

Discussion of  
“Market Structure and Competition in Airline  
Markets”  
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## Airline Competition: Demand, Price + Entry

- ▶ Broad idea goes back to Reiss and Spiller (1989), but much progress made possible by recent methods.
- ▶ There are strong methodological reasons to combine entry and post-entry competition
- ▶ Results for airlines are policy-relevant, suggest future directions as well.

# Endogenous Market Structure in the Demand and Pricing Model

Primary emphasis here is on correlated shocks, leading to bias in estimation.

**Example:** if the marginal entrant is an (unobservably) high quality firm, on entry the price may go down a bit, but demand will go up a lot. Makes demand look unrealistically elastic.

(Note that firms are not, however, choosing their demand quality, which is a different kind of endogeneity.)

# D and Pricing in an Endogenous Market Structure (Entry) Model

What does an entry model “alone” estimate?

Entry models with “reduced form profits are not *that* interesting.

Say entry is modeled as

$$y_1 = 1[\bar{\pi}(y_2, y_3, Z_1, \theta) + \nu_1 \geq 0]$$

In practice, the only thing “nonparametrically” identified is (at best), *relative* “competition effects” like

$$\frac{\Delta \bar{\pi} / \Delta y_2}{\Delta \bar{\pi} / \Delta y_3}$$

Hard to say anything about welfare, counterfactual policy, etc.  
And this is with a single linear error in profits! What about shocks to  $D$ , to  $MC$ , to  $FC$ ?

# $D$ and Pricing in an Entry Model

cont

Makes more sense to learn about demand and marginal cost from data on quantity and price. Can carry  $D$  and  $MC$  parameters and unobservables over to the entry model.

In best case, this gives us the parameters of variable profit,  $\bar{\pi}(y_{-j}, Z, \theta)$ , leaving us only to estimate the parameters of fixed cost from the entry model.

But ...

# Endogeneity and Selection

How to deal with the endogeneity of market structure when estimating demand and supply?

With **timing** assumptions (don't observe  $D$  shocks at time of entry, etc.), can get **no endogeneity** problem.

Or, if **all shocks are revealed post-entry** (say shock is that the discrete market-location level, as in Berry & Waldfogel (1999) or Berry, Eizenber and Waldfogel (2016)), then get an endogeneity problem, but **not a selection problem**.

## Selection with Firm Specific shocks

The selection problem here is nothing like the “traditional” one-equation selection model. The “selection region” involves all the unobservables and it is some very complicated area that depends on the full equilibrium map. Many have tried . . . few have returned.

Solution here: **brute force**. Simulate all possible equilibria for many unobservables and thereby simulate the selection region (I think). Would be even harder with non-logit demand, as might have multiple pricing equilibria as well.

## Demand and Marginal Cost

Aside from selection, a fairly straightforward model. Logit demand (with a nest on in / out of the market) is a step back (in order to deal with selection.) Would like a random coefficient on price.

Also, no price heterogeneity (this would be much harder here, introducing more demand and MC shocks.)

# Merger Application

More inelastic demand: merger looks worse

Entry possibilities: merger often looks better.

Offsetting effect: entry by merged firm may lead to exit by other competitors

There is an implicit “synergy” parameter, set to make the merger look as good as possible. Might “fit” this parameter using pre-post merger dummies as instruments.

Also: interesting contrast to Benkard, Bodoh-Creed and Lazarev, who have a dynamic model of entry with i.i.d. private shocks.

## Specification of the Unobservables

Another specification issue is the full support for all the unobservables. Implies that one might get any number of airlines in even a small market and might get no airlines in a large market. The assumption may be exaggerating some entry and exit probabilities.

Note that with a finite support for the unobservables, some airlines will serve some markets with 100% probability and the selection issue is greatly lessened. What is the chance that United won't serve ORD-SFO, is this actually selected on the exact demand and mc shocks?

I have looked forward to reading such a paper for many years:  
[thanks to the authors](#)