

Specifications in demand systems for drugs: logits v. aids

Farasat A.S. Bokhari and Franco Mariuzzo

KEYWORDS: Demand systems, AIDS demand, logit, random coefficients logit, discrete choice, merger simulations, psychostimulant drugs

BACKGROUND

- Competition authorities in the U.S. and Europe are increasingly supplementing traditional merger analysis with quantitative methods involving econometric estimation of demand models and merger simulations. In principle, the analysis is a straightforward three-step process: (i) use pre-merger data to estimate demand parameters and elasticities, (ii) recover marginal costs, and then (iii) simulate a merger via joint profit maximization of products owned by the merging parties to obtain post-merger equilibrium prices and mark-ups.
- In practice, however, this is a complicated process as it requires making assumptions and modelling choices along each of the three main steps.
- In this paper, we focus on the choice of demand systems, and show differences in estimated elasticities and post-merger simulated prices when demand is estimated using alternative but popular models on the same aggregate sales data. Further, we estimate these models where some of the products may in fact be complements, and show that the choice of demand models may lead to very different estimates of elasticities and of post-merger price predictions.

METHODOLOGY

- We use sales data from the ADHD drugs market for the period 2000-2003 and compare estimates of elasticities and merger simulations from three different demand models.
- Models include logit, random coefficients logit choice model for consumers with heterogeneous tastes, and conditional AIDS demand model in multistage budgeting faced by a representative consumer.
- The three (hypothetical) mergers are between (i) two small firms, (ii) a small and large firm, and (iii) two large firms.

KEY FINDINGS

- The magnitude of cross-price elasticities is large in the third model (AIDS with multilevel budgeting) in comparison to the first two discrete choice models, and some of the cross-price elasticities are estimated to be negative.
- Merger simulations show large price effects for the multistage AIDS model in comparison to the other two models, both for the merging firms as well as for the competitors.
- Our analysis shows that discrete choice models can underestimate the predicted changes in prices in merger simulations, both for the merging parties as well as for the competitors.

W: www.competitionpolicy.ac.uk

T: +44 (0)1603 593715

A: UEA, Norwich, NR4 7TJ

POLICY ISSUES

- The results of this paper are meant to serve as a cautionary tale when using discrete choice models to evaluate mergers.
- Estimates from discrete choice models should be taken as a lower bound to the true predicted price changes.
- If there is any reason to suspect that some of the products may be complements, effort should be directed towards acquiring better data to allow for estimation in product space.

SUGGESTED CITATION

Bokhari, Farasat A.S. and Mariuzzo, Franco (2016) Specifications in demand systems for drugs: logits v. aids, CCP Working Paper 16-6. Available at:
<http://competitionpolicy.ac.uk/publications/working-papers>

THE CCP

The Centre for Competition Policy (CCP), at the University of East Anglia, undertakes competition policy research, incorporating economic, legal, management and political science perspectives, that has real-world policy relevance without compromising academic rigour.

FOR MORE INFORMATION

More information about CCP and its research is available from our website:
www.competitionpolicy.ac.uk

ABOUT THE AUTHORS

- Farasat Bokhari is a Senior Lecturer (Associate Professor) in Economics at the UEA School of Economics and a member of the Centre for Competition Policy at the University of East Anglia.
- Franco Mariuzzo is a Lecturer of Econometrics at the School of Economics and member of the Centre for Competition Policy at the University of East Anglia.

W: www.competitionpolicy.ac.uk

T: +44 (0)1603 593715

A: UEA, Norwich, NR4 7TJ