

Does it Pay to Know More in Games of Incomplete Information?

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There are various real-life scenarios that can be characterized by their participants having different amount of information about the underlying nature of the interaction they are actually involved in. Historically, the most popular one in economics is that of complete knowledge shared by all participants. An alternative, more recent approach is to study scenarios where all participants are completely ignorant. This paper covers a middle ground between the two by considering an asymmetric scenario where one participant is fully aware of the underlying nature of the interaction and the other is completely deprived of that information and, among other things, has to learn it on the go.

Essentially, the paper asks an empirical question of what difference additional one-sided information makes in a strategic two-agent environment relative to the baseline case of both agents being completely ignorant. Such scenarios are modeled in the form of repeated 2x2 plays in the stylized Prisoner's Dilemma, Stag Hunt, and Battle of Sexes games that can be thought of as different realizations of a finitely-lived two-agent economy that capture issues of cooperation and symmetric and asymmetric coordination. The research focus is on the individual and joint welfare attainments; and controlling for both the amount of information available to the players and the behavioral model of the opponent allows for distinct treatments of performances of informed and uninformed subjects.

The main findings are as follows:

- the informed agent need not benefit from his informational advantage while the uninformed need not be worse off;
- asymmetric information can be used as an equilibrium selection device in games with a multiple of such;
- asymmetric scenarios do not improve much in terms of welfare over the symmetric incomplete information baseline;
- uninformed subjects can easily be exploited by a purposeful opponent;
- subjects tend to perform worse than simplistic benchmark strategies.

The paper concludes that in scenarios with asymmetric information: (i) considerable portion of the effort by the informed agent ends up being crowded out by learning of the uninformed; and (ii) ignorance can be bliss as such information has to be put to the proper use to yield positive results from the social welfare maximization perspective. Therefore, in situations where it is not feasible to provide information about the underlying nature of the interaction to all participants, providing it to just one of them doesn't always pay and may even have adverse welfare effects.

Keywords:

learning, asymmetric information, experiments, simulations