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Information and coordination frictions in experimental posted offer markets ☆

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Abstract

We experimentally investigate buyer and seller behavior in small markets with two kinds of frictions. First, a subset of buyers may have (severely) limited information about prices, and choose a seller at random. Second, sellers may not be able to serve all potential customers. Such capacity constraints can lead to coordination frictions where some sellers and buyers may not be able to trade. Theory predicts very different equilibrium outcomes when we vary the set-up along these two dimensions. In particular, it implies that a higher number of informed buyers will lead to lower prices when sellers do not face capacity constraints, while prices may actually increase if sellers are capacity constrained, as shown by Lester (2011). In the experiment, the differences between the constrained and non-constrained case are confirmed; prices fall when sellers are not capacity constrained but either do not fall by much or even increase when they are not. We find that prices are quite close to the predicted equilibrium values except in treatments where unconstrained sellers face a large fraction of informed buyers. However, introducing noise into the theoretical decision making process produces a pattern of deviations that fits well with the observed ones.

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1. Introduction

Many markets are affected by information frictions and capacity constraints. Information about prices or salaries is not always available before visiting a firm, or may be too costly to acquire. Furthermore, in some markets sellers can serve all customers, whereas in other markets sellers are constrained in their capacity. In labor markets, firms may or may not advertise wages, and may to a varying degree be capacity constrained depending on the number of equivalent open job slots they possess. In some retail markets, like the gasoline market, sellers are not capacity constrained, while buyers often have to visit the station to observe the price. In the customer-to-customer markets for used cars, by contrast, prices are advertised (although bargaining may occur), while the seller only has one car to sell and thus is capacity constrained.

The theoretical literature shows that even small changes in the capacity of sellers or the informedness of buyers can have a profound impact on market outcomes. Particularly, prices decrease sharply in the share of informed customers when capacity is not constrained, but might change little in the presence of such constraints. While the interactions between seller capacity and consumer information is well understood in theory, well-controlled empirical studies of such interactions are absent in the literature. This paper aims at filling the gap by setting up a laboratory experiment.

The results of our experiment confirm the different effects of higher informedness with and without capacity constraints. In particular, when sellers are capacity constrained prices fall little and may even increase as the number of informed buyers increases. However, our findings also indicate that as information increases, prices do not decrease as much as theory predicts when sellers do not face capacity constraints. This may imply that measures of consumer protection aiming at informing customers may be less effective in terms of reducing prices than previously thought. Our findings may also contribute to a more nuanced view regarding the potential consumer benefits of the rapid growth in essentially cost-free access to posted prices on the internet.

Our experiment is based on two strands of the theoretical literature on posted offer markets. One strand explores the effects of information frictions when sellers have unlimited capacity. Hence sellers can serve all buyers that show up, but some buyers are uninformed about prices. Varian (1980), Burdett and Judd (1983), Stahl (1989), and Janssen and Moraga-González (2004) analyze markets where only a fraction of buyers observe all the prices in the market. The remaining buyers are uninformed, and approach a seller at random. In the resulting equilibrium, sellers randomize over prices. As the fraction of informed buyers increases, the average price decreases, with the classic Bertrand equilibrium as the limiting case where price equals marginal cost.[1]

Another strand of this literature, starting with Montgomery (1991) and developed further by, among others, Burdett et al. (2001), explores the effects of search frictions when sellers have limited capacity to serve customers. Buyers have perfect information about prices, demand one unit of the good, and decide independently which seller to approach. Sellers only have a limited number of goods for sale, which can be normalized to one. Some sellers may get many and some

[1] An overview of this literature can be found in Baye et al. (2006).