ECON 281: ALTERNATIVE THEORIES OF CHOICE UNDER UNCERTAINTY

Winter 2013   **T,Th 3:30 – 4:50pm**   **Econ 304**

Prof. Mark Machina   **Office: Econ 217**   **Office Hours: Wed 9:00-1:00**

This course examines alternatives to the classic expected utility and subjective expected utility models of risk preferences and beliefs. It begins with an review of the classical models, presents the various systematic violations of them, and then presents and analyzes those alternatives which have been offered.

DATE	TOPIC
Jan. 8	Introduction & Preliminary Concepts
Jan. 10	Expected Utility Risk Preferences under Objective and Subjective Uncertainty
Jan. 15	Evidence on the Underlying Assumptions of the Classical Models
Jan. 17	Evidence on the Underlying Assumptions of the Classical Models (continued)
Jan. 22	Non-Expected Utility Models of Risk Preferences
Jan. 24	Non-Expected Utility Models of Risk Preferences (continued)
Jan. 29	Generalized Expected Utility Analysis
Jan. 31	Generalized Expected Utility Analysis (continued)
Feb. 5	Dynamic Consistency: Arguments and Counterarguments
Feb. 7	Dynamic Consistency: Arguments and Counterarguments (continued)
Feb. 9	**Midterm Exam**
Feb. 14	Probabilistic Sophistication
Feb. 19	Probabilistic Sophistication (continued)
Feb. 21	Models of Ambiguity and Ambiguity Aversion
Feb. 26	Models of Ambiguity and Ambiguity Aversion (continued)
Feb. 28	Models of Ambiguity and Ambiguity Aversion (continued)
Mar. 5	Subjective Expected Utility Analysis without the Sure-Thing Principle or Probabilistic Beliefs
Mar. 7	Subjective Expected Utility Analysis w/o Sure-Thing Principle or Probabilistic Beliefs (cont.)
Mar. 12	Almost-Objective Uncertainty
Mar. 14	Almost-Objective Uncertainty (continued)
Mar. 19	**(Tuesday) FINAL EXAM 3:00-6:00pm**

(Review Sessions will be scheduled prior to each exam.)

READINGS: The readings will consist of handouts, expository articles, classic articles from the literature and current research articles. I will make the required readings available via the web or printed handouts.

EXAMS: The course grade will be determined on the basis of a Midterm and a Final Exam. I will provide practice problems, and there will be review sessions before each exam.

ECONOMICS 281 OUTLINE

Winter 2013   **Mark Machina**

I. INTRODUCTION & PRELIMINARY CONCEPTS
a. Preliminary Concepts in Probability Theory
Probability Distributions, Probability Measures and Cumulative Distribution Functions
Expected Value, Moments and Stieltjes Integrals
Concave Functions, Convex Functions and Jensen's Inequality
Convolutions, Compound Lotteries and Probability Mixtures
b. The Representation of Uncertainty
Objective Uncertainty: Outcomes, Probabilities and Lotteries
Subjective Uncertainty: States, Events, Acts and Payoff Tables
Mixed Subjective-Objective Uncertainty: "Horse/Roulette Lotteries"
Two-Stage Uncertainty
c. Simple Criteria for Choice Under Uncertainty
First Order Stochastic Dominance Preference
Expected Value Criterion and the St. Petersburg Paradox
Mean-Variance Criterion
Minimax and "Safety-First" Criteria

II. EXPECTED UTILITY RISK PREFERENCES UNDER OBJECTIVE UNCERTAINTY
a. Expected Utility Preferences under Objective Uncertainty
Preferences Functions and von Neumann-Morgenstern Utility Functions
Cardinal and Ordinal Aspects of Utility Functions
Properties of Expected Utility Preferences
The Triangle Diagram
b. Axiomatic Characterization of Expected Utility Preferences
Ordering
Mixture Continuity
The Independence Axiom
Expected Utility Representation Theorem
c. Risk Aversion, Comparative Risk Aversion, Risk Aversion and Wealth
d. Evidence on the Shape of the Utility Function
Friedman-Savage Hypothesis
Skewness Preference, Decreasing Absolute/Increasing Relative Risk Aversion

III. EXPECTED UTILITY RISK PREFERENCES AND BELIEFS UNDER SUBJECTIVE UNCERTAINTY
a. The State-Preference Framework
States, Events, Outcomes and Acts
Preference Functions over Subjective Acts
Objective:Subjective Uncertainty: Anscombe-Aumann Acts
b. Expected Utility Preferences over Subjectively Uncertain Prospects
Subjective Probability and Subjective Expected Utility
Properties of Subjective Expected Utility Preferences
Revealed Comparative Likelihood

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READINGS (starred readings are required)

The following are some texts and surveys of the material covered in this course

Abdellaoui, M. and J. Hey (eds.) (2008). *Advances in Decision Making under Risk and Uncertainty.* Dordrecht: Springer.

