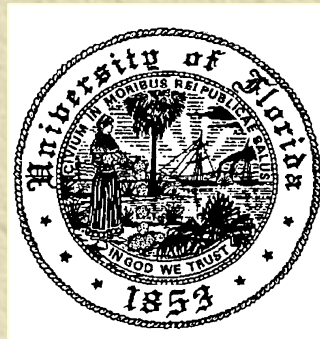


In Search of Data: An Editorial

Steven M. Shugan

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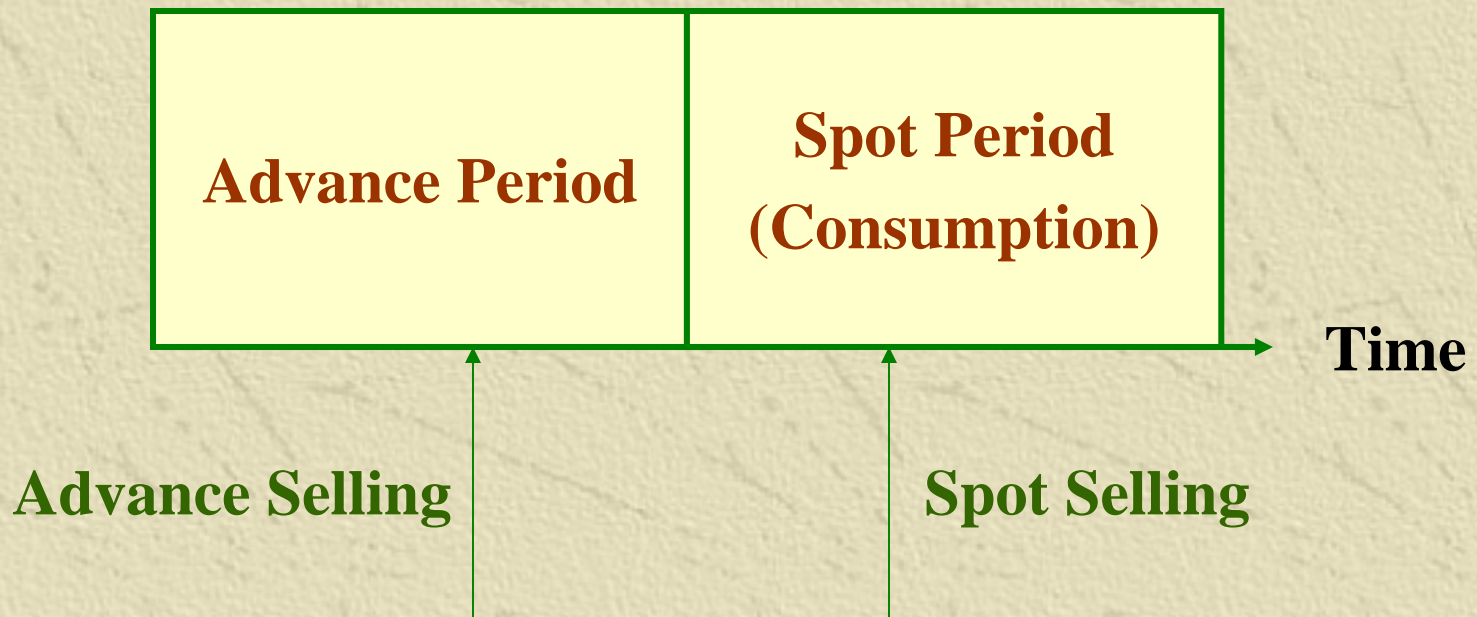
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Why Publish in Marketing Science

- ✦ 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 Research 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



State Dependency

Mood



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 \times 100 = \200
 - ◆ Spot sell at \$5; profit = $\$5 \times 50 = \250

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 - ◆ Spot sell at \$5; profit = $\$5 \times 50 = \250
 - ◆ Maximum advance price = $\$2 \times \frac{1}{2} + \$5 \times \frac{1}{2} = \$3.50$

