OVERVIEW

This course provides students with an overview of hot topics that quant researchers are studying today and the models they use to explore them. The instructors will choose both classic articles from the field and recent advances. The purpose of the seminar is to educate students about picking interesting problems to research, positioning their research in the literature, collecting suitable data, choosing the right model to address the problem, and crafting their article for impact.

Both quant and behavioral candidates can benefit from the course. About 1/3 of the papers covered in the seminar come from research done by doctoral students who took the seminar in prior years. Many of them are award winning and based on dissertations. This selection of papers provides PhD students with both inspiration and a template for their own research.

Substantive topics include innovation, market entry, incumbent defense, diffusion, quality, price, advertising, promotion, category choice, brand choice, competitive targeting, social media, returns to marketing, and network effects.

Models include Bayesian and non-Bayesian estimation for Logit and Probit models, and Tobit, Hazard, Diffusion, Functional Analysis, Synthetic Control, 2- & 3-Stage Least Squares, Instrumental variables, and Latent Dirichlet Allocation, and Structural Models. Focus will be on intuition of the model and insights derived from it, rather than on algebraic derivation.

Methods of instruction includes a mix of instructor presentations, student critiques of papers, and lively discussion of pros and cons of topics, models, and papers. The goal is critical appreciation of the rich literature in quant marketing on these topics.
PART I: Marketing Mix Models (Siddarth)
COURSE SYLLABUS AND SCHEDULE
(Revised 29 November, 2021)

Instructor: S. Siddarth
HOH 313
Phone: (213) 740-5048 Fax: (213) 740-7828
E-mail: siddarth@marshall.usc.edu

Room/time: To be decided, will meet once a week for three hours.

Office Hours: By appointment

Useful Texts: Train, Kenneth (2003), Discrete Choice Methods with Simulation. Cambridge University Press. (Chapters of this book are available for individual use at the author’s website)

Overview and Objectives

The purpose of my half of this course is to acquaint students with the basic research techniques, approaches, and key findings in the realm of disaggregate (i.e., individual level) marketing models. The thrust of research in this area is to understand, explain, and predict the nature and behavior of markets by modeling behavior at the dis-aggregate or individual level.

The topics are designed to provide a thorough treatment of about one-third of marketing's quantitative modeling field. In this course we cover dis-aggregate models of market response and market structure. It is useful to keep in mind that quantitative modeling also includes aggregate-level models of market response and structure as well as modeling the behavior and decisions of the firm.

Class Format

Each week we will discuss several papers (please refer to the attached schedule), typically oriented around a particular topic, modeling approach, or issue. While students are expected to read all the papers carefully, each paper will be pre-assigned to a student, who will be responsible for making a presentation to the class about the paper.

Each presentation should provide:

- A brief background of the topic area that concisely highlights the major research questions and goals, the theoretical and empirical model, the data and a summary of the main results.
- A careful critique of the research, including a discussion of the paper's major strengths and weaknesses. You should try and make suggestions about at least some of the following issues:
  - Are the research questions addressed interesting? How well do the results answer the question?
  - Are the model assumptions reasonable or realistic?
- An agenda for future research in the problem area. You might think about alternative ways of answering the same question. You should aim to be very precise about your suggestions and comments.
The formal or structured part of the presentation should last about 20 minutes. About 20 minutes of a general discussion by all students and the instructor of the research issues involved in the paper will follow.

**Written Research Proposal**

Students will be required to submit a written proposal for research either on a topic covered in the seminar or a topic related to the general academic thrust of the seminar (individual-level marketing models). The proposal should clearly define the research problem of interest, concisely review relevant literature, define the contribution to be made, and provide an in-depth description of how the research is to be conducted (e.g., what model formulations might be used, what data might be used to test the model, what statistical procedures might be involved). There is no maximum or minimum length for the proposal, but approximately 10 to 15 double-spaced pages usually suffices. A two-page outline of the research proposal is due at the beginning of the fifth class session. This will not be graded but will serve as a basis for providing early comments, feedback, and guidance on the research proposal. Final papers are due by 4 pm on Friday, December 6, 2019.

**Estimation Exercise**

Students, in teams of two, will also be required to complete and submit a short assignment that involves setting up and estimating a logit choice model. Background on the data set and estimation procedures will be provided during the second week of class. The assignment is due at the beginning of class on Friday, September 27, 2019.