Camerer, C. and M. Weber (1992). "Recent Developments in Modeling Preferences: Uncertainty and Ambiguity," *Journal of Risk and Uncertainty* 5, 325-370.

Epstein, L. (1992). "Behavior Under Risk: Recent Developments in Theory and Applications," in Laffont, J.-J. (ed.). *Advances in Economic Theory, Vol. II.* Cambridge University Press.

Fishburn, P. (1988). *Nonlinear Preference and Utility Theory.* Baltimore: Johns Hopkins Univ. Press.

Geweke, J. (ed.). (1992). *Decision Making under Risk and Uncertainty: New Models and Empirical Findings.* Dordrecht: Kluwer Academic Publishers.

Hamouda, O. and J.C.R. Rowley (eds.) (1997b). *Paradoxes, Ambiguity and Rationality* (Vol. 2 of *Foundations of Probability, Econometrics and Economic Games*). Cheltenham, U.K.: Edward Elgar Publishing Ltd.

Hey, J. and P. Lambert (eds.) (1987). *Surveys in the Economics of Uncertainty.* Oxford: Basil Blackwell Ltd.

Kelsey, D. and J. Quiggin (1992). "Theories of Choice Under Ignorance and Uncertainty," *Journal of Economic Surveys* 6, 133-153.

Kischka, P. and C. Puppe (1992). "Decisions under Risk and Uncertainty: A Survey of Recent Developments," *Mathematical Methods of Operations Research* 36, 125-147.

Machina, M. (1987). "Choice Under Uncertainty: Problems Solved and Unsolved," *Journal of Economic Perspectives,* Summer 1987.

Machina, M. "Non-Expected Utility Theory," in *The New Palgrave Dictionary of Economics, 2nd Edition,* Steven N. Durlauf and Lawrence E. Blume (eds.), Palgrave Macmillan.

Munier, B. (1989). "New Models of Decision under Uncertainty: An Interpretive Essay," *European Journal of Operations Research* 38, 307-317.

Siniscalchi, M. (2008). "Ambiguity and Ambiguity Aversion," in the *New Palgrave Dictionary of Economics*, 2nd Edition, Ed. Steven N. Durlauf and Lawrence E. Blume, Palgrave Macmillan.

Starmer, C. (2000). "Developments in Non-Expected Utility Theory: The Hunt for a Descriptive Theory of Choice Under Risk," *Journal of Economic Literature* 38, 332-382.

Sugden, R. (1986). "New Developments in the Theory of Choice Under Uncertainty," *Bulletin of Economic Research* 38, 1-24.

Wakker, P. (2008). "Uncertainty," in in the *New Palgrave Dictionary of Economics*, 2nd Edition, Ed. Steven N. Durlauf and Lawrence E. Blume, Palgrave Macmillan.

Wakker, P. (2010). *Prospect Theory: For Risk and Ambiguity.* Cambridge: Cambridge University Press.

Weber, M. and C. Camerer (1987). "Recent Developments in Modeling Preferences under Risk," *OR Spektrum* 9, 129-151.

I. INTRODUCTION *The following are some standard on probability. (You presumably know all the probability theory that will be used in this course)*

Billingsley, P. (1986). *Probability and Measure, 2nd Ed.* New York: John Wiley and Sons.

Feller, W. (1968). *An Introduction to Probability Theory and Its Applications, Volume I, 3rd Ed.* New York: John Wiley & Sons.

Feller, W. (1971). *An Introduction to Probability Theory and Its Applications, Volume II, 2nd Ed.* New York: John Wiley & Sons.

Parzen, E. (1960). *Modern Probability Theory and Its Applications.* New York: John Wiley & Sons.