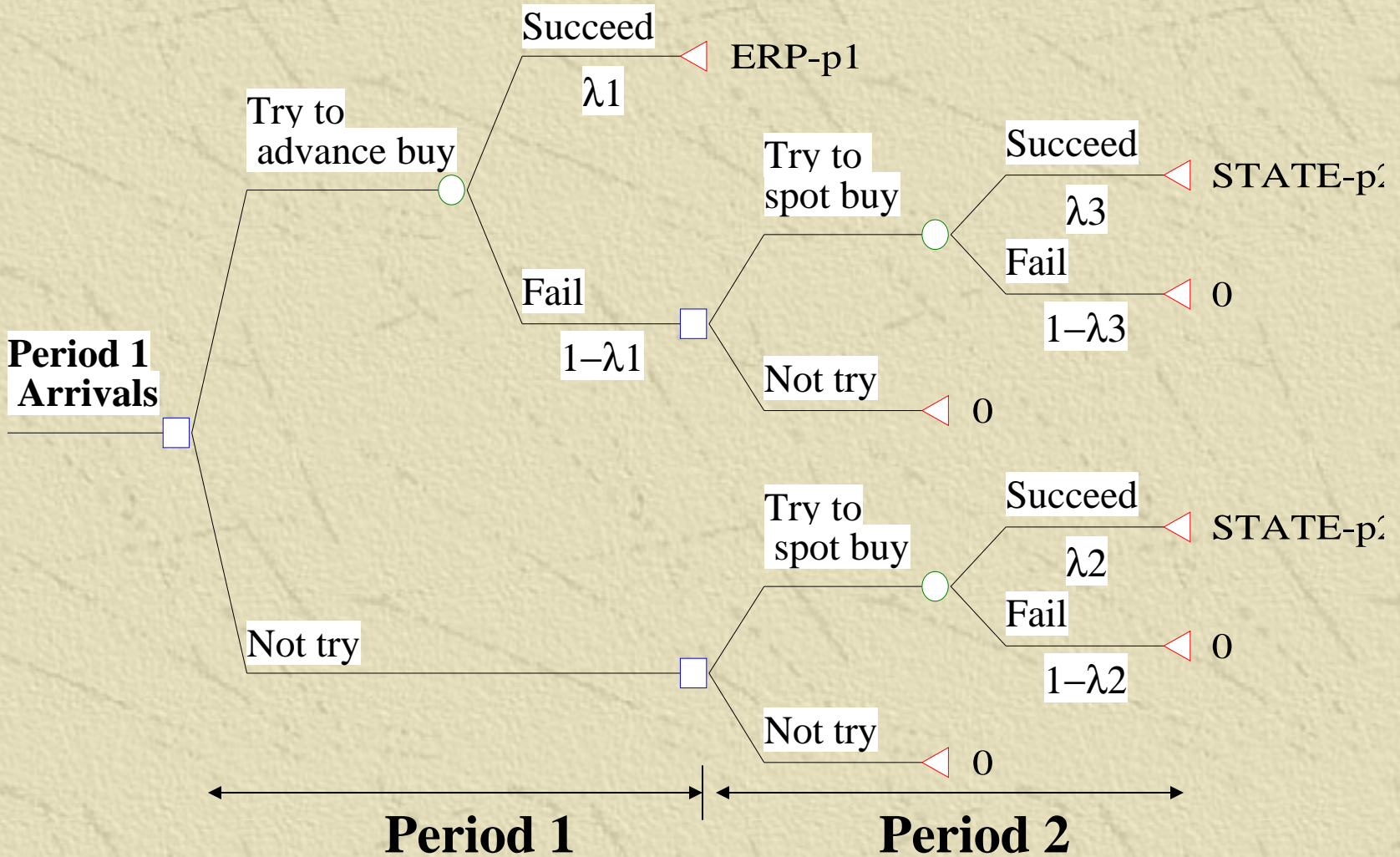
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 - ◆ Advance sell at \$3.5; profit = $\$3.50 \times 100 = \350
 - ◆ Increases profits $(\$350 - \$250) / \$250 = 40\%$

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 - ◆ Advance sell at \$3.5; profit = $\$3.50 \times 100 = \mathbf{\$350}$
 - ◆ Increases profits $(\$350 - \$250) / \$250 = 40\%$
 - ◆ **1st degree price discrimination:**
Profit = $\$2 \times 50 + \$5 \times 50 = \mathbf{\$350}$

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