Financing Through Advance Selling: The Role of Social Ties

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Advance selling – the practice of selling a product in advance of its consumption date – has received significant attention in the recent operations literature, and has shown to be beneficial in a variety of industries as a tool for implementing price discrimination, reducing demand uncertainty, and managing capacity more effectively. More recently, start-up companies have been exploring the use of advance selling as a mechanism to help capital-constrained firms secure bank financing. This paper conducts a theoretical investigation into the efficacy of this alternative financing approach.

We consider a small-to-medium sized service firm operating in a local market. Adopting the standard fixed-investment moral-hazard model, we assume that the firm requires a fixed level of external funding in order to remain in operation (e.g., to conduct a repair). Should the firm secure the funds it requires, it then exerts an unverifiable level of effort which directly influences its profit potential, and by extension its ability to repay its debt. The firm may seek to raise the funds it requires through two channels, which may be used in conjunction: the first is the traditional banking channel, which is represented by a competitive bank loan; the second is a group of “loyal” consumers (i.e., the firm’s established consumer base), to which the firm may advance sell its product at a discount. The firm chooses the initial price discount in order to maximize its expected profit, the consumers make forward-looking purchasing decisions in order to maximize their expected utility, and the bank chooses the break-even interest rate, if such a rate exists.

The results of our analysis can be summarized as follows. We find that the ability of advance selling to alleviate the firm’s financial distress depends critically on the strength of “social ties” between its established consumers. In particular, we find that if consumers consider only their individual expected utility when deciding whether to advance purchase, the benefits of advance selling in terms of reducing the firm’s borrowing needs are completely offset by the negative impact of these sales on the firm’s subsequent effort level. By contrast, when the consumers value the expected utility of their peers in addition to their own, we find that their increased willingness-to-pay in advance renders advance selling beneficial. Exploring the latter finding further, we show that
Advance selling can benefit the firm in two ways: first, by expanding the firm’s borrowing capacity (i.e., allowing the firm to secure a loan at levels of distress in which it was previously unable to do so) and second, by improving the firm’s borrowing terms and expected profit. We additionally observe that the benefit of advance selling may be further enhanced by restricting the quantity of advance sales.

Our work relates to three distinct streams of literature. First, this paper is closely related to the operations-finance literature, which focuses on the interplay between firms’ operational decisions and various forms of financial frictions. Within this literature, our work is most closely related to studies that focus on various financial and operational mechanisms that facilitate firms to obtain financing and improve operational performance, such as trade credit (Kouvelis and Zhao 2009, Yang and Birge 2009, Chod 2015), financial covenants (Iancu et al. 2015), and pre-shipment financing (Tang et al. 2016). In considering the strategic interaction between a financially-constrained firm and its customers, our paper also relates to Birge et al. (2016), who examine how the retailer can use price, quantity, and deferred discount to mitigate the negative impact of customers’ strategic waiting behavior.

Second, our work contributes to the literature on advance selling. Existing work in this area has mostly focused on highlighting various economic benefits of advance selling, such as price discrimination (Gale and Holmes 1993); profiting from customers’ ex ante valuation uncertainty (Xie and Shugan 2001, Swinney 2011, Yu et al. 2015); extracting advance demand information (Tang et al. 2004); etc. A related stream of work examines the interaction of advance selling with other market features, such as competition (McCardle et al. 2004), the seller’s private information regarding product quality (Yu et al. 2014), and social learning from product reviews (Papanastasiiou and Savva 2015).

Finally, our work also connects to a growing literature that considers the effects of social interactions between consumers on firms’ operational decisions. Candogan et al. (2012) consider the role of social network externalities on pricing decisions; Feldman et al. (2016) analyze a monopolist’s choice of product quality in the presence of social learning; Hu et al. (2015) consider inventory decisions when the consumers’ choices between two substitutable products are affected by the choice of their predecessors; Papanastasiou et al. (2016) develop insights on online recommendation systems when the goal is to maximize social welfare.

References

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