II. EXPECTED UTILITY RISK PREFERENCES UNDER OBJECTIVE UNCERTAINTY

Arrow, K. (1951). "Alternative Approaches to the Theory of Choice in Risk-Taking Situations," *Econometrica* 19, 404-437.

Bernoulli, D. (1738). "Specimen Theoriae Novae de Mensura Sortis," *Commentarii Academiae Scientiarum Imperialis Petropolitanae* [Papers of the Imperial Academy of Sciences in Petersburg] V, 175-192. English translation: "Exposition of a New Theory on the Measurement of Risk," *Econometrica* 22 (1954), 23-36.

Fishburn, P. and P. Wakker (1995). "The Invention of the Independence Condition for Preferences," *Management Science* 41, 1130-1144.

* Friedman, M. and L. Savage (1948). "The Utility Analysis of Choices Involving Risk," *Journal of Political Economy* 56, 279-304.

Hammond, P. (1998). "Objective Expected Utility," in Barberá, S., P. Hammond and C. Seidl (1998). *Handbook of Utility Theory. Volume 1: Principles.* Dordrecht: Kluwer Academic Publishers.

* Herstein, I. and J. Milnor (1953). "An Axiomatic Approach to Measurable Utility," *Econometrica* 21, 291-297.

* Machina, M. (1988). "Expected Utility Hypothesis," in John Eatwell, Murray Milgate and Peter Newman, Macmillan (eds.) *The New Palgrave: A Dictionary of Economics*.

Marschak, J. (1950). "Rational Behavior, Uncertain Prospects, and Measurable Utility," *Econometrica* 18, 111-141 ("Errata," *Econometrica* 18, 312).

Pratt, J., H. Raiffa and R. Schlaifer (1964). "The Foundations of Decision Under Uncertainty: An Elementary Exposition," *Journal of the American Statistical Association* 59, 353-375.

Samuelson, P. (1950). "Probability and the Attempts to Measure Utility," *Economic Review* 1, 167-173.

* Samuelson, P. (1952). "Probability, Utility, and the Independence Axiom," *Econometrica* 20, 670-678.

Samuelson, P. (1952). "Utility, Preference, and Probability," (Abstract of a paper given at the conference on "Les Fondements et Applications de la Théorie du Risque en Econométrie," Paris).

Neumann, J. and O. Morgenstern (1944). *Theory of Games and Economic Behavior.* Princeton: Princeton University Press. (2nd Ed. 1947; 3rd Ed. 1953).

III. EXPECTED UTILITY RISK PREFERENCES AND BELIEFS UNDER SUBJECTIVE UNCERTAINTY

* Anscombe, F. and R. Aumann (1963). "A Definition of Subjective Probability," *Annals of Mathematical Statistics* 34, 199-205.

Drèze, J. (1974). "Axiomatic Theories of Choice, Cardinal Utility and Subjective Probability," in Drèze, J. (ed.) (1974). *Allocation Under Uncertainty: Equilibrium and Optimality.* London: Macmillan.

Fishburn, P. (1967). "Preference-Based Definitions of Subjective Probability," *Annals of Mathematical Statistics* 38, 1605-1617.

Fishburn, P. (1986). "The Axioms of Subjective Probability," *Statistical Science* 1, 335-345.

Fishburn, P. (1969). "A General Theory of Subjective Probabilities and Expected Utilities," *Annals of Mathematical Statistics* 40, 1419-1429.

* Hammond, P. (1998). "Subjective Expected Utility," in Barberá, S., P. Hammond and C. Seidl (1998). *Handbook of Utility Theory. Volume 1: Principles.* Dordrecht: Kluwer Academic Publishers.

* Hirshleifer, J. (1965). "Investment Decision Under Uncertainty: Choice-Theoretic Approaches," *Quarterly Journal of Economics* 79, 509-536.

Hirshleifer, J. (1966). "Investment Decision Under Uncertainty: Applications of the State-Preference Approach," *Quarterly Journal of Economics* 80, 252-277.

Karni, E. (1985). *Decision Making Under Uncertainty: The Case of State Dependent Preferences.* Cambridge, Mass.: Harvard University Press.

Kyburg, H. and H. Smokler (eds.) (1980). *Studies in Subjective Probability, 2nd Ed.* Huntington, New York: Robert E. Krieger Publishing Co.

