

V541 - Benefit Cost Analysis
Spring 2006
5:30 – 6:30 pm, MW PV 272

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Introduction

How should public decision-makers deploy scarce resources to achieve the “greatest good”? This difficult question can neither be definitively answered, or avoided, an uncomfortable paradox that forces imperfect public decision-making.

Benefit-cost analysis offers a number of advantages in the role of an imperfect decision-making aid. It can raise the accounting profile of cost and benefit categories neglected in other appraisals; reveal certain transactions as “transfers” that net out of the conventional social accounting; and can indicate the distributional impacts of a project on impacted stakeholders within an accounting domain. Above all, benefit-cost analysis offers a conceptually-consistent framework for evaluating the trade-offs associated with alternative resource deployments.

On the negative side of the ledger, the results of a CBA analysis can sometimes be regarded as more definitive than they are. The reciprocal problem may also arise: even when the conclusions of CBA strongly justify a particular recommendation, the recommendation may not be politically acceptable. A benefit-cost analysis that has no effect on decision-making is a waste of resources.

This course has two principal objectives. First, to develop the conceptual framework underlying conventional benefit-cost analysis and to explain the associated analytic techniques. Students develop the knowledge to understand and conduct project appraisals. The second objective is to provide the philosophic and methodological perspective needed for interpreting the results of benefit-cost analyses.

Course Structure

The course has seven parts:

Unit 1: Introduction and Microeconomics Overview	(Weeks 1-2)
Unit 2: Introduction to CBA Fundamentals	(Weeks 3-4)
Unit 3: Investment Analysis	(Weeks 5-6)
Unit 4: CBA Fundamentals Continued	(Weeks 7-8)
Unit 5: Benefit Valuation	(Weeks 9-10)
Unit 6: Politics and Distribution	(Weeks 11-12)
Student Presentations	(Weeks 13-15)

Course Structure (continued)

Unit 1 introduces the course and reviews some microeconomic theory particularly relevant to CBA application. A short take-home test is used to solidify the concepts developed in this unit.

Unit 2 introduces fundamental CBA concepts, and develops the Kaldor-Hicks Tableau format for distributional accounting. A short take-home test is again used to nail down the essential concepts.

Unit 3 covers the fundamentals of inter-temporal decision-making -- the defining characteristic of investment analysis. A somewhat longer take-home exam is used to solidify the concepts introduced in this unit.

Unit 4 covers the concept of “shadow pricing” in some detail. A practice CBA -- on a vehicle emissions inspection program -- is reviewed as part of this unit. Students also complete a graded case assignment on a worker-training program.

Unit 5 focuses on the theory and techniques of benefit measurement. Students conduct a statistical analysis of survey data generated by a contingent valuation study as a way to help master the concepts of this unit.

Unit 6 explores the political and distributional issues associated with the application of cost-benefit analyses. A critique of a CBA performed by the consulting firm “Cambridge Systematics” reinforces the essential points developed in this unit.

Finally, student presentations round out the final three weeks of the course. The presentations are based on a final research project of your choosing (discussed further below). This part of the course introduces a tremendous volume of new information; further solidifies the concepts introduced earlier; and allows everyone to witness the extensive application of the CBA paradigm.

Class Format

Weeks **1-12** of the course are based on a series of lectures and informal class discussions, the concepts of which are reinforced through tests and case assignments. I encourage you to ask questions and otherwise participate fully in class. From time to time I may also schedule outside-the-class workshops on particular topics, e.g., spreadsheet application for investment analysis.

Weeks **13-15** are dedicated to student presentations.

I encourage group study and collaboration throughout the course. I will clarify the rules for such collaboration for each take-home assignment.

Readings Materials

There are four types of course materials:

1. Lecture notes, compiled into a course packet.
2. Handout supplements to lecture notes (distributed from time to time).
3. Required readings (book chapters/journals articles) posted on ONCOURSE or library reserve.
4. Case assignments, distributed by e-mail, and supplemental case background (for Case 3) posted on ONCOURSE or library reserve.

Six on-line CBA manuals, developed by various government organizations and think tanks, are also posted on the course website under “CBA guidelines.” Refer to these anytime to clarify topics discussed in class, or otherwise to use as a reference.

See also the “Links” section of the course web page for additional information.

