Extended abstract

Essays on costly and truthful communication

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Based on three essays, this Ph.D. thesis studies costly and truthful communication in the following situation: a sender (S) tries to convince a receiver (R) to accept a project.

Before communication, both agents do not know the project quality. On the one hand, they believe with probability $\alpha$ that the project is of high quality and will raise R’s payoff by $r_H$, and otherwise that it is of low quality and will decrease R’s payoff by $|r_L|$ ($r_L < 0 < r_H$). On the other hand, S earns $s$ if R accepts the project.

S has information that, if understood by R, tells R whether the project is of high or low quality. Therefore, if S wants R to accept the project, S may need to communicate with R to resolve the uncertainty about the project quality. The communication between S and R may either fail or succeed. The higher their costly efforts to communicate, the more likely communication will succeed. If communication fails, R does not learn anything about the project quality: he still believes that by accepting it, he will earn $r_H$ with probability $\alpha$ and lose $|r_L|$ otherwise. If communication succeeds, there are two possible outcomes: R either finds out with certainty that the project is of high quality or that it is of low quality.

After communication, R decides whether to accept or to refuse the project.

The first essay of the thesis extends the framework of the Dewatripont and Tirole’s modes of communication model (2005) by considering the case of social preferences/S’s project quality incentives, as well as the one a sender who is uncertain about the value of a parameter affecting R’s payoff.

This essay shows theoretically that R’s communication objective and effort depend on whether the project yields R a negative expected payoff before communication (NEG case) or a positive one (POS case).

In the NEG case, without any communication, R would refuse the project. R’s communication goal is to identify and accept a high quality project. R is only interested in finding out that the project is of high quality because it is the only communication outcome that induces him to change his mind about his project acceptance decision. Therefore, an increase in $r_H$ and/or in $\alpha$ raises the agents’ efforts. Moreover, since R never accepts a low quality project, an increase in $|r_L|$ (his loss from accepting a low quality project) does not affect the agents’ efforts.

In the POS case, R’s communication goal is to identify and reject a low quality project. Therefore, the higher $|r_L|$ and/or $(1 - \alpha)$ (the probability before communication that the project is of low quality), the higher the agents’ efforts. Moreover, since R never rejects a high quality project, an increase in $r_H$ does not affect the agents’ efforts. In the existing literature, S does not communicate if R’s goal is to identify and reject a low quality project (in the POS case) because it is common knowledge for both agents that R is ready to accept the project without any communication. I show that this result is not robust to very plausible extensions of the model. First, S may communicate if his
revenue is tied to the project quality or if he has social preferences. The reason is that if S cares positively about R’s revenue, S might be ready to communicate to prevent R to some extent from accepting a low quality project. Another reason why S may communicate in the POS case is that he is uncertain whether R is in the NEG or POS case. Putting it differently, S does not know whether R would accept the project without communication. This implies that in the POS case, S’s project quality incentives and S’s uncertainty may both enable R to reduce his risk of accepting a low quality project through communication.

In the second essay, a laboratory experiment tests some predictions of the first essay by investigating the impact of $r_H$ and $r_L$ on real communication effort choices.

In the experiment, the projects are represented by master theses. A thesis is a high quality project if its grade is higher than 16.5 out of 20, and it is a low quality project if its grade is lower than 13 out of 20. The experiment round is composed of two stages. In the first stage, S has to read the master thesis and to write a report to transmit information about the thesis quality. In the second stage, R has to evaluate the thesis quality by reading S’s report and by comparing it to the master thesis.

By measuring the participants’ communication efforts by the time they have spent on their tasks, the experiment suggests that R pursues one out of two communication objectives.

In the NEG case, R’s objective is to find out whether he would make money by accepting the project: his effort depends positively on $r_H$ and does not depend on $r_L$.

In the POS case, R’s goal is to know whether he would lose money by accepting the project: his effort depends negatively on $r_L$ and does not depend on $r_H$.

In the third essay, a field experiment studies some predictions of the first essay, namely the impact of $\alpha$, in the context of an information campaign about energy-saving projects.

The information sent was controlled by the experimenter and each participant was a receiver. Moreover, the participants' ex-ante and ex-post beliefs about the project quality (the likelihood of facing a high quality project) were assessed through a questionnaire both before and after the information campaign.

The field experiment suggests that R’s effort depends on his ex-ante belief about the project quality.

In the NEG case, R’s communication objective to enhance his chance of accepting a high quality project: his effort increases with $\alpha$, the ex-ante probability of a high quality project.

In the POS case, R’s objective is to enhance his chance of refusing a low quality project: his effort increases with the ex-ante probability of a low quality project, $1 - \alpha$.

The experiment results also suggest that new information has lower influence on posterior beliefs about the project quality if R ex-ante holds strong views about it than if he holds a less clear-cut view. This essay therefore shows that discriminating the quantity of information sent according to $\alpha$, including whether R is in the NEG or the POS case, may enable to reap efficiency gains on public information campaigns.