Optimal Price Targeting

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Abstract

We study the profitability of personalized pricing policies in a setting with consumer-level panel data. To compare pricing policies, we propose an inverse probability weighted estimator of profits, discuss how to handle non-random price variation, and show how to apply it in a typical consumer packaged good market. We generate pricing policies from a large set of models, including Bayesian hierarchical choice models, regularized regressions, and classification trees using different sets of data inputs. Across all models information on consumers' purchase histories lead to large improvements in profits, but demographic information only has a small impact. A relatively parsimonious Bayesian hierarchical logit model achieves a marginally higher profit gain than most other models. We show that out-of-sample hit probabilities, a standard measure of model performance, are uncorrelated with our profit estimator and provide poor guidance towards model selection.

Keywords: *Personalization; Heterogeneity; Pricing*

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