Discussion of "Location, Productivity, and Trade"

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First part of paper: Spatial competition

**Basic setup:**

1. heterogenous firms
2. endogenous location & price
3. sequential entry (SE)
4. elastic demand for individual consumer

Results:

9. eqm w/ selection (Syverson 2004, Vogel 2009)
10. more productive ...rms more isolated (Vogel 2008, 2009)
11. arbitrary distribution of \( a_i \) (Vogel 2009)

Tractability:

- only “market toughness” & \( a_i \) matter for \( \pi_i \), as in, e.g., Cournot & monopolistic competition (Vogel 2008, 2009)
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Second part of paper: A general demand system (& trade)
Outline

What can I (try to) add?

1. Assumptions
   1. What are the roles of the two key assumptions?
      - What does SE buy and why?
      - What does $\gamma > 0$ buy and why?
   2. Is there an alternative assumption to replace these?

2. How to think of spatial competition and multiple markets?

3. What do/can we learn about trade?
   - Unfortunately, I have little to add here...
Role of key assumptions

- Key assumptions (SE and $\gamma > 0$) are costly
  - Why can’t a firm change its price?
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- **Jumping ahead:**
  - I know what $\gamma > 0$ buys
  - I don’t know what SE buys
Role of key assumptions

- Consider standard Hotelling: $\gamma = 0 \& \text{no SE}$
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What is the role of SE?

1\textsuperscript{st} thought: SE $\Rightarrow$ pure strategy eqm?

- Not true: require $\gamma > 0$
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- Let $V_i^N = \frac{1}{1-\delta} \pi_i^N$ denote firm $i$’s value of not deviating

- Deviating at $t = 1$ $\Rightarrow$
  - period 1 profit rises $\pi_{i1}^D > \pi_i^N$
  - may be entry in period 2 $\Rightarrow$ $\pi_{i2}^D \leq \pi_{i1}^D$

- However, still have $\pi_{i2}^D \geq \pi_{i1}^N$
What is the role of SE?

- 2nd thought: $SE + \gamma > 0$ necessary for pure strategy eqm?
  - Not true: see previous Figure

- 3rd thought: $SE + \gamma > 0$ necessary for arbitrary distribution of $a$?
  - Not true: see previous Figure
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  - If ε → 0 and f → 0, then a deviation ⇒ entry
  - and entry ⇒ π^D_{i2} = π^N_{i1}
  - Thus, ε → 0, any γ > 0, & sufficient patience ⇒ no deviation
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  - If ε → 0 and f → 0, then a deviation ⇒ entry
  - and entry ⇒ \( \pi_{i_2}^D = \pi_{i_1}^N \)
  - Thus, ε → 0, any γ > 0, & sufficient patience ⇒ no deviation

- Dropping one ad-hoc assumption in exchange for others?
  - those on f and δ quite reasonable
  - but ε? what happened to arbitrary distribution of a?
What is the role of SE?

- 5th thought: SE + γ > 0 ⇒ can solve explicitly for γ?
  - True. In standard model could only get lower bound for γ

- 6th thought: SE + γ > 0 ⇒ elastic demand for individual consumer and non-linear transport cost
  - This is what generates demand system and cool price eqn
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- 6th thought: SE + γ > 0 ⇒ elastic demand for individual consumer and non-linear transport cost
  - This is what generates demand system and cool price eqn
  - I see that elastic demand works in this model, but:
    - where is the characterization & proof?
    - this is key innovation of paper, so must include a proof!
    - still unclear what SE buys here though...
Alternative assumption

Spatial price discrimination, e.g. BEJK (2003), Vogel (2009)

Suppliers (intermediate good producers) tailor their goods to match requirements of consumers (final good producers)
**Alternative assumption**

*Spatial price discrimination, e.g. BEJK (2003), Vogel (2009)*

- Suppliers (intermediate good producers) tailor their goods to match requirements of consumers (final good producers)
- For any locations and distribution of costs, unique eqm in prices
  - Bertrand competition in undifferentiated goods at each location
- Vogel (2009): unique eqm to three stage game w/ inelastic demand: entry, location, price
  - Elastic demand has no effect on price stage... Can it be incorporated??
Spatial competition and multiple markets

Introducing trade

- Must good I sell in the U.S. be same as one I sell in China?
  - If "yes," equilibrium solution in closed economy not valid unless integrated equilibrium
    - i.e. no trade costs
  - If "no," why don’t I sell both in both countries?
    - Maybe it’s same good, but marketed differently
    - The province of many a recent Minnesota grad: Arkolakis, Nosal, Drozd
Role of spatial competition

- Spatial competition models are usually quite complex

- Often yield same aggregate demand predictions as aggregate utility
  - Melitz Ottaviano (aka linear demand) $\approx$ Vogel (2008)
    - although intercepts of demand curves vary across firms in Vogel (2008)
  - CES = logit (with homothetic demand conditional on discrete choice)
    - Anderson, de Palma, Thisse (1989)

- Might suggest that, if only care about demand system, just assume something reduced form
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- But I have never seen demand system (and price eqns) obtained here...
  - very general...
Demand system

- **Question**: What can we do with demand system that we could not do with others?
  
  - Given generality, there must be something

- Answer is not variable markups: other systems imply variable markups
Conclusion

- Very tough problem leads to very general demand system
- Role of SE is unclear
- Arbitrary distribution of productivity from ad-hoc assumption
- Derivation, characterization of equilibrium w/ elastic demand & non-linear transport cost?
- ***Want to see demand system shed light on questions in trade, macro, IO...
  - A lot of room for interesting applications