Luce, R. and P. Suppes (1965). "Preference, Utility and Subjective Probability," in *Handbook of Mathematical Psychology*, Vol. III, ed. by R. Luce, R. Bush and E. Galanter. New York: John Wiley and Sons.

Myerson, R. (1979). "An Axiomatic Derivation of Subjective Probability, Utility, and Evaluation Functions," *Theory and Decision* 11, 339-352.

* Savage, L. (1954). *The Foundations of Statistics.* New York: John Wiley and Sons. Revised and Enlarged Edition, New York: Dover Publications, 1972. [Chapter 2]

Suppes, P. (1956). "The Role of Subjective Probability and Utility in Decision Making" *Proceedings of the Third Berkeley Symposium on Mathematical Statistics and Probability, 1954-1955*, 5, 61-73.

IV. EVIDENCE ON THE UNDERLYING ASSUMPTIONS OF THE CLASSICAL MODELS

Allais, M. (1953a). "Fondements d'une Théorie Positive des Choix Comportant un Risque et Critique des Postulats et Axiomes de l'Ecole Américaine," *Econométrie,* Colloques Internationaux du Centre National de la Recherche Scientifique, Paris 40, 257-332.

Allais, M. (1953b). "Le Comportement de l'Homme Rationnel devant le Risque, Critique des Postulats et Axiomes de l'Ecole Américaine," *Econometrica* 21, 503-546. Summarized version of Allais (1953a).

* Allais, M. (1979). "The Foundations of a Positive Theory of Choice Involving Risk and a Criticism of the Postulates and Axioms of the American School," English translation of Allais (1953a). In Allais, M. and O. Hagen (eds.) (1979). *Expected Utility Hypotheses and the Allais Paradox.* Dordrecht: D. Reidel Publishing Co.

Allais, M. (1979). "The So-Called Allais Paradox and Rational Decisions Under Uncertainty," in Allais, M. and O. Hagen (eds.) (1979). *Expected Utility Hypotheses and the Allais Paradox.* Dordrecht: D. Reidel Publishing Co.

Allais, M. (1988). "The General Theory of Random Choices in Relation to the Invariant Cardinal Utility Function and the Specific Probability Function," in Munier, B. (ed.) (1988). *Risk, Decision and Rationality.* Dordrecht: D. Reidel Publishing Co.

Allais, M. (1994). "An Outline of My Main Contributions to Risk and Utility Theory: Theory, Experience , and Applications," in Munier, B. and M. Machina (eds.) (1994). *Models and Experiments in Risk and Rationality.* Dordrecht: Kluwer Academic Publishers.

Baron, J. and D. Frisch (1994). "Ambiguous Probabilities and the Paradoxes of Expected Utility," in G. Wright and P. Ayton (eds.), *Subjective Probability.* Chichester, U.K.: Wiley, 273-294.

Barberá, S. and M. Jackson (1988). "Maximin, Leximin and the Protective Criterion: Characterizations and Comparisons," *Journal of Economic Theory* 46, 34-44.

* Birnbaum, M. (2008). "New Paradoxes of Risky Decision Making," *Psychological Review* 115, 463-501.

Birnbaum, M. and A. Chavez (1997). "Tests of Decision Making: Violations of Branch Independence and Distribution Independence," *Organizational Behavior and Human Performance* 71, 161-194.

* Birnbaum, M. and W. McIntosh (1996). "Violations of Branch Independence in Choices Between Gambles," *Organizational Behavior and Human Performance* 67, 91-110.

Camerer, C. and T.-H. Ho (1994). "Violations of the Betweenness Axiom and Nonlinearity in Probability," *Journal of Risk and Uncertainty* 8, 167-196.

Conlisk, J. (1989). "Three Variants on the Allais Example," *American Economic Review* 79, 392-407.

Curley, S., F. Yates and R. Abrams (1986). "Psychological Sources of Ambiguity Avoidance," *Organizational Behavior and Human Decision Processes* 38, 230-256.

* Ellsberg, D. (1961). "Risk, Ambiguity and the Savage Axioms," *Quarterly Journal of Economics* 75, 643-669.

Ellsberg, D. (2001). *Risk, Ambiguity and Decision.* New York: Garland Publishing, Inc.

Halevy, Y. (2007). "Ellsberg Revisited: An Experimental Study," *Econometrica* 75, 503-536.

