

# ECON 484

## Economic Consulting and Applied Econometrics

### Fall 2016

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Office Hours: One hour before lecture and by appointment

Prerequisites: Econ 303 and Econ 318

#### **Course Description:**

This is an upper level special topics course for undergraduate and masters students that introduces economic consulting and applied econometric methods applied to real world problems. We use economic methods to analyze issues of intellectual property, environmental damage, trademark infringement, brand value, and consumer demand. Economic principals such as elasticity, demand curves and monopolies will be discussed using an applied econometric approach. During the second half of the course marketing models such as logit and the Bass Model will be analyzed and discussed in comparison to economic models. The analysis will focus on econometric thinking and problem solving using case studies as the basis for the lectures and homework. Lectures will focus both on the quantitative approach used by economic consultants as well as the intuitive thought process and rationale that drives that quantitative analysis. The problems and cases analyzed are typical of those found in the economic consulting environment. Prior background in econometrics is required. Econometric technique is demonstrated through case studies. A goal of the course is to provide insight into problem formulation, data gathering, and the implications of statistical models for real world decision-making. Students are exposed to the methods of marketing based on data analysis.

Professor Jeffrey Dubin teaches this course. Dr. Dubin earned his undergraduate degree in Economics with highest honors and great distinction from the University of California, Berkeley, and received a Ph.D. in Economics from the Massachusetts Institute of Technology. Dr. Dubin retired from the California Institute of Technology in 2007 where he was a tenured Professor of Economics. Dr. Dubin joined Caltech in 1982.

Dr. Dubin's research focuses on microeconomic modeling with particular emphasis in applied econometrics. His current research concerns discrete choice econometrics, energy economics, and tax compliance. Dr. Dubin is also co-founding member and Director of Statistical and Economic Analysis at Pacific Economics Group in Pasadena. He is also Senior Advisor with Cornerstone LLP. Dr. Dubin frequently provides expert testimony.

#### **Main Text:**

Studies in Consumer Demand – Econometric Methods Applied to Market Data. (1998) Jeffrey Dubin  
ISBN: 0-7923-825-3 (“SCD”)

**Recommended Texts:**

Academic journal articles, legal cases, expert testimony, and excerpts from additional books will be assigned throughout the course for critical analysis and discussion and will be available on Blackboard.

**Assessment:***Core Grade*

Homework problems based on the current cases being discussed will be assigned on a roughly weekly basis. There are typically 8-10 homework assignments during the semester. A course project (TBD), to be worked on collaboratively by the class as whole (but in assigned groups of 5-7 students) will be assigned. The course project involves original research and data collection with data analysis and a class presentation. The core course grade is determined by homework (25%), class project (25%), midterm examination (25%), and final examination (25%).

*Participation*

The top 10% or so of students that participate in class will typically receive a 1/3 letter grade boost to their core course grade (e.g. a boost from a B+ to an A-). The award of the core grade boost remains at the complete discretion of the Professor. Participation in class is defined roughly as asking and answering questions and taking an active role in a manner that raises the educational experience for the entire class. Participation is not the same as attendance.

Note: the assessment of participation is somewhat subjective and is completely at the discretion of the instructor. Attendance is not mandatory (except for presentation days and examination days). However, lack of attendance is likely to be very highly correlated to poor performance in this course given the lecture style in this course. Also Professor Dubin does not provide “make-up” lecture notes. If you plan to miss class, let the Professor know in advance and plan to get notes from a friend. A reasonable objective for all students is to get the Professor to recall your name by mid-semester. Professor Dubin encourages students to meet with him outside of the classroom.)

*Extra Credit*

“Extra credit” may be awarded during the semester. For instance, homework extra credit may be available from time to time. Homework extra credit might allow a student to compensate for lost points from another assignment or from a missing homework. Homework extra credit, whether it is offered or how much weight it receives in the overall homework component grade, remains at the discretion of the Professor and is subject to revision or adjustment during the semester as deemed appropriate by the Professor. Homework extra credit will not allow even the most eager student to achieve more than 100% on the homework grade component. The value of homework extra credit is limited and should not be expected to be a perfect substitute for performance on the core homework assignment.

