In Search of Data: An Editorial

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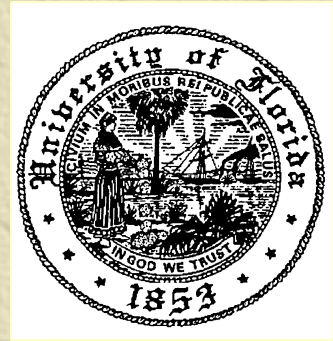


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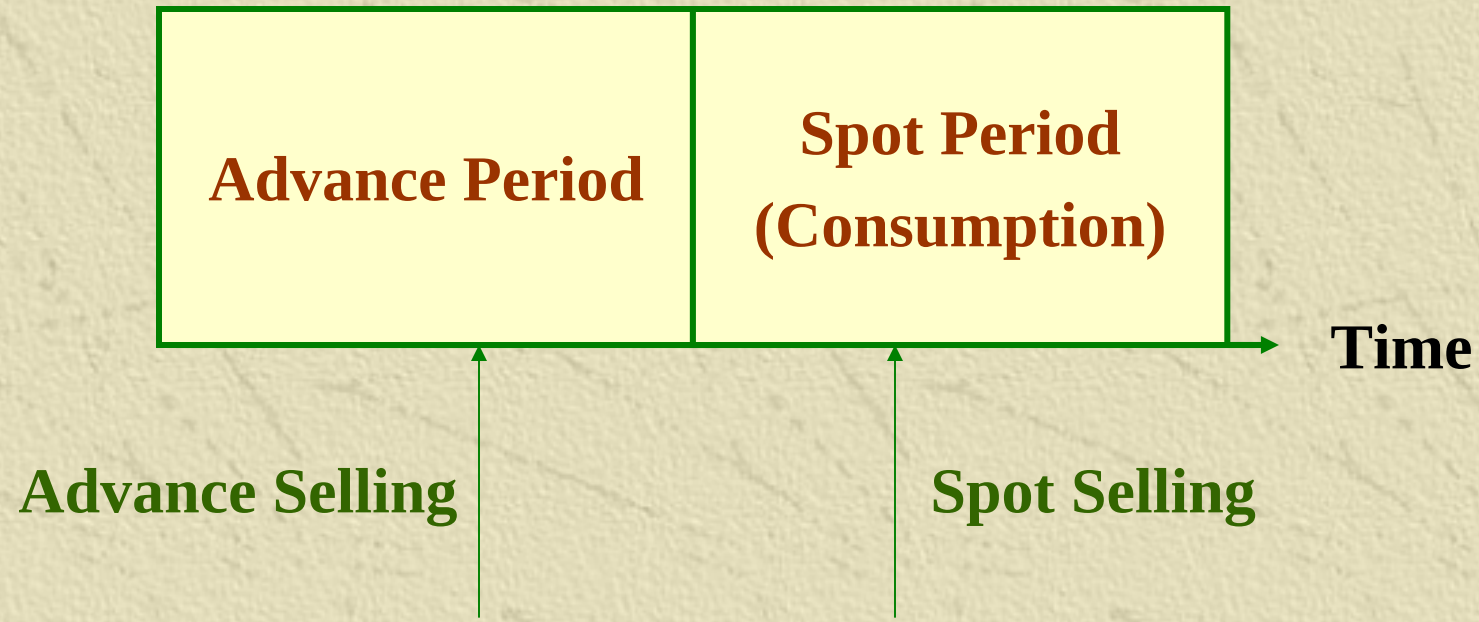
Why Publish in Marketing Science

- INFORMS Sponsor
- Highly Cited (SSCI #3 of 94 business journals)
- On Financial Times List MBA-rankings
- Accessible- libraries throughout world
- Accessible- EBSCO, ProQuest ABI/INFORM, JSTOR, INFORMS (on-line), Web-of-Science (abstracts)…
- Transparent
- FAST! Minimum Revisions
- Directed Revisions
- Link for Own Posting
- Specialized AE System (2 chances)
- Completely Double Blind
- Paperless

Sequence of Events

Advance selling occurs when sellers allow buyers to purchase at a time preceding consumption.