Heath, C. and A. Tversky (1991). "Preferences and Belief: Ambiguity and Competence in Choice Under Uncertainty," *Journal of Risk and Uncertainty* 4, 5-28.

* Hey, J. and D. di Cagno (1990). "Circles and Triangles: An Experimental Estimation of Indifference Lines in the Marschak-Machina Triangle," *Journal of Behavioral Decision Making* 3, 279-306.

* Kahneman, D. and A. Tversky (1979). "Prospect Theory: An Analysis of Decision Under Risk," *Econometrica* 47, 263-291.

* Keller, R. (1985). "The Effects of Problem Representation on the Sure-Thing and Substitution Principles," *Management Science* 31, 738-751.

Kreps, D. and E. Porteus (1979). "Temporal von Neumann-Morgenstern and Induced Preferences," *Journal of Economic Theory* 20, 81-109.

* Lichtenstein, S. and P. Slovic (1971). "Reversals of Preferences Between Bids and Choices in Gambling Decisions," *Journal of Experimental Psychology* 89, 46-55.

Lichtenstein, S. and P. Slovic (1973). "Response-Induced Reversals of Preference in Gambling: An Extended Replication in Las Vegas," *Journal of Experimental Psychology* 101, 16-20.

* MacCrimmon, K. and S. Larsson (1979). "Utility Theory: Axioms Versus 'Paradoxes,'" in M. Allais and O. Hagen (eds.) (1979). *Expected Utility Hypotheses and the Allais Paradox.* Dordrecht, Holland: D. Reidel Publishing Co.

* Machina, M. (1987). "Choice Under Uncertainty: Problems Solved and Unsolved," *Journal of Economic Perspectives,* Summer 1987.

Machina, M. (1983). "Generalized Expected Utility Analysis and the Nature of Observed Violations of the Independence Axiom," in *Foundations of Utility and Risk Theory with Applications,* edited by B. Stigum and F. Wenstøp, D. Reidel, Dordrecht, Holland.Marshall, R., J.-F. Richard and G. Zarkin (1992). "Posterior Probabilities of the Independence Axiom With Nonexperimental Data (or Buckle Up and Fan Out)," *Journal of Business and Economic Statistics* 10, 31-44.

* Slovic, P. and A. Tversky (1974). "Who Accepts Savage's Axiom?" *Behavioral Science* 19, 368-373.

Wu, G. and R. Gonzalez (1998). "Common Consequence Conditions in Decision Making Under Risk," *Journal of Risk and Uncertainty* 16, 115-139.

V. NON-EXPECTED UTILITY MODELS OF RISK PREFERENCES

* Chew, S. (1983). "A Generalization of the Quasilinear Mean With Applications to the Measurement of Income Inequality and Decision Theory Resolving the Allais Paradox," *Econometrica* 51, 1065-1092.

Chew, S. and L. Epstein (1989). "A Unifying Approach to Axiomatic Non-Expected Utility Theories," *Journal of Economic Theory* 49, 207-240.

Chew, S., E. Karni and Z. Safra (1987). "Risk Aversion in the Theory of Expected Utility with Rank Dependent Probabilities," *Journal of Economic Theory* 42, 370-381.

Dekel, E. (1986). "An Axiomatic Characterization of Preferences Under Uncertainty: Weakening the Independence Axiom," *Journal of Economic Theory* 40, 304-318.

* Epstein, L. (1992). "Behavior Under Risk: Recent Developments in Theory and Applications," in Laffont, J.-J. (ed.). *Advances in Economic Theory, Vol. II.* Cambridge University Press.Gollier, C. and M. Machina (eds.) (1995). *Non-Expected Utility and Risk Management*, Kluwer Academic Publishers.

* Fishburn, P. (1984). "SSB Utility Theory and Decision-Making Under Uncertainty," *Mathematical Social Sciences* 8, 253-285.

Green, J. and B. Jullien (1988). "Ordinal Independence in Non-Linear Utility Theory," *Journal of Risk and Uncertainty* 1, 355-387.

Gul, F. (1991). "A Theory of Disappointment Aversion," *Econometrica* 59, 667-686.

Hagen, O. (1979). "Towards a Positive Theory of Preferences Under Risk," in M. Allais and O. Hagen (eds.) *Expected Utility Hypotheses and the Allais Paradox.* Dordrecht, D. Reidel.

