



Essays in Experimental Industrial Organization: How Communication and Information Affect Market Outcomes
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Summary in English

This thesis consists of three independent essays that use laboratory experiments to address a number of industrial organization questions. In particular, it studies the role of communication and information revelation in market interactions. Chapters 2 and 3 focus on the question of how communication between firms affects the way they compete in the market. By introducing communication in our experimental markets, our analysis diverges from traditional industrial organization conventions in two ways. First, in Chapter 2 we expect (and find) different outcomes in markets with and without communication. This contrasts with the standard model of collusion that does not distinguish between implicit and explicit collusion so that its predictions do not depend on communication possibilities. In Chapter 3, we introduce communication in such a way that firms individually can decide whether or not to communicate with other firms in the same market, i.e., whether they want to be part of a cartel. In this way, partial cartels can form endogenously, which is precluded in traditional oligopoly models where cartels are assumed to be all-inclusive.

We study the effect of information revelation in market outcomes in Chapters 2 and 4. In Chapter 2, we analyze the impact of information about other firms' actions and outcomes on market prices in an oligopoly setting. In Chapter 4, we examine the effect of revealing information about the outcome of an auction to an external party on bidding behavior and auction revenue. We do so in a setting where the external party's estimates of bidders' values influence bidders' payoffs.

The three core chapters are summarized now. In Chapter 2, we experimentally study the effect of information about competitors' actions on cartel stability and firms' incentives to form cartels in Cournot markets. The impact of publishing firm-specific data on competition has been subject to a debate in the economics literature at least since Stigler's (1964) work. Stigler argues that market transparency facilitates collusion because firms are better able to monitor other firms deviating from a collusive agreement. Empirical data is limited but confirms this prediction (Albaek et al. 1997). In addition, antitrust authorities usually consider that this kind of information has potentially anticompetitive consequences and therefore the exchange of individualized information between firms is generally forbidden. In contrast, recent experimental studies yield opposite conclusions: full disclosure of individual data makes Cournot

markets more competitive, not less, mainly because firms tend to imitate the most profitable firm. In this chapter, we conjecture that the effect of publishing firm-specific data may depend on the opportunities for firms to collude explicitly i.e. to communicate. As in previous experiments, in our experiment, markets become very competitive when individualized information is available and participants cannot communicate. In contrast, when communication is possible, results reverse: Markets become less competitive and cartels become more stable when individualized information is available. We also observe that the extra profits that firms obtain thanks to the possibility to communicate are higher when individualized information is present, suggesting that firms have greater incentives to form cartels in that situation. Summarizing, the publication of firm-specific data results in two undesirable effects when communication is possible. First, it increases cartel stability for the reasons put forward by Stigler (1964). Second, it increases firms' incentives to form cartels, not only because it stabilizes cartels but also because the market would become more competitive otherwise.

In Chapter 3, we study both theoretically and experimentally the formation and behavior of partial cartels. The formation of partial cartels is allowed in the theoretical model developed in the chapter and in the experimental design in which the experiment is based. The theoretical model is a variation of Bos and Harrington's (2010) model where firms are heterogeneous in terms of production capacities and where individual cartel decisions are endogenized. The experimental study is based in the theoretical model introducing the possibility of optional communication among subjects to facilitate the formation of collusive agreements. The experiment has two main objectives. The first goal is to examine whether partial cartels emerge in the lab at all, and if so, which firms are part of it. The composition of the cartels formed is relevant because it influences the stability of the collusive agreement and therefore has an impact on market prices. The second aim of the experiment is to study the coordinated effects of a merger. Theory predicts different effects on competition depending on whether partial cartels or all-inclusive cartels are operating. The analysis developed in this chapter illustrates how merger simulations in the lab can be seen as a useful tool for competition authorities to back up merger decisions. The main results are that cartels are typically not all-inclusive and that various types of partial cartels emerge. In addition, we show that a merger analysis that is based on the assumption that only full cartels will form produces misleading results. The merger imposed in the design decreases market

prices, especially in markets where firms joining communication represent a considerable share of total market capacity. Therefore, we conclude that the merger should not raise competitive concerns.

Chapter 4 consists of an experimental auction setting where we try to uncover the effect of an outside observer who affects bidder's payoffs, on the outcome of the auction. We consider an independent private values setting in which a single object is allocated in first-price sealed-bid (FP) or second-price sealed-bid (SP) auctions. The valuation of all bidders is private information, but all bidders care to the same extent about an outside observer's estimation of their type. The outside observer sees the auction outcome and uses this information to update his beliefs about the bidders' values. We consider different information settings: the outside observer either sees the identity and the payment of the winning bidder (i.e., the auction's revenue) or he only observes the identity of the winning bidder. We find that FP auctions where both the winner and her payment are revealed to the outside observer yield the highest auction revenue. In contrast, revealing the winner's payment reduces the efficiency of the auction: the good is allocated more efficiently in auctions where only the winner is revealed.