Academic Research (Shugan-Xie)

- Shugan-Xie (Journal of Service Rearch 2000)
  - Basic Idea and demonstration that uncertain valuations can increase profits without price discrimination.
- Xie-Shugan (Marketing Science 2001)
  - Full Model Monopoly with Capacity Constraints
- Shugan-Xie (California Management Review 2004)
  - Implementation and Strategic Issues
- Shugan-Xie (International Research in Marketing 2005)
  - Advance Selling with Competition
- Google SHUGAN for articles

New Technology: The Smart Card

GEMPLUS

State Dependency

Not Price Discrimination

- Complex issue … but general foundation (buyer uncertainty)
- EXAMPLE: 100 potential ticket buyers
- Future valuations unknown
- Suppose $5 or $2 with equal likelihood
- Profits
  - Spot sell at $2; profit = $2 × 100 = $200
  - Spot sell at $5; profit = $5 × 50 = $250

Not Price Discrimination

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  - Spot sell at $5; profit = $5 × 50 = $250
  - Maximum advance price = $2 × ½ + $5 × ½ = $3.50

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  - Spot sell at $5; profit = $5 × 50 = $250
  - Maximum advance price = $2 × ½ + $5 × ½ = $3.50
  - Advance sell at $3.5; profit = $3.50 × 100 = $350
  - Increases profits ($350-$250)/$250 = 40%

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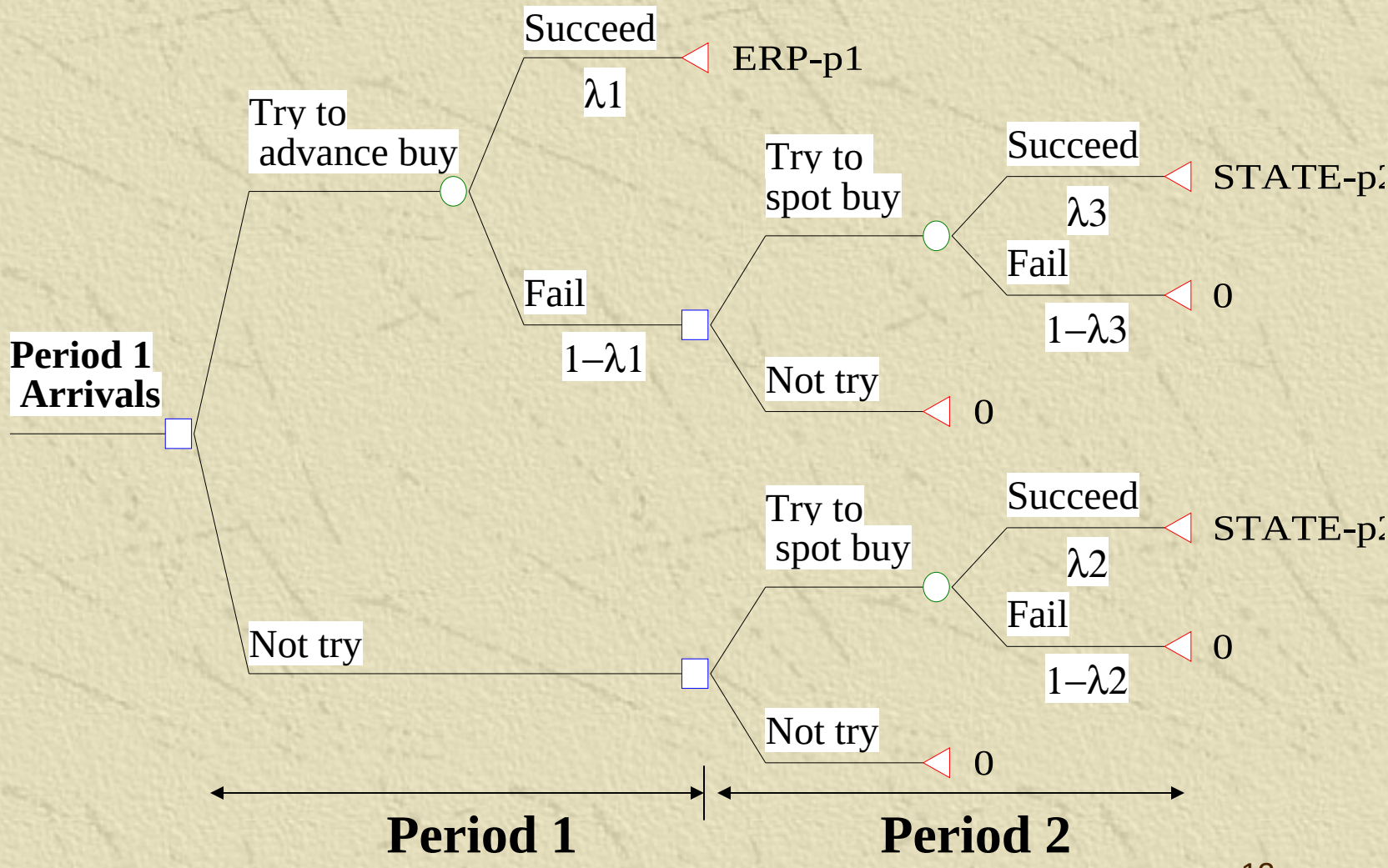
  - Advance sell at $3.5; profit = $3.50 × 100 = **$350**
  - Increases profits ($350-$250)/$250 = 40%
  - **1st degree price discrimination:**

