Discussion of “Competition and Incentives in Mortgage Markets: The Role of Brokers”

Jean-François Houde
UW-Madison

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What is the paper doing?

- Estimate a model of demand and competition between banks with different levels of vertical integration (brokers)
- **Goal:** Quantify the impact of vertical integration and (wholesale) discrimination on market-power and efficiency
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- Estimate a model of demand and competition between banks with different levels of vertical integration (brokers)
- **Goal:** Quantify the impact of vertical integration and (wholesale) discrimination on market-power and efficiency
- **Data:** (i) commissions (upstream prices), (ii) shopping mode choice, (iii) retail prices and fees (downstream prices), and (iv) vertical network
- **Model highlights:**
  - Resale price maintenance (sort of)
  - Price discrimination (commissions)
  - Agency problems
  - Bargaining: Relax price-taking assumption
What do Brokers do?

Competition:
- Provide access to "mortgage specialists"

Transaction cost:
- ↓ shopping cost

Efficiency:
- Lower origination cost (mostly)

Agency problem:
- Distorts lender/product choice

\[ y_i = \begin{cases} 
1 & \text{if } -\theta c_1 > -\theta c_2 + (1 - \theta) r_2 \\
2 & \text{else.}
\end{cases} \]

Double markup:
- Potentially through broker fees (assumed away)

Bottom line:
- Brokers ↓ market-power and ↑ consumer surplus (vertical integration is bad!)

HSBC UK

Broker

Aldermore

Borrower

\[ c_1 \]

\[ r_1 + \kappa_i \]

\[ f + r_1 \text{ or } r_2 \]

\[ c_2 \]
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Demand and Shopping Mode Choice

- Lender/product choice: Direct and Broker channels

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P^d_{ij} = \frac{\exp(\delta_j - \alpha r_j + \lambda \text{Branches}_{ij} - \kappa_i)}{\sum_{j'} \exp(\exp(\delta_{j'} - \alpha r_{j'} + \lambda \text{Branches}_{ij'} - \kappa_i))}
\]

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P^b_{ij} = \frac{\exp(\delta_j - \alpha (r_j + f_b) + \lambda \text{Branches}_{ij} + \frac{\theta}{1-\theta}(\delta^b_{j} + \alpha^b c_j))}{\sum_{j'} \exp(\delta_{j'} - \alpha (r_{j'} + f_b) + \lambda \text{Branches}_{ij'} + \frac{\theta}{1-\theta}(\delta^b_{j'} + \alpha^b c_{j'}))}
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- Common search cost \(\kappa_i\) → Does not affect lender/product choice
- \(\theta > 0\) allow small banks to “steer” business away from large banks
- What is the reference group normalization (i.e. no outside option)?
Demand and Shopping Mode Choice

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**Implication 1:** No selection on unobservables

- Consumers choose Broker if \( \kappa_i > \bar{\kappa} \)
- \( \bar{\kappa} \) is independent of unobserved “taste” for lenders/products
- Allow sequential estimation of \((\delta, \alpha, \lambda), (\delta^b, \theta, \alpha^b)\) and \(F(\kappa)\)
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**Implication 2:** IIA substitution patterns across loan types/lenders

- Unappealing substitution across loan sizes (LTV) and terms
Price (rate) competition

- Given commissions, banks compete in rates (assuming one product per lender):

\[
\max_{r_j} F(\hat{\kappa}) D_j^d(r_j, r_{-j})(r_j - mc_j^d) + (1 - F(\hat{\kappa})) D_j^b(r_j, r_{-j})(r_j - mc_j^b - c_j)
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- MC estimation: Invert FOC
  - How? \( J \) FOCs... but \( 2J \) unknowns!
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  \[\text{Solution: Estimate different slopes for borrower/product } X' \text{ using}\]
  \[r_j = AMC_j + \text{Markup}_j\]

Where, \(AMC_j \approx \rho_j mc_j^d + (1 - \rho_j)(mc_j^b + \gamma c_{jb})\)

→ Weights depend on demand/prices
→ Why does \(c\) (commission) enters the MC function (\(\gamma\))?
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- Potential concerns:
  - Simultaneity problem (paper uses rival shares as IVs)
  - Unobserved cost differences between \( d \) and \( b \)?
Commission bargaining

- Nash-in-Nash:

$$\max_{c_{jb} \in [c_{jb}, \bar{c}_{jb}]} \left[ \pi_j(c_{jb} | B_j) - \pi_j(B_j \setminus b) \right]^{\beta_{jb}} \left[ W_b(c_{jb} | L_b) - W_b(L_b \setminus j) \right]^{1-\beta_{jb}}$$

Where $W_b(c_{jb}) = \sum_{j' \in L_b} \pi_b D_j^b(r, c) \cdot$ [Broker utility].

What is broker "utility"? Answer: $\delta_{jb} + \alpha_{bic} \cdot$ [from demand-side.]

Why not use revenue? $(c_{b} + f_{b}) \times$ [Loan size]

Estimation:

- $\beta_{jb}$ is "inverted" from the FOCs ($\approx J \times B$) (as in Grennan)
- Stackelberg: How is the pass-through matrix $d_r/\partial c_{jb}$ incorporated?
- Participation: Are there "broken" links? If so, does this violate the N-in-N assumption?
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Additional comments/suggestions

What do brokers do?
- Shop for better rates? If so, how much dispersion?
- Find qualifying lenders?
- “Advices”: Long-term relationship beyond first term (refinancing)

Motivating facts: Somewhat disconnected from the model
- NHB vs refinancing consumers
- Commission dispersion? Correlation with branch presence (conditional on bank FEs)?
- Within broker lender share distribution: (Semi)-Exclusive relationships?

Price elasticity: Fees vs Rates
- Rates determine monthly payments (discounted)
- Fees are paid upfront
- Might want to estimate two separate price coefficients
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- Broker fees:
  - Many brokers wave fees for (all?) borrowers. Broker competition? Negotiation?
  - Welfare: Broker ban (VI) should have additional efficiency gains due to double marginalization

There is a lot of moving pieces...

- Product choice:
  - Why not take the LTV/term choice as given, and focus solely on the lender/broker choice? What about the cost of mortgage insurance?

- Broker preferences:
  - Are borrowers using brokers choosing different products because of biases, or because of unobserved heterogeneity?
  - Clarify identification of cost difference between broker/direct

- Alternative strategy: Infer cost difference from commission choice

- Use common Nash-bargaining parameter

Similar to Gowrisankaran, Nevo and Town (AER, 2015)
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