

The Optimality of Constant Mark-Up Pricing

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This paper investigates the strategic pricing decisions of a monopolist when offering quantity or quality differentiated products in the absence of complete information about the distribution of demand. Specifically, we focus on the "profit guarantee" of a pricing rule, which represents the minimum ratio of expected profits to expected surplus for any distribution of demand. Our goal is to devise robust pricing policies that maximize the profit guarantee and provide insights into revenue guarantees across all possible distributions.

To achieve this, we first establish that setting the price markup over marginal cost to a specific function of elasticity maximizes the profit guarantee. By doing so, we offer pricing mechanisms that enable the seller to attain robust profit guarantees, regardless of the distribution of buyers' willingness to pay. For cost functions with a constant elasticity, we demonstrate that a constant markup pricing policy achieves the optimal revenue guarantee across all possible distributions, while a Pareto distribution represents the lower bound. Interestingly, Pareto distributions emerge as extremal cases that significantly impact both profits and consumer surplus.

Expanding our analysis to encompass general cost functions, we provide a revenue guarantee that holds for arbitrary cost distributions. Moreover, we extend our findings to optimal procurement policies, ensuring maximal surplus guarantees for buyers considering all possible cost distributions of sellers.

By uncovering these optimal pricing strategies and profit guarantees, we contribute valuable insights into the decision-making process of monopolists operating in markets with incomplete demand information. Our results provide practical guidance for monopolists seeking to maximize profits and enhance social welfare. Additionally, we shed light on the intricate interplay between value distributions, cost conditions, and surplus outcomes, offering a comprehensive understanding of the dynamics inherent in markets for differentiated products.

This research significantly advances the understanding of second-degree price discrimination in the presence of incomplete demand information. By providing robust pricing policies and revenue guarantees, our findings have important implications for both practitioners and policymakers in digital commerce. The insights gained from this study can aid in optimizing pricing strategies and fostering efficient market outcomes, ultimately benefiting both sellers and buyers in differentiated product markets.

JEL CLASSIFICATION: D44, D47, D83, D84.

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