Karmarkar, U. (1978). "Subjectively Weighted Utility: A Descriptive Extension of the Expected Utility Model," *Organizational Behavior and Human Performance* 21, 61-72.

Konrad, K. and S. Skaperdas (1993). "Self-Insurance and Self-Protection: A Nonexpected Utility Analysis," *Geneva Papers on Risk and Insurance Theory* 18, 131-146.

* Loomes, G. and R. Sugden (1982). "Regret Theory: An Alternative Theory of Rational Choice Under Uncertainty," *Economic Journal* 92, 805-824.

Luce, R. (1991). "Rank- and Sign-Dependent Linear Utility Models for Binary Gambles," *Journal of Economic Theory* 53, 75-100.

* Machina, M. "Non-Expected Utility Theory," in *The New Palgrave Dictionary of Economics, 2nd Edition,* Steven N. Durlauf and Lawrence E. Blume (eds.), Palgrave Macmillan.

* Quiggin, J. (1982). "A Theory of Anticipated Utility," *Journal of Economic Behavior and Organization* 3, 323-343.

* Segal U. (1990). "Two-Stage Lotteries without the Reduction Axiom," *Econometrica* 58, 349-377.

Segal, U. (1988). "Does the Preference Reversal Phenomenon Necessarily Contradict the Independence Axiom?" *American Economic Review* 78, 233-236.

Sugden, R. (1989). "An Axiomatic Foundation for Regret Theory," manuscript, University of East Anglia.

Viscusi, W. (1989). "Prospective Reference Theory: Toward an Explanation of the Paradoxes," *Journal of Risk and Uncertainty* 2, 235-264.

Weil, P. (1990). "Nonexpected Utility in Macroeconomics," *Quarterly Journal of Economics* 105, 29-42.

* Yaari, M. (1987). "The Dual Theory of Choice Under Risk," *Econometrica* 55, 95-115.

The following debate brought out some particularly evocative language by Professor Allais:

Machina, M. (1995). "Two Errors in the 'Allais Impossibility Theorem'," *Theory and Decision* 38, 231-250. "The Two Errors: A Summary," *Theory and Decision* 38, 301-307.

Allais, M. (1995). "The Real Foundations of the Alleged Errors in Allais' Impossibility Theorem: Unceasingly Repeated Errors or Contradictions of Mark Machina," *Theory and Decision* 38, 251-299. "Allais' Rejoinder," *Theory and Decision* 38, 309-311.

Experimental Tests of Non-Expected Utility Models:

Birnbaum, M. (2004). "Tests of Rank-Dependent Utility and Cumulative Prospect Theory in Gambles Represented by Natural Frequencies: Effects of Format, Event Framing, and Branch Splitting" *Organizational Behavior and Human Decision Processes* 95, 40-65.

* Camerer, C. (1989). "An Experimental Test of Several Generalized Utility Theories," *Journal of Risk and Uncertainty* 2, 61-104.

Carbone, E. and J. Hey (1995). "A Comparison of the Estimates of EU and Non-EU Preference Functionals using Data from Pairwise Choice and Complete Ranking Experiments," *Geneva Papers on Risk and Insurance Theory* 20, 111-133.

Chew, S. and W. Waller (1986). "Empirical Tests of Weighted Utility Theory," *Journal of Mathematical Psychology* 30, 55-72.

* Harless, D. and C. Camerer (1994). "The Predictive Utility of Generalized Expected Utility Theories," *Econometrica* 62, 1251-1289.

* Hey, J. and C. Orme (1994). "Investigating Generalizations of Expected Utility Theory Using Experimental Data," *Econometrica* 62, 1291-1326.

Hey, J. and E. Strazzera (1989). "Estimation of Indifference Curves in the Marschak-Machina Triangle: A Direct Test of the 'Fanning Out' Hypothesis," *Journal of Behavioral Decision Making* 2, 239-260.

* Starmer, C. (1992). "Testing New Theories of Choice Under Uncertainty Using the Common Consequence Effect," *Review of Economic Studies* 59, 813-830.

Wu, G. (1994). "An Empirical Test of Ordinal Independence," *Journal of Risk and Uncertainty* 9, 39-60.