    Profit = $2 × 50 +$5 × 50 = $350

Impact of Capacity Constraint on Buyers



Empirical Work

- As Illustration
- Test Assumptions (Conditions?)
  - Is there state dependency??
  - Does technology exist to advance sell??
  - Will some consumers pay more at spot??
  - Are consumers heterogeneous in period 1??
- Calibration (to make decisions)
  - Find specific advance price for a situation
  - Find specific spot price for a situation
  - Find quantity limits for situation

Conclusions

- Whether articles contain numeric data IS IRRELEVANT
- Research objective dictates desirability of data (numeric real, numeric synthetic or non-numeric)
- Assumptions SHOULD often substitute for data
- give equal scrutiny to data collection - regardless of whether researcher influences or not.
- rather than data, focus on whether research compelling evidence for conclusions

Why use data?

- OPINION vs. FACT
- Observations (or data) pivotal role for publication
- Fuel Popper “falsification” engine of science
- Data foundation decision-support systems
- Sophisticated analysis more efficiently extracts information from data
- Approaches to data sometimes have conflicting objectives

Troubling developments

- leading journal refused to accept just theory
- conflicts over sources of numeric data
- data determines classification
- mining large databases (exploratory?)
- research agendas around databases

Why Numeric Data Matters?

- Signal by author?
- Signal -- author aspires to applicability
- Signal – author concerned with realism
- Signal – author has velleity for practicality
- Signal – author respects empiricism
- MORE IMPORTANT: appropriate or inappropriate?
- MORE IMPORTANT: how data are used
- data sometimes only illustrative
- data sometimes reveal discovery
- focus on answering important research questions

Appropriate Data and Synthetic Data

- Different objectives
  - tools for decision-makers, qualitative strategies, identify or eliminate courses of action, extract information, produce hypotheses, improve theories, test theories
- different objectives require different criteria
- Example – Synthetic Data Appropriate
- Example – Synthetic Data Inappropriate
- Proofs avoid tacit & hidden conditions

The Absence of Data

- Numeric Data Sometimes Irrelevant
  - Compare 2 statistical estimators
  - Determine optimal response given conditions
  - Consistency between stylized facts
  - Deduce the testable implications from assumptions
  - produce testable hypothesis
  - decisions of what to measure & relationships
  - observations should be means to an end
- Focus SHOULD BE ON research question
- Research demarcation-- theoretical & empirical non-sensible

