Discussion of *"Competition and Incentives in Mortgage Markets: The Role of Brokers"*

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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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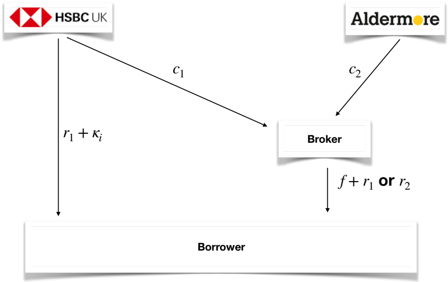
- **Goal:** Quantify the impact of vertical integration and (wholesale) discrimination on market-power and efficiency
- **Data:** (i) commissions (upstream prices), (ii) shopping mode choice, (iii) retail prices and fees (downstream prices), and (iv) vertical network
- **Model highlights:**
  - Resale price maintenance (sort of)
  - Price discrimination (commissions)
  - Agency problems
  - Bargaining: Relax price-taking assumption

What do Brokers do?



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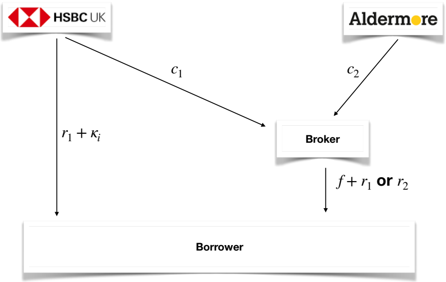

- **Competition:** Provide access to "mortgage specialists"
- **Transaction cost:** $\downarrow$ shopping cost κ
- **Efficiency:** Lower origination cost (mostly)
- **Agency problem:** Distorts lender/product choice

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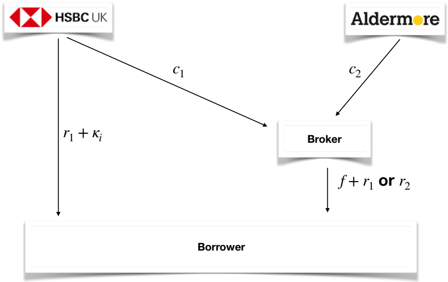

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- **Bottom line:** Brokers $\downarrow$ market-power and $\uparrow$ consumer surplus (vertical integration is bad!)

Demand and Shopping Mode Choice

- Lender/product choice: Direct and Broker channels

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

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  - $\theta > 0$ allow small banks to "steer" business away from large banks
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  - Consumers choose Broker if $\kappa_i > \bar{\kappa}$
  - $\bar{\kappa}$ is independent of unobserved "taste" for lenders/products
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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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$$r_j = \text{AMC}_j + \text{Markup}_j$$

$$\text{Where, AMC}_j \approx \rho_j mc_j^d + (1 - \rho_j)(mc_j^b + \gamma c_{jb})$$

$\rightarrow$ Weights depend on demand/prices

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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:

$$\max_{c_{jb} \in [\underline{c}_{jb}, \bar{c}_{jb}]} \left[\pi_j(c_{jb}|\mathcal{B}_j) - \pi_j(\mathcal{B}_j \backslash b)\right]^{\beta_{jb}} \left[W_b(c_{jb}|\mathcal{L}_b) - W_b(\mathcal{L}_b \backslash j)\right]^{1-\beta_{jb}}$$

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

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- Estimation:
  - β_{jb} is "inverted" from the FOCs ($\approx J \times B$) (as in Grennan)
  - Stackelberg: How is the pass-through matrix dr_k/dc_{jb} incorporated?
  - Participation: Are there "broken" links? If so, does this violate the N-in-N assumption?

Additional comments/suggestions

- What do brokers do?
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  - NHB vs refinancing consumers
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- 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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  - *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?
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- 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)