Discussion on "Cellular Service Demand: Biased Beliefs, Learning, and Bill Shock"

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Ambitious Paper

- Nonlinear pricing is not dead.
- Outstanding data set.
- Sophisticated structural approach that incorporates features of consumer behavior in making modeling choices.
- Policy relevant application – Another example of the unintended consequences of regulation.
- Long and winding...

Model

Individuals are uncertain about their future usage at the time of subscribing plans:

- Initial guess might be biased, which the authors distinguish (in p.28) between aggregate mean bias and conditional mean bias.
- Expected consumption has some distribution. The dispersion of the distribution of the prior relative to the distribution of the actual consumption characterizes (p.29) overconfidence, *i.e.*, underestimating their own uncertainty.
- Learning may induce consumers to switch (or to change their usage patterns).
- There is inertia but not inattention – Deliberation costs.

Features of the Data

The data is extremely rich:

- Includes individual call information.
- Repeated observations of tariff choice and cellular usage: timing of calls over the billing period rules out sophisticated behavior and hints at positive correlation of usage.
- Tariffs include peak and off-peak periods, fixed fees, different price per minute, within network discounts, and an allowance of free minutes.
- In addition, during the sample period, different plans were offered to consumers, which helps for the identification of some parameters.

Estimation

SML:

- Sensible choices of functional forms demand specification.
- Nice use of the change in demand between peak and off-peak periods to identify the price effect on usage.
- Untested statistical assumptions on the distribution of some of the parameters help define the likelihood function.
- SML incorporates not only the choice of an individuals in a particular period of time but the whole sequence of decisions, thus taking advantage of switching that may make subscribers to be better or worse off.
- Heavily parameterized model.

Econometric Approach & Results

- Good reduced form analysis to guide modeling choices in the structural model (10 pages!).
- Excellent discussion on identification (another 10 pages!).
- Structural estimates reflect, for the most part, the features of consumer behavior documented in the reduced form analysis.
- Counterfactuals show how structural modeling may help figure out the unintended consequences of regulation – Evidently, pricing of firms will not remain unchanged after the "Bill Shock" agreement.

Easy Fixes

The paper is extremely long:

- Introduction – overreaching.
- Changing the order of some sections may help reading the paper – Use concepts repeatedly that are only defined much later in the paper.
- Do not need to measure yourself to *every* single paper remotely related to this one.
- Stata xtabond?

Tone

Tone it down:

- Cellular service a new good in 2002? You do not need this.
- Inattention.
- On pedantic distinctions – Pushing for fashionable interpretations.
- Risk aversion *vs.* overconfidence.

Other Issues

Suggestions:

- Consideration sets: Why not include the choice to stay in the same plan? (You can use your micro data to study whether there is evidence in favor or against it).
- It might be interesting to evaluate the removing biased beliefs but it is not a practical policy issue.
- Need to devote much more time to explain how firms change tariff offering optimally.

Problems

Specification Analysis:

- Despite the authors' efforts, there are hints that the model is overparameterized.
- Sample variation might not be sufficient to identify all the parameters of the model.
- Need to evaluate alternative models and compare whether results are more reasonable under different specifications.