

Graduate Course Outline

**Department of Economics
School of Business and Economics**

**ECON 6040-3
Valuation Methods for Cost-Benefit Analysis (3,0,0)**

1. COURSE OVERVIEW

Calendar Description

Building on Foundations of Cost-Benefit Analysis, students explore advanced techniques of valuing impacts and contingent valuation methods for investment projects. Valuation will be conducted using experiments, quasi-experiments, direct estimation and other indirect market methods. Other topics include contingent valuation, hedonic pricing method, shadow prices, cost-effectiveness analysis, distributional weighted cost-benefit analysis, and hypothesis testing in contingent valuation surveys.

Educational Objectives/Graduate-Level Learning Outcomes

After successfully completing the course, students will be able to:

1. Estimate the benefits and costs of program interventions by using experimental and quasi-experimental designs.
2. Understand the measurement of changes in social surplus by estimating supply and demand functions.
3. Comprehend the theoretical foundation of the contingent valuation method.
4. Build and estimate regression models with qualitative (categorical) dependent variables.
5. Assess impacts from consumer revealed preferences for products that do not exist.
6. Evaluate the major strengths and weakness of contingent valuation methods for estimating costs and benefits of investment projects.
7. Estimate implicit (hedonic) prices for goods and services.
8. Select the best available value of a number of frequently used shadow prices.
9. Estimate alternative shadow prices used in cost-benefit analysis for developing countries.
10. Compute cost-effectiveness ratios to compare policy alternatives.
11. Categorize different individuals affected by government policies, programs, and projects.
12. Construct statistical hypothesis tests about the response effects in contingent valuation surveys.

Course Topics

1. Valuing Impacts from Observed Behavior: Experiments and Quasi-Experiments
 - Alternative evaluation designs
 - Cost-benefit analysis (CBA) of environments and quasi experiments
 - CBA of employment and training programs: an introduction
 - CBA framework in the education and training context
 - Conceptual issues in conducting CBAs of education and training programs
 - Choosing prediction parameters
 - CBA of welfare-to-work experiments

- Random assignment experiments in health
2. Valuing Impacts from Observed Behavior: Direct Estimation of Demand Curves
 - Knowing the slope or price elasticity of demand
 - Extrapolating from a few observations
 - Econometrics estimation with many observations
 3. Theoretical Basis of the Contingent Valuation Method
 - Basis of welfare economics
 - Choices of benefit measure
 - Willingness-to-pay versus willingness-to-accept measures
 - New property rights approach
 - Aggregation issues
 - Private goods and political market models
 - Implications of theory of for contingent valuation scenario design
 4. Econometrics of Contingent Valuation
 - Multiple regression; assumptions, estimation, and tests
 - Linear probability model
 - Probit model
 - Maximum likelihood estimation
 - Logit model for binary choice
 - Multinomial logit choice probabilities
 - Conditional logit choice probabilities
 5. Valuing Impacts from Observed Behavior: Indirect Market Methods
 - Market analogy method
 - Trade-off method
 - Intermediate good method
 - Asset valuation method
 - Hedonic pricing method
 - Travel cost method
 - Defensive expenditure method
 6. Contingent Valuation: Using Surveys to Elicit Information about Costs and Benefits
 - Overview of contingent valuation methods
 - Payment vehicle
 - Generic survey issues
 - Contingent valuation problems and issues
 - How accurate is contingent valuation?
 - Heuristic for the design and use of consumer value surveys
 7. Hedonic Pricing Method as an Approximation of Benefit
 - Development of the hedonic conception
 - Examination of over estimation ratio
 - Two-region general equilibrium model
 - Large national project evaluation

- Parameter estimation method and data
- Estimation of hedonic price function
- Environmental cost-benefit analysis using the hedonic price method

8. Shadow Prices from Secondary Sources

- Value of a sustainable life
- Value of a life-year
- Cost of crashes and cost of injuries
- Cost of crime
- Value of crime
- Value of recreation
- Value of nature (specific species or habitats)
- Value of water and water quality
- Cost of noise
- Cost of air pollution
- Social cost of automobiles
- Cost of taxation: marginal excess tax burden
- Transferring and adjusting plug-on values

9. Shadow Prices: Applications to Developing Countries

- LMST methodology
- Illustrations of the LMST method in practice
- Shadow pricing when goods are in fixed supply
- Shadow price of labor
- Additional topics
- Is the LMST method actually used for project evaluation?

