



# The “Economics” in Consumer Choice: Modeling Consumer Forward- Looking Expectations

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# Dynamic Structural Choice (Demand) Models

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- time and uncertainty are explicitly treated
- agents may maximize a multi-period objective function
  - that is, if they are forward-looking, they take the impact of their current choices on expected utilities into consideration when making current decisions.



## Few words on “structural”

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- In a very broad context: Any model that provides a behavioral interpretation for some or all of the parameters  $f(x, y)$

(Reiss and Wolak 2002, Structural Econometric Modeling: Rationales and Examples from Industrial Organization)

- Explicit Specification
- Policy-Invariance
- Structural vs. Reduced Form



# Behavioral Specifications

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- “Behavioral specification to facilitate behavioral interpretation”: Two Examples
  - Lagged choice variables to capture state dependence in discrete choice models
    - Last purchase dummy or GL purchase feedback variable without explaining the source of why past purchases affect current choices (reduced-form) versus
    - Specifications that explain the behavioral source of state dependence (learning, switching costs, habit formation).
  - Reference Prices
    - Weighted average of past prices
    - Specification that explain the reasons that underlie why past prices and references matter (future price expectations or price signaling quality)



# Modeling Consumer Expectations with Dynamic Structural Demand Models

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- Quality Expectations
  - Brand Choice (Erdem and Keane 1996-- learning through use experience and advertising content; Erdem, Keane, Sun 2004-- learning through price, advertising content, advertising frequency, use experience)
- Coupon Expectations
  - Purchase Incidence (Gönül and Srinivasan 1996 -whether to buy, given coupon availability expectations)
- Price (Promotion) Expectations
  - Whether to Buy, Brand Choice and Quantity choice, given price expectations (Erdem, Imai, Keane 2003)
- Quality and Price Expectations
  - Whether to Search, Whether to Buy, What to Buy (Erdem, Keane, Oncu and Strebel 2003)



# Forward-Looking Expectations

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## Consumer Trade-offs

- Erdem and Keane *MS* 1996
  - Trade-off: information value vs getting a product that does not match with one's tastes
  - Evidence for strategic sampling even in mature categories
- Erdem, Imai and Keane *QME* 2003
  - Better price versus stock-outs
  - Price elasticities are significantly biased when forward-looking price expectations are ignored
- Erdem, Keane, Strebel, working paper
  - Lower price or better product/ lower uncertainty vs forgone utility of consumption



# Strengths and Weaknesses

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- Good for
  - theory testing
  - as well as theory specification (deductive/inductive nature)
  - and policy evaluation (Lucas Critique)
- But
  - Restrictive assumptions
  - Identification is more challenging
  - Misspecification is more likely compared to reduced-form models
    - Some remedies: combining different data sources, comprehensive fit diagnostics, robustness checks



# Economics & Psychology & Marketing Interfaces

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- *To model* "behavior" more realistically and *test* for different behavioral processes
  - Context-Dependent Preferences
  - Fairness
  - Instant Gratification
  - Learning
  - Limited Thinking Ahead