

Search Intermediaries

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(My) Motivation

- Frictionless world, room for intermediation activity. With frictions, intermediaries may reduce the likelihood of mismatch/increases the quality of the match.
- Search and Matching models: sellers and buyers search for trading counterparts. What if two-sided heterogeneity?
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- Informational frictions. Example: Housing market, Headhunters vs. regular labor market.
- Information is not efficiently dispersed; e.g. non-trading spell

This paper's goal

- To investigate the gains from the intermediation activity
 - in a frictional market with double heterogeneity
 - housing market as a reference
- Intuition: Employing brokers may overcome the costs by increasing the quality of the match due to larger **inventories**.
- Heterogeneity must be sufficiently large for brokering to take place in equilibrium.

Search without Brokers

- Discrete time
- $r(= 0)$: discount rate.
- n types of agents of equal size.
- Free entry of sellers
- Agents simultaneously search:
 - seller has one house for sale (building cost k)
 - buyer wants to buy one house
- $\theta \equiv B/S$
- $m(\theta)$: arrival rate for a seller; $\frac{m(\theta)}{\theta}$: for a buyer
- Upon matching, inspection and showing costs: c_b and c_s .
- Trade conditional on same type. Leave the market (new entry)

Value Functions

- Seller's value function

$$V = \frac{1}{1+r} \left(m(\theta) \left(-c_s + \frac{1}{n} t \right) + \left(1 - \frac{1}{n} m(\theta) \right) V \right)$$

- Buyer's value function

$$U = \frac{1}{1+r} \left(\frac{m(\theta)}{\theta} \left(-c_b + \frac{1}{n} (1-t) \right) + \left(1 - \frac{1}{n} \frac{m(\theta)}{\theta} \right) U \right)$$

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- Expected value for a buyer-seller pair:

$$V + U = 1 - nc_s - nc_b$$

Search with Brokers

Brokers

- free entry
- contact sellers to seek exclusive representation.
- Two markets:
 - Seller's market
 - Buyers' market
- complete a transaction if sells a house to a buyer.
- Limited capacity: at most 2 houses at once.
- No cost advantage over buyers and sellers.
- same matching technology:
 - $m(\theta_s)/\theta_s$: arrival rate for brokers at the sellers' market; $m(\theta_b)$: arrival rate at the buyers' market.

Broker's Value Functions

- at the sellers' market (ϕ : commission)

$$W_1 = \frac{1}{1+r} \left(\frac{m(\theta_s)}{\theta_s} (-c_b + \frac{n-1}{n} (W_2 + \phi)) + (1 - \frac{m(\theta_s)}{\theta_s} \frac{n-1}{n}) W_1 \right)$$

- at the buyers' market

$$W_2 = \frac{1}{1+r} \left(m(\theta_b) (-c_s + \frac{2}{n} (W_1 - \frac{1}{2} c_s)) + (1 - m(\theta_b) \frac{2}{n}) W_2 \right)$$

Equilibrium

- Brokers make 0 profits from each transaction
- Buyers and sellers want to participate in the market
- Equilibrium commission

$$\phi = \frac{n+1}{2}c_s + \frac{n}{n-1}c_b$$

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- $\Delta(U + V) = \frac{n^2 - 6n + 3}{2(n-1)}(c_b + c_s) > 0$ iff $n \geq 6$