Endogeneity Matters: Essays on Cooperation and Coordination

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Summary

This thesis, titled "Endogeneity Matters: Essays on Cooperation and Coordination" has investigated how cooperation and coordination can be increased in strategic situations where this does not arise naturally. Each of the core chapters studies a different game in which it is difficult for the parties involved to achieve beneficial outcomes without facilitating institutions. Common elements in all chapters are: (i) the use of laboratory experiments, and (ii) that the institutions offered allow players to endogenously decide about factors that are relevant in the situation at hand. In particular, we experimentally explore the impact of punishment possibilities in a pure social dilemma, the role of information sharing in a market experiment where firms may have an incentive to coordinate and collude, and the effect of endogenous group composition in a team-production setting where coordination is key.

In Chapter 2 we investigate whether making oneself vulnerable facilitates cooperation in a prisoner's dilemma game. Here we study a three-stage game in which subjects are able to choose their own vulnerability level (i.e. the punishment they might receive after the prisoner's dilemma) in the first stage. In the second stage they play a two-person prisoner's dilemma, and in the third stage they can decide whether to punish the partner at a small cost. If they decide to punish, the partner receives a punishment equal to the level of her own vulnerability chosen in the first stage. The intuition here is that by choosing high own possible punishment levels, players can signal their intention for cooperation.

The experimental results show that, in agreement with the theory, subjects make themselves vulnerable and cooperate more often if they have higher possible punishment levels compared to the Baseline case where punishment possibilities are absent. Furthermore, our exogenous treatments − in which we remove the first stage, and exogenously impose punishment levels − reveal that intentionality is important. Subjects cooperate less often in the exogenous treatments. Furthermore, they also punish more often resulting in a lower efficiency.

In Chapter 3 we run a market experiment to see how different information structures and different information types affect production in a Cournot oligopoly. Here we not only consider exogenous information structures, where firms (subjects) either received feedback only on their own performance in the market, or also about the competitors' choices (either in

aggregate or in individual form), but we also introduce an endogenous information structure. Subjects are free to decide whether they want to share information about their own past production with other firms. Because voluntary information sharing gives a unilateral informational advantage to the competitors, making oneself vulnerable in this way can indicate an intention for collusion.

Our results reveal no significant differences in average total output across information types and structures. However, we do observe less Nash equlibrium outcomes, and more collusion when individual information is available to the subjects. Furthermore, we find evidence for showing intentions for collusion under voluntary sharing. Subjects tend to share more often low production levels, and hide high production levels. Markets where subjects voluntarily share information are significantly more collusive compared to markets where subjects intentionally withhold information. In fact, the latter markets are even more competitive compared to the exogenous treatment where information is absent by design. Thus, voluntary sharing of individual data can have important consequences for market output, even though it cannot be seen from average total outputs.

Finally, Chapter 4 investigates whether the fear of exclusion increases team-production in a weakest-link setting. Moreover, it also studies whether this fear has to be maintained to keep effort levels high. In this chapter we add a manager to the standard minimum-effort game who monitors and (if possible) replaces workers. The manager's and workers' interests are aligned; the higher the workers' (common) effort levels are, the more beneficial it is for both the team and the manager. The experiment shows that the manager is able to discipline workers if she has an efficient tool to do so, even under noisy monitoring. If she can replace workers in every round, workers learn how to avoid being fired, and choose high effort levels. In contrast, when the manager can only observe, but cannot fire, workers quickly converge to the lowest possible effort levels. Finally, if workers can be fired only during their probation phase, they exert high effort level under probation. Yet they immediately reduce effort once they receive a permanent status and cannot be fired any more. The intuition behind this result is that especially workers with above average productivity during probation are promoted. These are the workers who most likely have both a strong motivation to match the other workers' effort levels and a strong motivation to avoid being fired. After being promoted the fear of exclusion vanishes and only the matching motive remains. Thus, they reduce their effort level. This reduction has a spillover effect on others as well, resulting in a steadily decreasing output against which the manager has no efficient tool to fight.

To sum up, in this thesis we have shown that endogeneity matters. People are able to cooperate more easily if they have a tool to credibly show their intentions (as in Chapter 2 and 3). Furthermore, coordination is much easier when someone sets a norm and shows the team the desirable action (as in Chapter 4).