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Review of Economic Dynamics 6 (2003) 240–251
Review of Economic Dynamics
www.elsevier.com/locate/red

About market structure

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Received 31 August 2000; revised 20 February 2002

Abstract

I study an economy where sellers choose locations, and buyers choose which location to visit. All sellers in one location correspond to the Walrasian market while each seller in a separate location corresponds to the standard random matching model. Trades are consummated in auctions, and it turns out that the Walrasian market is not an equilibrium market structure. Rather, the sellers choose to distribute themselves in several locations endogenously creating the imperfectness of markets. I determine the number of sellers per location in equilibrium as a function of the ratio of buyers to sellers.

JEL classification: C78; D40

Keywords: Market structure; Matching; Auctions

1. Introduction

Random matching and search models are widely used in economics applications ranging from labour and marriage markets (e.g., Pissarides, 1990; Burdett and Coles, 1997) to the study of credit (Diamond, 1990) and endogenous money (Kiyotaki and Wright, 1993). The standard rationale for these models is that finding a trading partner is time consuming, and that in reality markets do not function in the complete fashion of textbooks.

It is still somewhat unsatisfactory just to assume market incompleteness without a properly modelled reason for it to exist. In this article, I provide a kind of foundation for non-Walrasian decentralised market models starting from two basic elements of trading, namely, the trading mechanism and the location of the agents. The basic idea is extremely simple. Assume that there are buyers and sellers and that there are more sellers than buyers.

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1094-2025/02/$ – see front matter
doi:10.1016/S1094-2025(02)00016-9

If all the sellers go to one location then all the buyers go to that location, too. Since there are more sellers it looks plausible that they end up in a Bertrand-like competition, and consequently the buyers get all the available surplus. In a sense this situation corresponds to the perfect Walrasian market.

If each seller goes to a location of his own and the buyers go randomly, or with equal probability, to any seller it may happen that a seller meets several buyers. In this case, it looks plausible that the buyers engage in an auction to get the seller's good, and the seller gets all the available surplus. Thus, by going to separate locations the sellers introduce randomness into the economy in order to gain bargaining power. This observation immediately raises the question about the equilibrium or optimal market structure which, in the setting of this article, boils down to how many sellers there are in a location. The literature has dealt mainly with the polar cases. All the sellers in one location correspond to the Walrasian market. Each seller in a location of his own is the standard assumption in random matching and search models. It should be noted that Lagos (2000) provides a story based on the choice of location, one-to-one meetings and bargaining for non-Walrasian outcomes.

In Section 2, I study the idea that by choosing separate locations the sellers may gain bargaining power. The analysis is most naturally conducted in a finite setting. This, however, is technically quite nasty and solving for the equilibrium market structure is not possible. In Section 3, I turn to the infinite setting to gain some understanding about the market structure. In Section 4, I present conclusions.

2. The finite model and a rationale for non-Walrasian markets

Consider a finite variant of the standard random matching model (e.g., Lu and McAfee, 1996). There are B buyers and S sellers in the economy. The buyers have a unit demand, and the sellers have one object for sale. The buyers value the object at unity, and the sellers at zero. In the dynamic setting the agents' reservation values are endogenously determined and differ from the above valuations. The time horizon is discrete and infinite, and the agents discount future at the same rate $\delta \in (0,1)$. The buyers can visit only one location within a period. When a buyer and a seller trade they leave the economy, and they are immediately replaced by identical agents. This guarantees that I can focus on a steady state.

The sellers are positioned at specific locations where buyers direct their search. In any location there may be any number of sellers; there are l locations, the number of sellers in location $i = 1, \ldots, l$ is s_i and $\sum_{i=1}^{l} s_i = S$. There is no need to consider empty locations so I assume that none of the locations is empty. All the buyers adopt a symmetric mixed strategy $\beta = (\beta_1, \ldots, \beta_l)$ where the ith coordinate denotes the probability of going to location i. Thus, the number of buyers that end up at location i is a binomial random variable with distribution $\mathrm{Bin}(\beta_i, B)$.

In the beginning of every period the sellers choose locations. Then the buyers decide which location they go to according to their mixed strategy. Note that the matching is not totally random since the buyers know where the locations are, and they can condition their