Substituting Assumptions for Data

- All research starts with assumptions (conditions!)
  - Conditions when research valid
  - Assumptions forfeit claims of generality
  - Explicit vs. Shared (Implicit) vs. hidden in procedures
  - Data and assumptions are substitutes
  - more assumptions - lessens need for data
  - fewer assumptions - need more data or weaker conclusions
  - limitations: assumption generality, data representativeness, future reality
- meticulous observations important but …
  - Seek information NOT observations per se.
  - Hope to reveal previously unknown information
  - previously overlooked actions and alternatives
  - value of observations = value of extracted information NOT quantity of observations
  - collecting a unique dataset not inevitably a contribution
- Avoid marginalizing the role of non-numeric data
  - non-numeric observations can reveal more than numeric
  - BUT traditional statistical tools focus on numeric data
  - nothing sacrosanct about numeric data
  - we are unable to extract information that is not there
  - sometimes, assumptions will drive the conclusions - data is a distraction

Data as Deception

- Truly empirical – findings from data
  - Sometimes assumptions within analysis dictate findings
  - finding originated from postulated model not data
  - assumptions often embedded within a complex estimation
  - assumptions: variables excluded, a concave response function, a specific prior distributions
  - implicit assumption of independence -> independence, optimal behavior, non-optimal prices
  - Excluding & including goodwill -> very different results
  - Implicit assumption firms profitable -> diverse marketing strategies can be successful
  - In litigation, found Logit models favor plaintiffs, regression favors defendants
  - falsification difficult if not impossible
  - Not argument for complexity – need parsimony
- instead, explicit assumptions are a virtue of research
  - sometimes punish being transparent
  - necessary balance given past research --- data/assumptions substitutes
  - assumptions impact all research results
  - clever ways extract information from data/ no assumptions unable to do so
  - unable to extract absent information
  - Data source of information NOT interesting sideshow (or deceptive distraction).

The Need for Data

- legitimate reasons for skepticism of theory
  - unrelated to presence of numeric data
  - ultimate contribution unclear
  - Unable to improve prediction -- Unable to improve decisions
  - Faulhaber and Baumol (1988) the record of theoretic adoption spotty
  - Ehrenberg (1995) -- consider empirical generalizations separate from theory (to discover)
  - Cobb (1928) argues that advances from accretion of data NOT excogitation of theory.
- Theory can hinder predictions.
  - Theory can restrict set of admissible models (i.e., consistent with the theory)
  - Does theory beat trial-and-error model (from unrestricted class)
  - Atheoretical Models often outperform (e.g., time series, neural network models, models of random walks) often out-predict theoretical models.
  - Theory can hinder invention – discourages pursuit of clever atheoretical ideas
  - Do serendipity, creativity and necessity play greater roles?
  - Existing theories may might discourage trial of atheoretical alternatives
- Theories should be ultimately testable and be ultimately rigorously verified
  - avoid casual excuses for not collecting data
  - Olaus Romer crudely measured speed of light in 1676, Albert Michelson precisely w/19th century technology
  - we should be humble about our difficulties
  - theory, application and technology are so intertwined -- impossible to tell which came first
  - we must hope theory, empirical research and application are synergistic
  - This argument independent of numeric data

Primary, Secondary and Good Data

- Reviews fault sample, response rate, weak manipulations, confounds
- procedures (e.g., survey, experimental, quasi-experimental)
- Sometimes ignore procedures for secondary data collection
- Data collection procedures always impact research
- Primary data w/recognized defects often BETTER than secondary data w/unknown collection
- Gives researchers the wrong incentives.
- Encourage squeezing more information from secondary datasets
- Discourages measuring new variables
- Consequently -- more incremental
- Should avoid different standards for primary data collections
- not whether defects exist but how (or if) defects impact findings
- impossible to extract information absent from the data
- variable only important because we give it ambiguous variance
- variable only important because we overlooked other variables

Good Data

- Consistency.
  - Different error specification – same findings
  - Sub-samples/larger same -- same results
  - Observations same underlying realities
  - Not inference but predictions to future--external validity (Griliches 1985)
- Inclusiveness
  - must have information to answer the central research question
  - data must be more than interesting sidebar
  - data not be a distraction
  - findings should be almost imperious to assumptions
  - capable of refutation
- Reliability
  - Others must be able to reproduce
  - deductive research often has this property