10. Cost-Effectiveness Analysis

- Cost-effectiveness ratios and policy choice
- Omitted costs and benefits
- Cost-utility analysis
- Use of league table

11. Distributional Weighted Cost-Benefit Analysis

- Distributional justification for income transfer programs
- Case for treating low- and high-income groups differently in CBA
- Distributional weights
- Determining distributional weights
- A pragmatic approach to weighting

12. Hypothesis Testing and Experimental Design in Contingent Valuation Surveys

- Power of test
- Power of contingent valuation hypothesis tests
- Contingent valuation surveys and the coefficient variation
- Ways to improve the power of simple experiments
- More complex experiments

Texts/Materials

Textbooks

Boardman, Anthony E., David H. Greenberg, Aidan R. Vining, and David L. Weimer. Cost-Benefit Analysis: Concepts and Practice, Pearson/Prentice-Hall, 2010.

Robert Cameron Mitchell, Richard T. Carson. Using Surveys to Value Public Goods, The Contingent Valuation Method, Resources for the Future Washington D.C., 1989.

Noboru Hidano, The Economic Valuation of the Environmental and Public Policy - A Hedonic Approach, Edward Elgar Publishing, UK, e-book, 2003.

Carter Hill, William E. Griffiths and Guay C. Lim, Principles of Econometrics, Fourth Edition, Willey and Sons, 2012.

Pearce, D., G. Atkinson and S. Mourato, Cost-Benefit Analysis and the Environment: Recent Developments, OECD, 2006.

Suggestive Readings

Adamowicz, Wiktor; Boxall, Peter; Williams, Michael; Louviere, Jordan. " Stated Preference Approaches for Measuring Passive Use Values: Choice Experiments and Contingent Valuation" *American Journal of Agricultural Economics*, Volume 80 (1) 64-75.

Blakemore, F and Williams, A. "British Tourists' Valuation of a Turkish Beach Using Contingent Valuation and Travel Cost Methods" *Journal of Coastal Research*, Volume 24 (6) 1469-1480.

Chang, Wei-Yew; Lantz, Van A; MacLean, David A, "Social Benefits of Controlling Forest Insect Outbreaks: A Contingent Valuation Analysis in Two Canadian Provinces" *Canadian Journal of Agricultural Economics*, Volume 59(3) 383-404.

Garcia, Serge; Harou, Patrice; Montagné, Claire; Stenger, Anne, "Models for Sample Selection Bias in Contingent Valuation: Application to Forest Biodiversity" *Journal of Forest Economics*, Volume 15(1/2) 59-78.

Hanley, Nicholas, "Using Contingent Valuation to Value Environmental Improvements," *Applied Economics*, Volume 20 (4) 541-549.

Hiyos D., Mariel P. "Contingent Valuation: Past, Present and Future" *Prague Economic Papers*, (4) 2010: 329-343.

Park, Timothy and Loomis, John. "Joint Estimation of Contingent Valuation Survey Responses," *Environmental and Resource Economics*, Volume 7(2)149-162.

Skim: Loureiro, Loomis, Vazquez (2009), "Economic Valuation of Environmental Damages due to the Prestige Oil Spill in Spain," *Environmental and Resource Economics* 44: 537-53.

Skim: Richard T. Carson, et al (2003), "Contingent Valuation and Lost Passive Use: Damages from the Exxon Valdez Oil Spill," *Environmental and Resource Economics* 25: 257-86.

