses. Since the existing literature has extensively studied the transmission of information, we choose to focus instead on the acquisition of information. Also, for some applications such as product advertising, one can argue that firms and consumers learn concurrently the