**Basis for Grading**

Participants will be graded based on the quality of their performance in four areas:

- Presentation of pre-assigned papers (35%)
- Participation in class discussion (15%)
- Written research proposal (35%)
- Computer exercise (15%)

Please note that it is mandatory to attend all class sessions.
Session 1:
Topic: Discrete Choice Models: Discrete and Continuous Heterogeneity
Models: Random Coefficients Logit, Purchase Incidence and Brand Choice Models

Papers for Discussion


Session 2:
Topic: Structural Models, Endogeneity
Models: Instrumental Variables, Joint Estimation of Supply and Demand Models, Empirical Bargaining Models

Papers for Discussion


Session 3:
Topic: Modeling Consideration Sets and Choice Processes
Models: Discrete Choice Models with Thresholds

Papers for Discussion


Session 4:
Topic: Cross-Category and Store Choice Models
Models: Restricted Boltzman Machine Learning Models

Papers for Discussion


Session 5:
Topic: Policy Applications of Discrete Choice Models

Papers for Discussion


Session 6:
Topic: Advertising Response: Experimental and Quasi Experimental Approaches
Models: Regression Discontinuity and Large-Scale Advertising Experiments

Papers for Discussion


Session 7:
Topic: Social and Mobile Marketing
Models: Price customization and Competitive Targeting

Papers for Discussion


Session 8: Topic: Course Review/Student Research Proposal Presentations
Part II: Strategic & Dynamic Models (Tellis)
Course Syllabus and Schedule
(Revised 29 November, 2021)

Instructor: Gerard J. Tellis
Professor of Marketing, Neely Chair in American Enterprise
Director of Outlier Research in Business (iORB)
Director of USC Marshall Center for Global Innovation
614 HOH. Phone: 213-740-5031 email: tellis@usc.edu
url: www.gtellis.net

Schedule: Day and time to be decided, will meet for 3 hours once a week.

Office Hours: By appointment

Readings: Hard copy available from Doris Meunier in the marketing department.
E-copy on Dropbox for MKT 615

References: Kuhn, The Structure of Scientific Revolutions (free online available)
Lilien, Kotler, & Moorthy, Marketing Models

Description
This part of the seminar covers strategic dynamic models in marketing, with a focus on how dynamic
models solve strategic marketing problems. The instructor will provide an introduction to and intuition of
key models and an overview of articles in each session (see schedule at end). Papers listed under
“Discussion” will be presented and critiqued by students. Papers listed under “Background” give a sense
of the literature on the topic but will not be explicitly discussed. Prior knowledge of econometrics, statistics,
and time series would be helpful though not required.

One of the best ways for doctoral candidates to understand a research area is to critically review articles
describing research in that area. While less efficient than lectures, this approach provides a deeper
understanding of research problems, a better appreciation of the research process, and a practice in
presentation, than the textbook approach. So, the seminar will consist primarily of a discussion of key
articles on each topic led by a student presenter. Students will be challenged to critique one of the articles
listed for discussion each week and position it in the literature. Students in the audience should contribute
constructively to the discussion. For this purpose, students may not use laptops and cellphones in class.

Goals
Upon successful completion of this seminar, students will be able to:
1) Identify important problems in strategic marketing
2) Describe how various dynamic models address these problems.
3) Detail findings in the area.
4) Critically review articles, integrate literature into their publications, and present research.

Method
The sessions will involve a discussion of the readings assigned for the day. Students should read all papers
and participate constructively in the discussion in every session, even if they are not responsible for the
presentation. In addition, on each session, some students will have one of two assignments: 1) Prepare a
summary and critique of a paper or 2) Prepare only a critique of a paper. Students will have to prepare these
critiques on PowerPoint and present to the class on the scheduled date. Students should email the presentation to the instructor ahead of class or bring it to class on a thumb drive. They should also email to other students ahead of the class or make handouts (6 slides per page) of the presentation for all participants in the seminar. Students should not consult notes, reviews, or answers of former students of this course, when preparing these assignments.

**Attendance**

Students need to attend every session punctually and should inform the instructor ahead of time for any absence or late attendance.

**Grading**

Grades will be based on the instructor’s private assessment of a student’s learning and contribution. Weights will be as follows:

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<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Class Participation</td>
<td>18%</td>
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<tr>
<td>Critiques presented</td>
<td>40%</td>
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<tr>
<td>Partially closed-book final exam</td>
<td>42%</td>
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**Final Exam**

The final exam will consist of answering two of four questions in a 3-to-4-hour period. The exam is partially closed book. Students may bring their own handwritten or printed notes to the exam but not bring others’ notes and printed or electronic material, articles, or books. They should not use laptops, tablets, or smart phones.

