

RESEARCH STATEMENT

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I am a theoretical microeconomist with interests in mechanism design, industrial organization and information economics. I apply the methodology of mechanism design to the study of market interactions in environments with incomplete information. My dissertation includes three chapters related to topics in the field of industrial organization: the design and pricing of information products, collusion in oligopolies under adverse selection, and bundling behavior for a monopoly.

In my job market paper, "Screening contracts for information products in oligopoly," I study the design of screening contracts for information products that are sold to a group of buyers who have strategic interactions with one another. An information provider offers a menu of information structures (i.e. experiments) to firms that compete in a downstream market. Firms can also obtain their own signals privately. The precision of signals obtained is the firm's private information (i.e. type). I identify properties of a feasible menu under different strategic environments, and study how the nature of competition between firms affects the information provider's optimal menu. Compared to an environment with no strategic interactions, the presence of strategic complementarities leads the information provider to perfectly correlate the information structures and provide the most accurate information available. When firms face a game of strategic substitutes, the optimal menu will be such that either all signals are provided independently with the highest precision, or the market is segmented into two parts. For the first segment, firms have relatively low types; the information provider offers the most accurate information to all types in this segment. For the second segment, firms have relatively high types and the information provided is distorted and degraded.

This paper has important implications for an emerging market in which business-to-business information services are provided. My result verifies the traditional literature's view that the information provider may strategically lower the quality of information sold to firms. I also show that the informational distortion depends crucially on the nature of competition between firms. Furthermore, in the presence of adverse selection, I explicitly characterize the information provider's optimal menu under different strategic environments.

In another working paper, "Explicit collusion in oligopoly," I study the enforcement of a cartel with private information about production cost under a static setting. I consider the problem of

a cartel authority to implement the ex-post efficient production when facing a non-cooperative threat game (either Bertrand or Cournot). I first show that, to implement an ex-post efficient allocation, paying a minimum ex-ante subsidy forces the individual rationality constraint to be binding at an interior point under Cournot environment and binding at the lowest point under Bertrand environment. When marginal cost is drawn from a uniform distribution and market demand is large, this minimum ex-ante subsidy is higher in a Cournot environment than in a Bertrand environment. In this sense, it is harder to sustain collusion in a Cournot environment than in a Bertrand environment. This paper indicates that the nature of competition plays an important role in the sustainability of a cartel in the presence of adverse selection. This paper was submitted to the *International Journal of Industrial Organization* and is currently under review.

In the paper titled "Selling separately as a robust mechanism for a multi-product monopoly," I propose selling separately as a robust mechanism for a multi-product seller who faces uncertainty about the correlations between product values. In the model, a deterministic mechanism (i.e. price schedule), is offered by a seller to a buyer who has private information about product values. I prove that, in the case of two items with continuous consumer types, the best strategy is to sell independently if the seller only knows the marginal distribution of each item's valuation. This maximizes the seller's worst-case expected profit. This paper contributes to the mechanism design literature by proposing a 'simple' mechanism which is also robust to strict informational assumptions.

In future research, I plan to pursue several research avenues related to my dissertation. One project I am currently working on is extending my job market paper to study how the information provider's strategy affects the downstream market's competition intensity and welfare distribution. I am also interested in extending my work to include the theoretical modeling of information design in oligopoly. In recent years, there has been a large, growing literature on the modeling of information design and its applications in several topics in Industrial Organization, such as price discrimination and advertising. However, most of the literature study a monopoly's problem and ignore the effect of strategic environment such as oligopolistic competition. This is not only an important topic due to the fast development of information technology in large economy, but also an understudied area mainly because of the technical difficulty. With my research experience, I am confident that I can deliver promising research in the near future. Finally, I am also willing to study other topics related to Industrial Organization and Information Economics, such as regulation of two-sided markets and information provision of product quality.