Buyers’ and Sellers’ Cartels on Markets With Indivisible Goods

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Abstract. This paper analyzes the formation of cartels of buyers and sellers in a simple model of trade inspired by Rubinstein and Wolinsky’s (1990) bargaining model. When cartels are formed only on one side of the market, there is at most one stable cartel size. When cartels are formed sequentially on the two sides of the market, there is also at most one stable cartel configuration. Under bilateral collusion, buyers and sellers form cartels of equal sizes, and the cartels formed are smaller than under unilateral collusion. Both the buyers’ and sellers’ cartels choose to exclude only one trader from the market. This result suggests that there are limits to bilateral collusion, and that the threat of collusion on one side of the market does not lead to increased collusion on the other side.

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1 Introduction

Recent theoretical models of collusion only consider the formation of cartels on one side of the market. Studies of bidding rings in auctions focus on collusion on the part of buyers in models with a unique seller. On oligopolistic markets, the
formation of cartels of producers is analyzed under the assumption that demand is atomistic, so that buyers react in a competitive fashion to the choices of sellers.

While these models are well-suited to analyze collusion on some markets (simple auctions, markets for consumer goods), their conclusions can hardly be extended to other markets, such as markets for primary commodities, where a small number of buyers and sellers interact repeatedly. However, some of the best known examples of cartels are actually found on thin markets with a small number of traders. The commodity cartels grouping producer countries (OPEC, the Uranium, Coffee, Copper and Bauxite cartels) face a very small number of buyers of primary commodities. Similarly, the famous shipping conferences, legal cartels grouping all shipping companies operating on the same route, interact repeatedly with the same shippers.

On markets with a small number of strategic buyers and sellers, the study of collusion on one side of the market must take into account the reaction of traders on the other side. The formation of a cartel by traders on one side of the market may induce collusion on the other side. In fact, it is often argued that commodity cartels were formed in the 1970’s as a response to the increasing concentration of buyers on the market (see the case studies by Sampson (1975) on the oil market, by Holloway (1988) on the aluminium market and by Taylor and Yokell (1979) on the uranium market). In oceanliner shipping, the monopoly power of shipping companies has led to the emergence of cartels of buyers, the shippers’ councils which negotiate directly with the shipping conferences (Sletmo and Williams 1980).

Our purpose in this paper is to analyze the formation of buyers’ and sellers’ cartels on markets with a small number of strategic buyers and sellers. In particular, we study how collusion on one side of the market may induce collusion on the other side. When do cartels emerge on the two sides of the market? What are the sizes of those cartels? Does the formation of cartels on the two sides of the market lead to a higher restriction in trade than in the case of unilateral collusion? Does bilateral collusion induce a “balance” in the market power of buyers and sellers, as suggested by Galbraith (1952)?

In order to answer these questions, we study a sequential model of interaction between an equal number of buyers and sellers of an indivisible good. In the first stage, buyers decide to form a cartel and restrict the number of traders they put on the market. In the second stage, sellers form a cartel and restrict trade in the same way. In the third stage, once the number of buyers and sellers excluded from the market is determined, the remaining traders trade on the market.

The model of trade for an indivisible commodity that we use is inspired by Rubinstein and Wolinsky (1990)’s model of matching and bargaining among a small number of traders. Buyers and sellers bargain over the surplus generated by the indivisible good, which is normalized to one. At each point in time, buyers and sellers are randomly matched and make decentralized offers. However, to guarantee the existence of a unique price at which trade occurs, we add to the model a centralization mechanism: trade only occurs when all offers are accepted in the same round. It is easy to see that, as the discount factor converges to 1,