Journal of Economic Behavior & Organization 137 (2017) 54–71

Contents lists available at ScienceDirect

Journal of Economic Behavior & Organization

journal homepage: www.elsevier.com/locate/jebo

Optimal delegation with self-interested agents and information acquisition☆

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ARTICLE INFO

Article history:
Received 19 September 2016
Received in revised form 26 February 2017
Accepted 1 March 2017
Available online 6 March 2017

JEL classification:
D23
D82
D86

Keywords:
Optimal delegation
Agent's bias
Information acquisition

ABSTRACT

A team composed of a principal and an agent needs to choose a project to run, while they may have different preferences regarding the project. The agent has various types of bias in terms of project selection, and he can make an effort in acquiring the information regarding the promise of projects. The principal can either keep the decision-making authority of choosing which project to run, or delegate it to the agent. We find that the optimal effort level under the principal's authority is at its highest when the agent is the most biased, while under the agent's authority it is also at its highest when the agent has an intermediate bias. Therefore, the principal should keep the authority and communicate with the agent when the agent is relatively biased, and delegate the authority when the agent has an intermediate bias. However, from the team's point of view where both players' payoffs are taken into account, the principal may delegate too much authority to a relatively unbiased agent, and too little authority to a relatively biased agent.

1. Introduction

In organizations, it is essential for the decision maker (the principal, she) to have accurate information to make the appropriate decisions. It is often the case that the subordinate (the agent, he) has better access to the information or can acquire the information more effectively than the principal. However, the agent's preference may not be aligned with that of the principal's. For example, in a firm, the CEO may rely on a product manager's opinion to determine the development of a new product; however, if the manager has empire-building incentives or career concerns, he may be biased to favor those products that increase the firm's size or his reputation rather than the firm's profit. In a global company, the headquarters may ask a local branch of the company to decide whether to expand or shut down its business in the local area. The local company can collect information on the economic environment more effectively, but it may be biased because of its personal interests to keep its business. In politics, a politician may need advice from a specialized bureaucrat or an expert who can collect detailed information about the effect of policies, but he may have a different view on what the optimal policy should be.

☆ We are very grateful to the editor William Neilson and two anonymous referees for their helpful comments that have substantially improved the paper. The third author also acknowledges the financial support provided by the Ministry of Science and Technology, Taiwan (MOST 101-2410-H-002-018-MY2).
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http://dx.doi.org/10.1016/j.jebo.2017.03.003
0167-2681/

Based on her relationship with a possibly biased agent, a principal not only wishes to control the agent's incentives to make the correct decision, but also wants to induce him to acquire more accurate information. Important issues then arise: will the allocation of decision rights affect the agent's incentives in acquiring information and the quality of decision making? If so, is it better to have the principal or the agent make the decision? It has often been argued that delegation can provide the agent with the incentive to acquire information. However, standard delegation models have not paid too much attention to the interaction between the agent's private interest (or his bias) and the incentive to acquire information under different types of authority. In this paper, we consider the situation where the organization needs to choose a project to run, while the principal and the agent may have different preferences over the project. We analyze the optimal allocation of authority under the consideration that the agent has various types of bias and can acquire information to improve the accuracy in decision making.

Consider the situation where there are two projects, Project 1 and Project 2. For example, Project 1 intends to innovate a new product, while Project 2 seeks to improve an old product. The correct choice of project depends upon the economic environment (or state). If the principal knows the realized state, she will prefer to choose the project which matches the true state. However, she has no information regarding the true state and has to count on the agent to acquire the information and convey it to her. Suppose that the principal prefers Project 1 when she has no information about the true state (i.e., *ex ante*). The agent, however, may have a different preference over the projects, perhaps due to his career concerns or personal interests.[1] The agent's "bias" is characterized by how much he prefers to choose Project 2 as opposed to Project 1 in the *ex ante* sense. Nevertheless, after he acquires the information and knows the true state (i.e., *ex post*), an *ex ante* biased agent may become aligned with the principal in terms of project selection. More importantly, whether or not an aligned decision will be made depends on the information that the agent acquires.

After observing the agent's bias, the principal decides either to keep the authority to choose which project to run, or to delegate the authority to the agent. We assume that, under the principal's authority, she can communicate with the agent by offering a payment scheme contingent on the message sent by the agent, and commit to the mechanism which can induce the agent's effort and extract his private information. If the principal decides to delegate, the agent can decide which project to run at will. However, because of the agent's bias, his decision may not be aligned with the principal's interest, so that there can be a cost of delegation. Whether or not the principal should delegate the authority thus depends on the tradeoff between the loss of the principal's control and the loss of the agent's information.

We argue that, under the principal's authority, the agent's effort level is indeed at its highest when the agent has the most biased *ex ante* preference to that of the principal, while it is at its highest under the agent's authority when the agent's bias is intermediate. Because the most biased agent prefers Project 2 to be chosen *ex ante*, under the principal's authority, he has the greatest incentive to acquire information since Project 1 would be chosen were he to fail to observe the realized state. Thus, the most biased agent makes his utmost effort to persuade the principal to choose Project 2.

On the other hand, under the agent's authority, the biased (the unbiased) agent prefers to choose Project 2 (1) *ex ante*, and will choose his preferred project if he has no information. The gain in terms of acquiring information is realized when the true state is $\theta = 1$ ($\theta = 2$) and a correct decision is made. However, this gain is at its lowest level when the agent has an extreme preference (i.e., the most biased or unbiased preference) since such an agent always chooses his preferred project regardless of the realized state, so that he has the least incentive to make the effort to acquire information. By contrast, the agent who is "neutral" toward the project selection chooses the highest effort level because it is equally important to collect the information regarding both states, and so he will put forth the highest level of effort. It can clearly be seen that the agent's incentives in acquiring information are crucially affected by the delegation policy.

We find that if the agent is either very biased or very unbiased, the principal should keep the authority and communicate with the agent, because the agent has the least incentive to invest based on his own authority. Although the principal may need to pay the agent some rent to extract the information under her authority, the contract is maintained to enhance the agent's incentive to acquire information so that it becomes more accurate. On the contrary, if the agent has an intermediate bias, he will put forth his highest effort under the agent's authority, and after observing the true state, he will also choose the project which is congruent with the principal's preference. Therefore, delegation is better for the principal. This is different from the conventional thinking that the principal will prefer to delegate to the agent if he shares a similar interest to her.

We also consider the team's optimum, where both the principal's and the agent's payoffs are taken into account. We argue that the team may prefer a relatively biased agent to have more decision-making power than the principal wishes, while a relatively unbiased agent should have less authority. This is because, for a biased agent, the payoff can be higher if he can control the selection of projects, which further increases the team's payoff. On the other hand, an intermediately unbiased agent will prefer the principal to make the decision on her own since the compensation paid by the principal is higher than the benefit he receives from controlling the project selection.

Another policy implication derived from our model is that regarding the optimal type of agent for the principal. When the principal can choose to which type of agent to delegate the authority or to communicate with from a pool of agents with different biases, we find that the principal should choose the most biased agent, and at the same time she should keep the

[1] For example, Aghion et al. (2013) distinguish two types of managers having different motives in determining innovation decisions: one refers to those who have career concerns about the impact of their decision on the market's perception regarding their ability, à la Holmström (1999), and the other refers to those who prefer a quiet life and fear losing the private benefits of remaining on the job, i.e., the "lazy managers."