Games and Economic Behavior 102 (2017) 240–254

Contents lists available at ScienceDirect

Games and Economic Behavior

www.elsevier.com/locate/geb

Multi-period competitive cheap talk with highly biased experts ☆

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ARTICLE INFO

Article history:
Received 10 June 2016
Available online 11 January 2017

JEL classification:
D23
D74
D82

Keywords:
Cheap talk
Multiple senders
Competition

ABSTRACT

Each of n experts communicates with a principal about the privately observed quality of the expert's own project via cheap talk, with new independently drawn projects available each period until the principal adopts one. Even when experts are highly biased in that they only receive a positive payoff if their own project is selected, we show that informative equilibria may exist, characterize a large class of stationary equilibria, and find the Pareto dominant symmetric equilibrium. Experts face a tradeoff between inducing acceptance now versus waiting for a better project should the game continue. When the future is more highly valued experts send more informative messages, increasing the average quality of an adopted project and resulting in a Pareto improvement, while communication is harmed and payoffs can decline when there is more competition between experts.

1. Introduction

A decision maker often consults many experts over time before taking an action. For example, consider the division managers of a company who report to the CEO about the profitability of projects available to them. The CEO has enough resources to fund some, but not all, projects and cannot directly observe their quality, while each division's manager is privately informed about his own best project. The CEO seeks to select only the best projects, whereas each manager is only concerned with his own division's profits and so statically wants his project adopted even if it has low profitability. However, better projects may arrive over time, which will influence the desirability of adopting projects currently available.

In this paper we ask whether the decision maker (the CEO) in such a setting can benefit from the unverifiable reports of highly biased experts (each division manager) when making an adoption decision, where the projects are independent across experts and time. The defining characteristics of this motivating example are as follows. Each of n experts simultaneously report their project's type using cheap talk to a decision maker (DM). The DM then either adopts one of the projects, terminating the game, or chooses against adopting any of them, in which case the players proceed to the next period where past projects are lost but new independent draws are available. In each period an expert observes only his own type, not that of the other experts, and receives a payoff equal to his project's type if it is adopted, but obtains no benefit when a competing expert's project is adopted. The DM's payoff equals the adopted project's type. Thus each expert competes with the others for the adoption of his project over an indefinite time horizon.

☆ For helpful comments I thank Michael Caputo, Tomer Hamami, Rick Harbaugh, Dmitry Lubensky, Harry Paarsch, two anonymous referees and seminar participants at the University of Central Florida and the Fall 2016 Midwest Economic Theory Conference. For research assistance I thank Erik Prince. All remaining errors are my own.

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http://dx.doi.org/10.1016/j.geb.2017.01.003
0899-8256/

Examples of experts competing in this manner can be found in many settings. Consider lobbyists who seek to convince the chairman of a government budget committee to spend on their own favored programs. One lobbyist proposes an educational intervention while the other an environmental one, and each is informed of his own policy's effectiveness but not that of the other. The chairman only has resources sufficient to fund one policy but may also adopt neither, deferring the decision to next year when additional proposals will be available. Another example is given in Li et al. (2016) in which an economics department has one open position to be filled by either a micro- or macroeconomist. The search committees can determine the quality of the candidate in their own field but not the other, and each prefers a hire in its own field. The department chair is a labor economist who prefers to hire the best candidate irrespective of the field but cannot observe either candidate's quality. In our setting the chair may also refrain from hiring anyone now and wait for next year's applicant pool.

This paper explores how the existence of future periods and competition between experts affects communication in the current period, and we show the two are intimately related. For example, it can easily be seen that when experts vie for their project to be adopted in a one-period model only a babbling equilibrium will exist: each expert wants his project adopted regardless of the state and has only this period to convince the DM to do so. One way to avoid this outcome is to change the experts' utility functions and in fact Li et al. (2016) show that in a static model with two experts informative equilibria exist if the experts have a low enough Crawford and Sobel (1982) style additive or multiplicative bias. When the stage game is repeated with new projects realized each period it is no longer clear that babbling must ensue in our model since each expert has a continuation value and so might not attempt to induce acceptance of low types. However, future periods are valued only if they are reached and so more competing experts tend to make informative communication harder to support.

In order to disentangle the effects of future periods from competition between experts on the current period's outcomes, we first consider a game between a *single* expert and a DM where incentives are aligned except for an outside option that provides a benefit to the DM but not the expert. This setting closely resembles Che et al. (2013) static model in which the expert observes the value of finitely many projects and recommends one by use of comparative cheap talk. Our expert's recommendation can similarly be viewed as a comparison between the value of the single project currently available with the value of projects that might be realized in the future, the crucial difference being that in our model the realization of future projects is not yet known to the expert. We show that even when an informative equilibrium does not exist in a one-period model, the addition of future periods can allow for meaningful first-period communication because both the expert and DM benefit from rejecting states below a threshold value since better outcomes are likely next period. When the future is discounted less, the continuation value from the game increases, expanding the parameter values over which informative communication can occur.

The intuition that having future periods improves communication in that only higher quality projects are recommended remains when there are two or more experts but now an additional factor is at play. Each expert is concerned that if he divulges information leading to rejection of his own project a competitor's project may be selected now and the game will terminate. For this reason competing experts put more weight on getting a project approved now than waiting for a better choice, and thus they recommend adoption more often. In turn, the DM infers a lower average quality for recommended projects and so rejects for a larger range of his outside option, making an informative equilibrium harder to sustain. Nonetheless, the basic structure of the equilibrium remains unchanged under competition: a threshold exists below which an expert prefers to induce rejection because continuation of the game has greater value. Loosely speaking, an equilibrium exists when projects have a high chance of low outcomes so that an expert does not fear being preempted by competitors, and yet a high expected value so that arriving at the next period is enticing enough. For states above the threshold, each expert prefers immediate acceptance and therefore wishes to induce as high a posterior as possible in order to be selected over competing experts. This implies credible distinctions between states above the threshold cannot be made and thus these states must be pooled.

Having shown that equilibria will entail the use of a threshold we establish that any equilibrium in which each expert's message is not ignored is symmetric. However, this symmetric threshold is too low in that there is a higher threshold that would constitute a Pareto improvement. We use this result to select a symmetric equilibrium and interpret comparative statics on the intensity of competition and value of future periods. We show that as the future is discounted less each expert's equilibrium threshold increases, which allows for informative communication for a larger range of parameter values and implies a conditionally higher project quality, improving payoffs for all. Increasing the intensity of competition has the opposite effect of lowering the equilibrium threshold and thus harming communication, which tends to lower the DM's payoff by causing a lower quality project to be adopted. However, consulting an additional expert has the offsetting effect of more quickly generating a successful project since it is more likely that at least one expert's project exceeds the threshold. We establish when the former communication effect dominates the latter time effect, in which case the DM prefers to consult a single expert, and identify asymmetric equilibria in which this can occur.

That consulting a single expert may be best for the DM contrasts with much of the multiple-sender literature (e.g., Battaglini, 2002) and owes to the experts' knowledge of just one dimension of the state. One other such exception is found in Li (2016), where a tradeoff between time and project quality is also present. In Li's model two experts compete over time to have their own project implemented, though unlike in the present paper they do internalize some benefit if the other's project is selected. Only one expert receives a project and makes a recommendation in each period, and the DM commits to consulting the same expert he consulted last period with probability p. In addition, an expert only receives a draw from