Sharing market access in buyer–seller networks

Sofia Priazhkina a,*, Frank H. Page b

a Bank of Canada, 234 W. Wellington St., Ottawa, ON K1A0G9, Canada
b Indiana University, 100 S. Woodlawn Ave, Bloomington, IN 47405, USA

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Abstract

This paper presents a network formation game of buyers and sellers with market sharing. Prior to engaging in bargaining with buyers, sellers exchange access to buyers for negotiated payments to overcome search frictions. With homogeneous preferences, sharing increases market trade volume. Surprisingly, buyers benefit from sharing when sellers have stronger bargaining positions. With heterogeneous preferences, market sharing may decrease market trade volume. Also, when sellers have more bargaining power than buyers, trade volume weakly exceeds Walrasian level, thus causing overproduction by high-cost sellers. Buyers who value the good the least are squeezed out from the market as a result of sharing between sellers.

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* Corresponding author.
E-mail address: SPriazhkina@bank-banque-canada.ca (S. Priazhkina).

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1. Introduction

Sellers usually possess significantly more information about markets than buyers. It is not surprising that this information can be traded and used by other sellers to access new buyers. Given the prevalence of such events, we wish to answer the question: what is the effect on prices, volumes, and welfare when sellers are allowed to share access to their local markets with one other? We answer this question using a model of bipartite networks, where nodes represent buyers and sellers and links represent market access. Before sellers trade with buyers, they can strategically share market access to selective buyers. In particular, sellers bargain by promising or demanding transfer payments for sharing access to their connected buyers. This interaction of sellers changes the initial network structure and affects the bargaining choices that sellers and buyers would make otherwise. We shed light on the geometry of resulting networks and find the effect of sharing on market trades. We also compare the stable outcomes with the perfectly competitive (Walrasian) outcome and determine how the trade surplus is re-allocated between sellers and buyers. Finally, we change the sharing rules to show the effect of market infrastructure on prices and volumes.

The economic intuition of our model can be gained from real-world examples. Professionals that have limited labor hours and face unequal demand, such as doctors and lawyers, often use information sharing in the form of referrals. As such, a popular practitioner may pass his clients to a less popular colleague free of charge or, if the referral becomes regular practice, allow the colleague to see the clients in the same building for a negotiated payment. Similarly, in retailing, sharing of market access often takes place in the form of platforms. Large stores, such as Amazon.com and Macy’s, sell only a limited volume of their own brands and make the majority of their profits by serving as platforms for other competing brands. Likewise, in a market of Internet sales, a company with an extensive client list may profit from selling email addresses of potential clients or information contained in clients’ cookies to another company.  

We find that, as a result of market sharing, total trade volume can either increase, decrease, or stay the same, as can prices depending on the initial market conditions. The model predictions are particularly sensitive to the bargaining power of sellers relative to buyers. The parameter of bargaining power measures the ability of traders to influence prices which is not captured by network effects. This may be determined by the properties of the good, such as degree of necessity and the number of substitutes, and the properties of the market, such as the level of trust, the business etiquette specific for the industry, and the technological infrastructure. The sensitivity of results to the bargaining power illustrates that benefits of markets sharing are product-specific and should be compared among different markets with caution.

We first focus on markets with homogeneous production costs and values. We show that information sharing among homogeneous sellers always increases total market trade volume independent of the initial network structure. Moreover, the trade volume reaches maximum when sellers are in a more preferable position than buyers—that is, when the number of buyers exceeds the number of sellers or when sellers have more bargaining power than buyers. On the contrary, if sellers have less preferable positions, they may abstain from giving away their non-trading contacts to secure their monopoly rents. When traders have heterogeneous preferences, sharing may have ambivalent effect on total market volume. In particular, total volume may decrease as a result of sharing if a sufficient number of high-cost sellers provide access to low-cost sellers and

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1 Abraham et al. (2013) verify that cookies create substantial information asymmetries among sellers.
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