How to Make an Offer? A Stochastic Model of the Sales Process

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Abstract

Firms in industrial markets use personal selling to reach prospective customers. Such person-to-person interaction between salespersons and customers allows for two-way communication and flexibility on price. In this paper, I model the sales process as a continuous-time dynamic game between a buyer and a seller. Over time, they discover how well the product matches the buyer’s needs while simultaneously bargain for price. The seller makes repeated price offers bounded by a self-imposed list price, and the buyer decides whether to accept or wait. Being in the sales process is costly, and either party can leave at any moment. I find that the list price plays an important role in balancing the buyer’s incentive to engage and the seller’s bargaining power. But the players always trade at a discounted price, due to the seller’s incentive to close the sale early. The costly discovery of match provides a rationale for the use of list price and discount, which is absent in the bargaining literature. I examine whether the seller should commit to a fixed price or allow bargaining. The paper finds that bargaining benefits the seller by creating shorter sales processes with higher success rate. When selling cost is high, both players are willing to participate in the sales process only if bargaining is allowed. In such cases, bargaining leads to a Pareto improvement over the fixed price, which can explain the prevalence of bargaining in many industries. If the buyer has private information on his outside option, the model predicts that, counter-intuitively, the buyer with higher need for the product pays lower price. More fundamentally, the paper expands the bargaining literature by adding a matching process that makes product value stochastic. This leads to departure from standard results.

Keywords: bargaining, sales force, matching, continuous-time game.

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