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The consequences of endogenizing information for the performance of a sequential decision procedure☆

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Abstract

We analyse the implications of endogenizing information collection and reputational concerns for the performance of a sequential decision structure. In this model, two agents decide in a sequence whether to implement a public project. The cost of gathering information is private. We derive two results. First, endogenizing information replaces the herding problem with a free-rider problem. Second, endogenizing information aggravates the distortionary effect of reputational concerns.

JEL classification: D72; D82

Keywords: Reputation; Delegation; Herding; Free-riding; Information collection

1. Introduction

In the last three decades, several studies have appeared on the relationship between the various ways decisions are made in organizations on the one hand and the performance of organizations on the other hand. A seminal paper by Sah and Stiglitz (1986) studied situations in which individuals have to screen projects.[1] In their article, the way the screening process is organized is important

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[1] Related papers include Sah and Stiglitz (1988), Young (1988), Ladha (1992), Koh (1992), Ben-Yasar and Nitzan (1997), Gehrig et al. (2000), Visser (2000). Other seminal contributions include Marschak and Radner (1972), Keren and Levhari (1983).

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for two reasons. First, individuals make errors of judgment. The implication of this aspect is that it is not always optimal to delegate the screening decision to one individual. Second, there are costs of acquiring and communicating information. The more individuals involved in the screening process, the higher the costs are.

It is not very surprising that in a Sah and Stiglitz setting, sequential decision procedures are quite attractive. To understand why, consider an organizational unit responsible for the screening of project proposals that the organization receives. One could think of, say, drafts of books submitted for publication with a publisher, music demos sent to a record company, or a request for a loan filed with a bank. Suppose the unit is made up of two persons. The expected benefits are negative so that implementation of the project requires that both individuals accept the project. Suppose a sequential decision procedure in which the project is first evaluated by one person. If this person accepts, then the project is forwarded to the second person who makes the final decision. If the first person rejects, then the project is discarded.[2] Clearly, compared to a situation in which two persons simultaneously evaluate projects, the sequential decision procedure saves on evaluation costs. If the first person rejects the projects, the second person does not have to evaluate the project. Compared to a situation in which the decision is made by a single individual, the sequential decision procedure has the advantage that some errors of judgment of the first person can be corrected by the second person.

Without doubt, the literature building on Sah and Stiglitz has yielded many insights into the pros and cons of alternative decision procedures. However, a main drawback is that it ignores the effect of the internal structure of an organization on its members' incentives to acquire information.

In this paper, we examine the performance of a standard two-step sequential decision procedure in a situation in which the individuals participating do not automatically behave in line with the interest of the organization. Our model differs from that of Sah and Stiglitz in two important aspects. First, we endogenize the process of opinion formation or information acquisition.[3] To see the relevance of this deviation, consider the examples of the selection processes given above. Evaluating the merits of a book or a demo or the risks associated with a potential borrower takes time and effort. Moreover, whether effort is exerted is a matter of choice. Each individual has to decide whether or not to collect information. Given that in Sah and Stiglitz the cost of information collection plays an essential role, endogenizing the acquisition of information seems to be a natural extension of their model.

The second deviation is that we assume that apart from caring about the project payoff, individuals are concerned with their reputation as decision makers. Arguably, one of the key assets of a publisher, a record company, or a bank is its ability to separate the wheat from the chaff. It is, therefore, likely that people who are successful at identifying good proposals are worth more to the organization and are, therefore, more likely to be kept and promoted. As a consequence, an employee evaluating the quality of a proposal is likely to care about his perceived screening ability. We assume that there are two types of employees, smart and dumb ones. Smart employees are more likely to make correct decisions than dumb employees. The reputation of an individual is defined as the (posterior) probability that he is smart.

We derive two results. First, if reputational concerns are sufficiently strong and the individuals' abilities do not differ too much, then the first individual in the decision process does not collect

[2] When the expected benefits of the project are positive so that status quo requires that two individuals reject the project, then the decision is forwarded to the second individual if and only if the first individual rejects.

[3] For another recent study that pays attention to information acquisition in a Sah and Stiglitz setting, see Gehrig (2004) and the comments by Demougin (2004).