Any extra credit, whether it is offered or how much weight it receives in the final course grade, remains at the discretion of the Professor and is subject to revision and adjustment as deemed appropriate by the Professor. The purpose of extra credit, in this course, is to provide extra work for some students to achieve a mastery or proficiency in the material that goes beyond

the course requirements. You should not and cannot rely on extra credit to compensate for poor achievement in the core component grading.

Importantly, it is not necessary to do any extra credit to get an A in this course. Doing A level work on each core component (homework, midterm, project, final) would be sufficient to get an A in the course. Extra credit is purely optional. Consequently, you will do no worse in this course than your core component grades reflect.

#### *Questions about Grading*

You may track your progress on Blackboard and discuss grading issues with the TA. It is your responsibility to discuss posted grades within one week of their posting. They are otherwise final.

#### **Academic Integrity Policy:**

The Department of Economics is committed to upholding the University's Academic Integrity code as detailed in the SCampus Guide. It is the policy of the department to report all violations of the code. Any serious violation or pattern of violations of the Academic Integrity Code will result in the student's expulsion from the major or minor, or from the graduate program.

#### **Academic Accommodations**

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early as possible in the semester. DSP is located in STU 301, and is open 8.30am-5.00pm, Monday through Friday. The phone number for DSP is (213)-740-0776.

#### **Optional Readings**

Readings labeled as "optional" are 100% optional. They are included for students that are interested in delving deeper into the topics than time permits in this course. The optional readings are largely geared towards a more advanced audience, such as MA or PhD students. The optional readings will *not* help you to do better on the exams or homework assignments. They are purely there for students seeking more advanced understanding of the material.

#### **Course Schedule and Topics**

The course is largely organized into various case studies, each of which emphasizes different topics, skills, and methodological tools. The readings listed below match file names on Blackboard. On Blackboard, the files are all organized into their respective case study folders. The blue/white pattern in the tables below is only for improved readability.

#### **CASE STUDY: Canada Post (Weeks 1-3)**

**Topics: Applied Demand Theory, Elasticity, Theory and Measurement Issues, and Intro to Regression Analysis**

## Econometric Topics: Ordinary Least Squares Regression, Missing Variable Theorem, Orthogonality Conditions, Seasonality

### Readings:

<i>Canada Post; Chapter 1.pdf</i> [see textbook for physical copy]	(required)
<i>McDevitt; Newsweek; To Postal Workers, No Mail is Junk.pdf</i>	(required)
<i>Dubin; Handwritten Regression Notes.pdf</i>	(required)
<i>Fisher; Multiple Regression in Legal Proceedings.pdf</i>	(required)
<i>Dubin Ch3; Demand for Direct Mail.pdf</i>	(skim)
<i>Project Objectives.pdf</i>	(skim)
<i>Wallis Seasonal Variation.pdf</i>	(optional)
<i>Malinvaud Demand Theory.pdf</i>	(optional)

**CASE STUDY: Prescott Event Center (mostly for homework; not covered much in class)**  
**Topics: Measurement of Economic Demand: Econometrics, Surveys, and Market Experiments**

## Econometric Topics: Role of the intercept in regression, Introduction to Random Sampling

### Readings:

<i>Cohen ERA Report.pdf</i>	(required)
<i>Dubin Expert Witness Report.doc</i>	(required)
<i>Rhoda Report.pdf</i>	(required)
<i>Dubin Affidavit 1;doc</i>	(required)
<i>Dubin Affidavit 2; Responses to Rhoda.doc</i>	(required)
<i>Dubin; Supplemental Expert Report for Bali Case.pdf</i>	(optional)
<i>ERA Draft Report.pdf</i>	(optional)

**CASE STUDY: Bali (Week 4-6)**

**Topics: Measurement of Economic Demand: Econometrics, Surveys, and Market Experiments**

## Econometric Topics: Introduction to Multinomial Logit, Ex-Post vs. Ex-Ante Forecasting

### Readings:

<i>Dubin Expert Report.pdf</i>	(required)
<i>Omsley Expert Report.pdf</i>	(required)
<i>Bali.ppt</i>	(look at)
<i>Omsley Scenarios; Bali Case.pdf</i>	(optional)

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<i>Dubin; Supplemental Expert Report for Bali Case.pdf</i>	(optional)
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## REVIEW and MIDTERM (Week 6-7)

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<i>Sample midterm.pdf</i>	(recommended)
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## CASE STUDIES: Mabuchi Micro Motors and High Fructose Corn Syrup (Weeks 7-8)