Venkatachalam, L. "The Contingent Valuation Method: a Review" *Environmental Impact Assessment*, Volume 24 (1) 89-124.

Wang, Yan and Zhang, Yi-Sheng, "Air Quality Assessment by Contingent Valuation in Ji'nan, China" *Journal of Environmental Management*, Volume 90 (2)1022-1029.

Student Evaluation Philosophy and Methods

Face-to-Face/Online

Assignments	20%
Team Case Study /Project	25%
Discussions/Participation	10%
Final Exam	45%

Case Study/Project- Students have a choice of a case study or a project. These assignments will be completed in teams. A grade of zero will be given for late a case/project unless permission is received in advance.

On-line Discussion- Discussion topics will be posted for comment for students at different times throughout the course. Students are expected to engage in an active debate with each other of the issues involved. The discussion will be monitored to ensure it remains focused on the topic and that students are respectful of each other and engaged. A grade will be assigned after each discussion based on the quality and not necessarily the quantity of each student's contributions. The followings are major online discussion topics:

- Discussion 1 – Experiments and Quasi Experiments
- Discussion 2 – Econometrics of Contingent Valuation
- Discussion 3 – Theoretical Basis of the Contingent Valuation Method
- Discussion 4 – Hedonic Pricing Method as an Approximation of Benefit
- Discussion 5 – Shadow Prices from Secondary Sources
- Discussion 6 – Hypothesis Testing and Experimental Design in Contingent Valuation Surveys

2. RELATIONSHIP TO OTHER COURSES

Prerequisites

ESMN 6020, ESMN 6030

Co-requisites

None

Links to Previous, Concurrent and Subsequent courses

This course builds on ESMN 6030-Foundations of Cost-Benefit Analysis. Together these courses provide students with an excellent grasp of cost-benefit analysis which is applied extensively in subsequent courses in the MScESM program studying different applications of sustainability management.

3. COURSE PURPOSE AND FIT IN GRADUATE PROGRAM

What is this course's role in the graduate program?

ESMN 6030-Foundations of Cost Benefit Analysis and ESMN 6040-Valuation Methods for Cost-Benefit Analysis are core courses in the MScESM that provide students with the advanced cost-benefit analysis tools needed to make effective decisions. In particular, this course facilitates economic decisions by using market information and behavior to infer the economic value of associated nonmarket impact. It also enhances students' prior knowledge in CBA with more advanced methods of valuations in both private and public investment projects.

4. DELIVERY

Delivery mode (face-to-face, blended, distance)

The course will be developed for distance, blended, and campus delivery.

Delivery Features

- Lectures recorded using Camtasia
- Group work
- Online discussions

Instructional Approach

This course employs an active, collaborative learning approach with a heavy reliance on problem solving, team case analysis, academic research and online discussion or class participation.

5. OTHER

Methods for Prior Learning Assessment and Recognition

PLAR is not allowed in graduate programs under Northwest Commission on Colleges and Universities (NWCCU) accreditation standards. No PLAR credit will be awarded, which is permissible under TRU policy.

Course Policies

Academic Integrity – In accordance with TRU Policy 5-0.

Examinations – In accordance with TRU Policy ED 3-9. In addition, students must pass the final exam to receive a passing grade for the course.

Grading – In accordance with TRU Policy ED 3-5.

Late Assignments - A grade of zero will be given for all late assignments unless permission is received in advanced from the instructor/facilitator.

Student Academic Appeals - In accordance with TRU Policy ED 4-0.

Student Attendance – In accordance with ED 3-1.

Team Conflict - All team members should actively participate in the analysis of the case and the preparation of the report and act professionally towards each other. During the course, if a student feels this is not occurring, they should bring this matter to the attention of the facilitator immediately so they can investigate the conflict and take the appropriate action including assigning students a failing grade for the course. Working effectively in teams and acting professionally towards one's colleagues is a major learning goal of the program.

Withdrawals – In accordance with ED 3-0.