Reputation in Endogenous Production Teams

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Team production analysis are usually carried in static frameworks where employees choose
neither their teammates nor between working in a team or by themselves.¹ This hypothesis
does not reflect certain work environments. For example, academics are seldom forced to
work as a team. They usually choose with whom they want to work, and once a project is
completed they may part. In the industry, a manager at Jet Propulsion Laboratory states:
“There is some say by team members on whom they want to work with. Regarding rewards,
a good job by the team bestow the reputation for further jobs” (Sherstyuk, 1998).

This paper computes optimal work strategies when agents either work in a team or
by themselves. Agents of different age and reputation are randomly matched. Matched
agents, but not employers, observe each other’s abilities. Agents’ abilities and production are
stochastic, and wages equal the conditional probability of being of high-ability (i.e an agent’s
reputation). Given that a teammate’s decision to work or not in a team (control variable),
affects the other agent’s current and future utility and reputation (the state variable), this
problem is a dynamic game. We focus on Markov strategies which are subgame perfect.
The nature of the game does not allow for closed-form solutions and we resort to numerical
methods.

Results show that a worker opts in team provided her teammate’s reputation does not
penalise him. If working in a team damages an agent’s reputation she opts out unless her
teammate wishes and can compensate him. For instance, a high-ability young worker chooses
to work with a high-ability adult when the latter’s reputation is sufficiently high compared
with the unconditional probability that she be of the high ability. Interestingly, a young
agent who chooses to work by himself enjoys a higher utility than when she is compelled to
do so. This result arises as agents value the option of forming a team when adult. In other
words workers derive non-negative utility from the team option which affect the conditional
probability that they be identified of high ability.

Keyword: Dynamic games, Learning.

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¹e.g. (Alchian and Demsetz 1972), (Holmstrom 1982), (Rasmusen 1987)) (McAfee and McMillan 1991),
(Itoh 1991), (Meyer 1994), and (Vander-Veen 1995)).