Topics: Patents and Identification and Demand-Supply Systems

### Econometric Topics: Simultaneous Equation Methods and Instrumental Variables

#### Readings:

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Dubin SCD Chapter 2: The World Demand for Fractional Horse Power Direct-Current Motors (textbook)	(required)
<i>DeFranco; Patent Infringement Damages.doc</i>	(required)
<i>Marston; Pricing to Market in Japanese Manufacturing.pdf</i>	(required)
<i>Panduit; Court Opinion.pdf</i>	(required)
<i>High Fructose Corn Syrup v Sugar.ppt</i>	(look at)
<i>Campa and Goldberg; Exchange Rate and Pass-through into Import Prices.pdf</i>	(skim)
Dubin SCD Chapter 3: Estimation and Identification of the Worldwide Demand for Acetic Acid (textbook)	(skim)

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## CASE STUDY: Nestle and Carnation (Weeks 8-10)

Topics: Brand Valuation, Patent Valuation, and Intellectual Property

### Econometric Topics: Interpolation and Missing Data Treatments; data collection

#### Readings:

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Dubin SCD Chapter 4: The Demand for Branded and Unbranded Products: An Econometric Method for Valuing Intangible Assets (textbook)	(required)
<i>Demand for Branded and Unbranded Products.pdf</i>	(required)
<i>Dubin; Cal Tech Admission Table 3-10.odf</i>	(required)
<i>Granger and Gabor; On the Price Consciousness of Consumers.pdf</i>	(required)
<i>Granger and Gabor; Price as an Indicator of Quality.pdf</i>	(required)
<i>Harlan; Rental America, Washington Post Article.doc</i>	(required)

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<i>Lewis; Price Sensitivity Measurement.pdf</i>	(required)
<i>Dubin et al.; LA Electric Vehicle Strategic Market Study.pdf</i>	(skim)
<i>Dubin; Report on Freshmen Admissions at Cal Tech.pdf</i>	(skim)

### CASE STUDY: Kodak and Polaroid (Weeks 11-12)

Topics: Forecasting New Product Demand: Logit and Bass Models

Econometric Topics: Extreme-value Random Utility Maximization, Maximum Likelihood, Probit and Logit

#### Readings:

Dubin SCD Chapter 7: The Demand for Cameras by Consumers - A Model of Purchase Type Choice and Brand Choice (textbook)	(required)
<i>Bass; New Product Growth for Model Consumer Durables.pdf</i>	(required)
<i>Baumol; Five Camera-Demand Models.pdf</i>	(required)
<i>Hauser; Note on Life Cycle Diffusion Models.pdf</i>	(required)
<i>Logic of Fisher Demand Analysis; start on page 13.pdf</i>	(required)
<i>Analysis of Sales of Integral Cameras, Kodak and Polaroid.pdf</i>	(skim)
<i>Exhibits.pdf</i>	(skim)
<i>Kodak Market Expansion.pdf</i>	(skim)
<i>Polaroid Conditional Demand for Film.pdf</i>	(skim)
<i>Sources of Integral Instant Cameras' Rise and Fall.pdf</i>	(skim)
<i>Summary of Kodak Market Expansion Effect and Other Exhibits.pdf</i>	(skim)

### CASE STUDY: Environment and Fishing (Week 12)

Topics: Environmental Demand, Resource Valuation and Damage Estimation

Econometric Topics: Weighted Exogenous Maximum Likelihood

#### Readings:

Dubin SCD Chapter 5: The Demand for Recreational Fishing in Montana (textbook)	(required)
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### CASE STUDY: Garcia Personal Injury (Weeks 13)

Econometric Topics: Simulation and Forecasting, Confidence Intervals

Topics: Damages in Personal Injury

#### Readings:

<i>Dubin Expert Witness Report on Garcia Case.pdf</i>	(required)
<i>Garcia Settles Lawsuit.pdf</i>	(required)
<i>Kings Settle Garcia Lawsuit.pdf</i>	(required)
<i>Garcia Exhibits.pdf</i>	(optional)

**TOPIC: Sampling (Week 14)**

**Econometric Topics: Random Sampling Theory**

**Readings:**

<i>Cochran; Ch2 Simple Random Sampling</i>	(skim)
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**STUDENT PRESENTATIONS (Week 12-15)**