**Legend for Schedule:**

- FDA = Functional Data Analysis
- ADL = Autoregressive Distributed Lag model
- VAR = Vector AutoRegressive model
- DiD = Difference in Difference analysis
- SC = Synthetic Control
- LDA = Latent Dirichlet Allocation
- NLP = Natural Language Programming
# Part 2 Schedule: Strategic Dynamic Models (Tellis)

<table>
<thead>
<tr>
<th>No</th>
<th>Date</th>
<th>Time</th>
<th>Room</th>
<th>Model/Method</th>
<th>Guest Speaker</th>
<th>Topic</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>1:00 PM</td>
<td>HOH 114</td>
<td>Phil Method</td>
<td>Philosophy of Science</td>
<td>Discussion: Tellis 2017</td>
<td><strong>Background:</strong> Fader 2012; Varian 1997</td>
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<tr>
<td>1b</td>
<td>1:00 PM</td>
<td>HOH 114</td>
<td>Archival R., DiD</td>
<td>Market Entry</td>
<td>Discussion: Golder &amp; Tellis 1993; Johnson &amp; Tellis 2008; Zervas, Proserpio &amp; Byers 2017;</td>
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<tr>
<td>2</td>
<td>1:00 PM</td>
<td>HOH 114</td>
<td>Bass Model, FDA</td>
<td>Diffusion</td>
<td>Discussion: Sood &amp; James &amp; Tellis 2009; Jiang &amp; Jain 2012; Appel, Libai, &amp; Muller 2019; Tellis et al 2019</td>
<td><strong>Background:</strong> Bass 1969; Chandrasekaran &amp; Tellis 2006</td>
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<tr>
<td>3</td>
<td>1:00 PM</td>
<td>HOH 114</td>
<td>Hazard Models</td>
<td>Innovation, Takeoff, Disruption</td>
<td>Discussion: Chandy &amp; Tellis 2000; Tellis &amp; Stremersch &amp; Yin 2003; Sood &amp; Tellis 2011; Zhang &amp; Luo 2019</td>
<td><strong>Background:</strong> Hauser, Tellis &amp; Griffin 2006</td>
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<tr>
<td>4</td>
<td>1:00 PM</td>
<td>HOH 114</td>
<td>Koyck, ADL, DID, SC</td>
<td>Advertising Response</td>
<td>Discussion: Tellis &amp; Chandy &amp; Thaivanich 2000; Teixeira Wedel Pieters 2010; Liaukonyte, Teixeira &amp; Wilbur 2015; Tirumillai &amp; Tellis 2017</td>
<td><strong>Background:</strong> Clarke 1976; Sethuraman &amp; Tellis &amp; Briesch 2011; Tellis &amp; Franses 2006;</td>
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<tr>
<td>5</td>
<td>1:00 PM</td>
<td>HOH 114</td>
<td>Event Analysis; VAR</td>
<td>Returns to Marketing</td>
<td>Discussion: Fornell et al 2006; Sood &amp; Tellis 2009; Tirumillai &amp; Tellis 2012; Borah &amp; Tellis 2014</td>
<td><strong>Background:</strong> Srinivasan &amp; Hanssens 2009; Mizik and Jacobson 2009a; 2009b</td>
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<tr>
<td>6</td>
<td>1:00 PM</td>
<td>HOH 114</td>
<td>LDA NLP</td>
<td>Use of AI for Social Networks</td>
<td>Discussion: Bayus 2012; Tirumillai &amp; Tellis 2014; Toubia &amp; Netzer 2017; Wei, Hong, Tellis 2022</td>
<td><strong>Background:</strong> Borah and Tellis 2016</td>
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## Readings

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<th>Author(s)</th>
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<td>Author(s)</td>
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**Statement on Academic Conduct and Support Systems**

**Academic Conduct:**

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” [policy.usc.edu/scampus-part-b](http://policy.usc.edu/scampus-part-b). Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on [Research and Scholarship Misconduct](http://policy.usc.edu/scampus-part-b).

**Students and Disability Accommodations:**

USC welcomes students with disabilities into all of the University’s educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at [osas.usc.edu](http://osas.usc.edu). You may contact...
OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call
studenthealth.usc.edu/counseling
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org
Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call
studenthealth.usc.edu/sexual-assault
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office for Equity, Equal Opportunity, and Title IX (EEO-TIX) - (213) 740-5086
eotix.usc.edu
Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298
usc-advocate.symplicity.com/care_report
Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

The Office of Student Accessibility Services (OSAS) - (213) 740-0776
osas.usc.edu
OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

USC Campus Support and Intervention - (213) 821-4710
campussupport.usc.edu
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity, Equity and Inclusion - (213) 740-2101
diversity.usc.edu
Information on events, programs and training, the Provost’s Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call
dps.usc.edu, emergency.usc.edu
Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.
USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call
dps.usc.edu
Non-emergency assistance or information.

Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC)
ombuds.usc.edu
A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

Occupational Therapy Faculty Practice - (323) 442-3340 or otpf@med.usc.edu
chan.usc.edu/otfp
Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.