QUALIFYING EXAMINATION

TEAMWORK, INCENTIVES, AND NEGATIVE ASSORTATIVE MATCHING

ZHAO ZICHEN, ECONOMICS

Abstract

In the workplace, it is a global trend that more and more firms are organizing their workers into small groups to cooperate and coordinate on projects. Teamwork has become critical and increasingly important in modern companies (e.g., Landeo and Spier, 2015; Lazear and Shaw, 2007). For instance, Deloitte, one of the world's largest accounting firms, titled 'Organizational Design - The Rise of Teams' in its 2016 annual report. Hence, to better understand the current working environment efficiency, this chapter aims to study employees' behaviors in teamwork scenarios. Especially we focus on heterogeneous workers, as the increased attention to differences and how individuals from different backgrounds work together is necessary to create a workplace where employees work productively (Abramson et al., 2002). Imagine a company that composes of heterogeneous workers, how should a superior assign them into teamwork? How do workers facing different types of colleagues behave under different reward incentives? A similar scenario occurs on campus as well. University professors often require students to form teams to accomplish a course project as an assessment of their final grades. Students generally have a different level of competence. They would choose their teammates considering their abilities, and what teams they form possibly affects how much effort they exert into the project. So, we are interested in how professors should design the 'team up mechanism' to induce more effort into studying by the heterogeneous students.

Specifically, our first chapter attempts to address three questions: in a firm with heterogeneous workers, should teams be formed with a mix of high-ability and low-ability workers, or are teams more efficient if all members are homogeneous under different compensation schemes? Will they get to the desired outcome in an environment where workers are allowed to form teams by themselves? If not, what mechanism can we use to induce an efficient result?

To answer these questions, we first construct a theoretical model. Suppose a principal has a number of problems to solve or projects to complete, for which she hires workers. Workers are free to form teams of their choice to solve these problems. Within a team, each worker puts an independent effort in finding the solution (i.e., we neglect any kind of synergies, complementarity, and peer learning).

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Considering that, there are two types of reward schemes to motivate workers in teams, namely 'team rewards' where each worker receives a reward if the team solves the problem regardless of who finds the solution, and 'contest rewards' where a worker gets a reward if and only if he or she finds the solution. Our goal is to study how workers of heterogeneous abilities select themselves into teams, and how much effort different types of teams exert, under the two compensation systems. If pure-selfish behaviors are assumed, the model predicts the good workers who are less costly in exerting effort are segregated from the bad workers who are costlier in exerting effort in both payment schemes. The reason is intuitive: under team rewards, although the underdogs want to pair with good workers, good workers are unwilling to team up with them; under contest rewards, bad workers refuse to compete with good workers, though paring with bad workers is a better situation for the favorites. However, segregation between the two types of workers is shown to be inefficient because of the decreasing difference (Becker, 1973). Thus, to obtain the socially optimal team composition, we propose an uncertain payment scheme where there is an ex-ante probability that the reward will be one of the schemes mentioned above.

Our predictions seem to be in accordance with the questionnaire results of Van Dijk et al. (2001). The scholars conducted a real-effort teamwork experiment under two incentive systems, team pay and relative-performance pay. After the experiment, they asked whether the subjects want to continue working with the previous matched person. The results show that in Tournament Condition, subjects were only happy to continue if their opponents were less competent than themselves. In Team Condition, subjects were generally satisfied with their partners and wanted to continue with them. However, in cases where the partners contributed little to the production of the team, subjects expressed a desire to have no further cooperation. Indeed, the choice of payment scheme has consequences for social interactions in the workplace.

Although we anticipate workers' behaviors in the theoretical model, many previous studies show that subjects' behaviors might deviate from pure-selfish assumption. For instance, under team incentives, contribution typically is above free-riding level (e.g., Isaac et al., 1985; Isaac and Walker, 1988), and individuals with heterogeneous productivity may contribute in different manners (e.g., Tan, 2008; Fellner et al., 2011; Kölle, 2014). Under contest incentives, both underdogs and favorites overbid compared to Nash equilibrium, and disadvantaged players are discouraged from exerting efforts (e.g., Weigelt et al., 1989; Fonseca, 2009; Muller and Schotter, 2010). Besides, distribution preferences may play a role in the team forming stage since the choice of partner also influences the relative incomes of other coworkers (Charness and Rabin, 2002; Fehr and Schmidt, 1999).

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That is why we intend to use an experiment to test whether experimental results will accord with Nash equilibrium and explore the behavioral reasons behind.

The remainder of this report is organized as follows. Section 2 reviews the findings in previous literature and illustrates how our paper relates and contributes. Section 3 describes the setup and results of our model. Section 4 presents the experimental design. Section 5 discusses the possible extensions for our future research.

Proceedings

Duration	Session
5 mins	Chair Welcome & Introduction of Panel
30-45mins	Presentation by Student
15 mins	Q&A (by audience – faculty / students)
Break	Audience to leave the room
30 mins	Q&A by Panel
15 mins	Chairperson to ask candidate to leave the room and wait outside Private Panel Discussion and Decision to Pass the Student
15 mins	Candidate invited back by Chairperson Feedback and Outcome of Oral Examination

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