

# Supermarket Choice with multi-store shopping: measuring the effect of public planning regulation

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# Aims of the Paper

- Planning system tries to “protect the high street”
- Questions:
  - Does application of planning policy in groceries reduce competition and/or impact consumer welfare?
  - Does it work to move volumes from out-of-town supermarkets to town centers?
- Aim to study effect of the planning policy on consumer welfare in the groceries market.
- Interesting question – but of course only going at ‘cost’ side of a CBA for the planning system - so cannot ultimately evaluate the planning policy – but could ‘feed in’ to the discussion

# Approach

- **Stage 1:** Estimate demand model for supermarkets and compute pricing equilibrium
- **Stage 2:** Policy analysis – evaluate effect of planning constraints on
  - Consumer welfare
  - Profits of big-box retailers
  - Profits of in-town stores
- **At stage 1:** aim to be very general
  - Consumers can choose to visit multiple stores in each 2 week period
  - Consumers decide both
    - Which store to visit and
    - How much to spend at a store in each of 4 categories of groceries
- **At stage 2:** very simple (at least for the moment)
- So there's a question: will the balance of modelling effort be right given the focus of the paper?

# How do they do at stage 2?

- An **unfair comment** given 'early' stage of the work....
- “6. Counterfactual Policy Analysis
  - To be written....”

## More Seriously: The Ambition for Stage 2

1. “We evaluate counterfactuals in which the large-format stores are added and removed from the market.
2. We evaluate the impact of those stores on the profits of stores located in town centers and..
3. the competitive impact on other big-box rivals.
4. In particular we evaluate the effect of stores that were rejected by the planning authorities.”

# Challenges for the 'Experiment' - 1

- Just 'adding back' rejected planning applications is not an equilibrium experiment
  - So for example if Tesco's application gets rejected maybe end up with a waitrose – possibly elsewhere in town.
  - If so, then presumably will risk systematically overstating the loss of competition
- But can make the same critique of many other 'experiments' like the value of new products- Brenahan et al/ Hausman/Petrin etc

# Challenges for the Experiment - 2

- **Dealing with decision to apply?**
  - As the authors acknowledge the planning *application* outcome data are the outcome of a process of deciding whether to submit an application in the first place
  - Find that rejected applications are, on average actually for smaller floor-space stores than accepted applications - see Table 1:

	Accepted	Rejected
Number	579	125
Mean Floorspace (sq ft)	27,163	21,219

- **Dealing with deterrence?**
  - The impact of the policy on consumer outcomes/profits of course includes the impact on applications not submitted and/or applications which were adjusted to make planners happy (aka deterrence effects).
- **Dealing with ‘accepted subject to changes/conditions’**
  - Also I imagine many accepted applications were approved subject to conditions – so just looking at rejections may be misleading

# Evaluate the CC 2008 Groceries Findings re: planning? For proposed 'Competition Test'

- Considerable number of highly concentrated ( $C1 > 60\%$ ) local grocery markets in UK
- Planning system considered the 'need' for a local supermarket
- Incumbent had particularly good information about local market conditions - so tended to get better outcomes from the planning process than entrants
- Recommended adding a 'competition test' to the planning system favouring new entrants in *highly concentrated markets*.
- *Still being discussed – but no legislation yet (or probably anytime soon)*
- NB: The CC did model this cost of ending up with either no store or a different store format – and found that the welfare impact was sufficiently small to justify the recommendation - in the remittal following Tesco's partially successful appeal
  - But didn't use your demand model....so could check the results




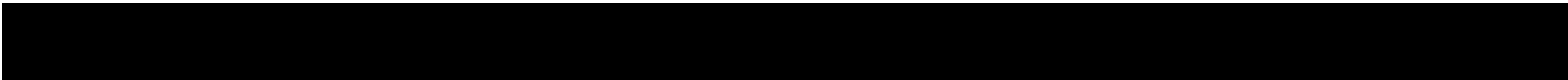
# Stage 1: Demand

- McFadden told us that if we have a discrete choice and a set of continuous choices then can solve the discrete choice model using the indirect utility – where maximized over continuous choices for a given discrete choice  $j$
- In this case:
  - Discrete choices: consumers can choose a store or a *pair-of stores* in a two week period
  -

# Lots of Separability Assumptions

- Separability assumptions: on the underlying utility function to separate the demand at a store from the choice of store
- Utility additively separable in income with constant marginal utility of income across individuals – so Engle curves for expenditure (ie x-sectional variation) look restricted (AIDS/QUAIDS etc)
- Ultimately a linear demand model for expenditures given you chose a particular discrete option  $\{0, j, (j, j')\}$

# Ultimately Linear Structural Form for Expenditures given you chose a store

- When consumer buys from store  $j$  at time  $t$ , demand in category  $k$  (household goods; meat and prepared food; fruit and veg + dairy and bakery; storable groceries) is:  

- While if individual  $i$  chose to go to two stores  $(j, j')$  in 2 week period then demand still linear but depends on both stores prices and characteristics:  

- Lots of testable restrictions on parameters being imposed here
  - Eg within equation
- Can you just estimate aggregated versions of these using linear IV for subsets of individuals followed over time?

# Simplification?

- Can you can estimate this model in 3 steps
  - Stata: expenditure at stores for given category (linear demand)
  - Excel: quadratic optimization (to solve for the conditional indirect utilities)
  - Stata: a standard random coefficient discrete choice model
- If so – then
  - this would be very neat as could actually do it without any major bespoke programming effort and
  - you should emphasize the ultimate simplicity rather than the complexity (which is what, at times, comes across in the current draft of the paper)

# Conclusion

- Interesting important industry
  - In UK has had so much focus there may not be another CC investigation for a while
  - Big companies understand CC unlikely to approve their mergers
  - NB: OFT approved ASDA/Netto – subject to divestments - not CC
- Ambitious paper on the demand side – sure there's a use for such a rich model - but still currently restrictive in potentially important ways
- The planning side/motivation for the paper is nascent - and will face challenges