VI. GENERALIZED EXPECTED UTILITY ANALYSIS

* Allen, B. (1987). "Smooth Preferences and the Local Expected Utility Hypothesis," *Journal of Economic Theory* 41, 340-355.

Bardsley, P. (1993). "Local Utility Functions," *Theory and Decision* 34, 109-118.

Chew, S., L. Epstein and I. Zilcha (1988). "A Correspondence Theorem Between Expected Utility and Smooth Utility," *Journal of Economic Theory* 46, 186-193.

Chew, S. and N. Nishimura (1992). "Differentiability, Comparative Statics, and Non-Expected Utility Preferences," *Journal of Economic Theory* 56, 294-312.

Karni, E. (1987). "Generalized Expected Utility Analysis with State-Dependent Preferences," *International Economic Review* 28, 229-240.

Karni, E. (1989). "Generalized Expected Utility Analysis of Multivariate Risk Aversion," *International Economic Review* 30, 297-305.

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* Machina, M. (1982). "'Expected Utility' Analysis Without the Independence Axiom," *Econometrica* 50, 277-323.*

Machina, M. (1984). "Temporal Risk and the Nature of Induced Preferences," *Journal of Economic Theory* 33, 199-231.

* Machina, M. (1989). "Comparative Statics and Non-Expected Utility Preferences," *Journal of Economic Theory* 47, 393-405.

* Machina, M. (1995). "Non-Expected Utility and the Robustness of the Classical Insurance Paradigm," *Geneva Papers on Risk and Insurance Theory* 20, 9-50.

Wang, T. (1993). "L_p-Fréchet Differentiable Preference and 'Local Utility' Analysis," *Journal of Economic Theory* 61, 139-159.

VII. DYNAMIC CONSISTENCY: ARGUMENTS AND COUNTERARGUMENTS

Eichberger, J., S. Grant and D. Kelsey (2005). "CEU Preferences and Dynamic Consistency," *Mathematical Social Science* 49, 143-151.

Eichberger, J. and D. Kelsey (1996). "Uncertainty Aversion and Dynamic Consistency," *International Economic Review* 37, 625-640.

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Farmer, R. (1990). "RINCE Preferences," *Quarterly Journal of Economics* 105, 43-60.

Fishburn, P. (1981). "Subjective Expected Utility: A Review of Normative Theories," *Theory and Decision* 13, 139-199.

Frisch, D. and J. Baron (1988). "Ambiguity and Rationality," *Journal of Behavioral Decision Making* 1, 149-157.

Green, J. (1987). "'Making Book Against Oneself,' The Independence Axiom and Nonlinear Utility Theory," *Quarterly Journal of Economics* 102, 785-796.

Hammond, P. (1976). "Changing Tastes and Coherent Dynamic Choice," *Review of Economic Studies* 43, 159-173.

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* Hammond, P. (1988). "Consequentialism and the Independence Axiom," in Munier, B. (ed.) (1988). *Risk, Decision and Rationality.* Dordrecht: D. Reidel Publishing Co.

* Hammond, P. (1989). "Consistent Plans, Consequentialism, and Expected Utility," *Econometrica* 57, 1445-1449.

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Johnsen, T. and J. Donaldson (1985). "The Structure of Intertemporal Preferences Under Uncertainty and Time Consistent Plans," *Econometrica* 53, 1451-1458.

Loomes, G. and R. Sugden (1986). "Disappointment and Dynamic Consistency in Choice Under Uncertainty," *Review of Economic Studies* 53, 271-282.

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Machina, M. (1981). "'Rational' Decision Making versus 'Rational' Decision Modeling?: A Review of *Expected Utility Hypotheses and the Allais Paradox,* Edited by Maurice Allais and Ole Hagen," *Journal of Mathematical Psychology* 24, 163-175.

* Machina, M. (1989). "Dynamic Consistency and Non-Expected Utility Models of Choice Under Uncertainty," *Journal of Economic Literature* 27, 1622-1668.

Marschak, J. (1951). "Why 'Should' Statisticians and Businessmen Maximize 'Moral Expectation'?" in Neyman, J. (ed.) *Proceedings of the Second Berkeley Symposium on Mathematical Statistics and Probability.* Berkeley: University of California Press.

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Morrison, D. (1967). "On the Consistency of Preferences in Allais' Paradox," *Behavioral Science* 12, 373-383.

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