**FINAL EXAM (TBA)**

<i>Practice Final Exam</i>	(recommended)
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FALL 2016 Tentative Schedule			
Week # and Day	Date	Homework Due Dates	Tentative Description of Material Covered

Week 1			
Monday	22-Aug		Syllabus, course reviews, past and current cases, introduce Prescott Event Center case and discuss Problem Set 1 (a.k.a. PS1) (Homework 1)
Wednesday	24-Aug	PS1 due	Canada Post: Introduction to Canada Post Case; Demand Theory, Elasticity, Theory and Measurement Issues; Elasticity Problem to do at home
Week 2			
Monday	29-Aug		Canada Post: Linear regression model and constant elasticity regression model; demand for ad mail; Canada post methodology; basics of econometric demand analysis; missing variable theorem; orthogonality conditions
Wednesday	31-Aug	PS1b due	Canada Post: Trends, creating seasonal variables, and ad mail math; dummy variables and seasonality methods
Week 3			
Monday	5-Sep		NO CLASS: LABOR DAY
Wednesday	7-Sep		Canada Post: Multiplier concept, ex-ante and ex-post forecasting, Lerner's Rule, marginal cost and revenue, and Ramsey Pricing; Role of intercept in regression
Week 4			
Monday	12-Sep	PS2 due	Hedonic Pricing; Multivariate regression; R-squared, Excel/Stata, seasonal variables with -1, 0, and 1
Wednesday	14-Sep		Bali: Introduction to Bali Case; Introduction to multinomial logit and independence from irrelevant alternatives
Week 5			
Monday	19-Sep	PS3 Canada Post due	Bali: Owsley estimates, market share, dilution rate, Dubin's mistakes, key variables affecting RC Villa Revenues; missing variable econometrics – an application. Maddala residual test; Chow tests for structural shift
Wednesday	21-Sep		Bali: Owsley's errors; Bali Conclusion
Week 6			
Monday	26-Sep	PS4 Bali due	Math; Ordinary least squares; Chow test continued
Wednesday	28-Sep		<b>REVIEW FOR MIDTERM</b>
Week 7			
Monday	3-Oct		<b>MIDTERM</b>
Wednesday	5-Oct		Mabuchi: Intro to Mabuchi; Patents, and Demand Supply Systems
Week 8			



Monday	10-Oct	PS5 Price Sensitivity due	Mabuchi continued, 4 elements of Panduit; price to market theory; Marston; foreign prices and exchange rates; trademarks; HFCS; instrumental variables methods for endogenous explanatory variables
Wednesday	12-Oct		Nestle/Carnation: Intro to Nestle/Carnation; Methods of determining values of brands/trademarks; multinomial logit; endogeneity; cumulative distribution function; introduce Dubin's Equity; interpolation and missing data methods
Week 9			
Monday	17-Oct		Nestle/Carnation: Dubin's Equity fully explained
Wednesday	19-Oct	PS6 Trademarks due	Linear probability model; CDF, Normal CDF; Random Utility Maximization; econometric models for discrete choice
Week 10			
Monday	24-Oct		Cal Tech Admissions; production theory; Bass Model; applied discrete choice models
Wednesday	26-Oct		Bass Model
Week 11			
Monday	31-Oct	PS7 Cal Tech due	Kodak and Polaroid Introduction
Wednesday	2-Nov		Kodak and Polaroid Continued; nested logit models
Week 12			
Monday	7-Nov		Finish Kodak; Baumol Model; value of features translated into prices; non-use values; travel cost as valuation method for nature; WESML estimators
Wednesday	9-Nov	PS8 Kodak-Polaroid due	In class project help / collaboration
Week 13			
Monday	14-Nov		Garcia Personal Injury Case Introduction; Simulation methods
Wednesday	16-Nov		Finish Garcia; <b>Begin Presentations</b>
Week 14			
Monday	21-Nov		Sampling
Wednesday	23-Nov		NO CLASS: THANKSGIVING BREAK
Week 15			
Monday	28-Nov	Optional PS9 due	<b>Presentations</b>
Wednesday	2-Dec		<b>LAST DAY OF CLASS: Presentations and REVIEW</b>
<b>MW10am Final: Mon, TBA</b>			

MW2pm Final: Fri, TBA	
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