Graded Assignments

Grades will be based on the following assignments:

Item	Assigned	Due	Percent
Test 1: Microeconomics Overview	W 1/25	M 2/1	8%
Test 2: CBA Fundamentals	M 2/6	F 2/10	8%
Test 3: Investment Analysis	M 2/13	M 2/20	12%
Final Paper Abstract		Now	M 2/6
Case 1: Worker-Training Program	W 2/22	M 3/6	16%
Case 2: Contingent Valuation of John-Day Steelhead Fishery	M 3/20	M 3/27	12%
Case 3: Critique of Cambridge Systematics CBA	W 3/29	W 4/5	12%
Final Paper	Now	M 4/17	26%
Paper Presentations	Weeks 13-15		6%
Total			100%

Note that assignments up to three days late will lose a half a grade point. Assignments from 4-7 days late will lose a full grade point. Assignments more than a week late will not be accepted.

The grading standard for PhD students will be appropriately more stringent than for master students, and the final paper requirement more substantial (see below). Please discuss the particulars with me if you are a PhD student, and have questions.

Final Papers

A final paper is required. It is due **4/17**. You should begin thinking about this paper as soon as possible. In particular, an abstract, **with the paper's title**, is due **2/6**. The abstract should provide a one or two paragraph summary of the paper topic. It can also provide one or two paper proposals, if you want some feedback about topic alternatives.

The final paper can be on any topic related to cost-benefit analysis. See Attachment 1 of this syllabus for some idea of the diversity of topics students have researched in past classes. Also, see posted papers on ONCOURSE and Library Reserve to witness the range of approaches students have followed for this assignment. The posted papers are well-done, so they also provide an example of the quality standard I am looking for.

The final papers can be written individually, or you can collaborate with one or two other classmates. Group papers cannot have more than three collaborators.

For MPA students, individual papers should be about 15 pages double space, with conventional margins, exclusive of references, tables, and figures.

For PhD students, individual papers should be about 20 pages double space, with conventional margins, exclusive of references, tables, and figures.

For papers with two coauthors, the page length can be about 25 pages (master students) and 35 pages (PhD students).

For papers with three coauthors, the page length can be about 35 pages (master students) and 50 pages (PhD students).

The final paper should be explicitly broken down into sections and subsections as follows:

Title Page:
Abstract Page
Table of Contents Page
1. Introduction
2. Background
3. First major topic
3.1
3.2
etc.
4. Second major topic, etc.
5. Conclusion
References

Final Papers (continued)

NOTE: is important that the last paragraph of the introduction provide an EXPLICIT “road-map” of the structure of the paper that follows. That is, the last paragraph of the introduction should

tell the reader that Section 2 does X, Section 3 does Y, Section 4 Does Z, etc, with the final section of the paper providing a conclusion. **A paper without this explicit orientation will be marked down half a letter grade.**

The web is obviously a useful research tool and you are encouraged to use it. But be sure to diversify your sources to include journal articles, book chapters, government documents, etc., like those included in the readings material for the course.

Follow the following reference format: First, alphabetize your references in the reference section of the paper. Articles from the web should be alphabetized along with the others , and the web address indicated. Second, attach a number to these references in the reference section of the paper in the order they appear. Finally, use the numbers in the body of the paper for citation, e.g., Marijuana smoking increased last year in the United States by 20% [17].

It is important to close follow these format guidelines.

Semester Schedule

Week	Topic	Event
Unit 1: Introduction/ Microeconomics Overview		
Week 1		
M 1/9	Course Overview	
W 1/11	Micro- Theory Review	
Week 2		
M 1/16	No Class – Martin Luther King’s Birthday	
W 1/18	Micro-Theory Review	
Unit 2: CBA Fundamentals		
Week 3		
M 1/23	Micro-Theory Review	
W 1/25	CBA Fundamentals	Test 1 assigned
Week 4		
M 1/30	CBA Fundamentals	Test 1 Due (in class)
W 2/1	CBA Fundamentals	
Unit 3: Fundamentals of Investment Analysis		
Week 5		
M 2/6	Fundamental Theory of Discounting	Test 2 Assigned
W 2/8	Introduction to Investment Analysis	Paper Abstract due
F 2/10		Test 2 Due (COB)
(Outside class spread-sheet session, as needed)		
Week 6		
M 2/13	Comparing Alternative Investment Criteria	Test 3 assigned
W 2/15	The Cost of Capital/Capitalization	

Semester Schedule (continued)

Week	Topic	Event
Unit 4: CBA Fundamentals Continued		
Week 7		
M 2/20 W 2/22	Shadow Pricing Worker Case Training overview	Test 3 due (in class) Case 1 Assigned
Week 8		
M 2/27 W 3/1	Shadow Pricing Shadow Pricing	
Unit 5: Benefit Valuation		
Week 9		
M 3/6 W 3/8	Introduction to Valuation Money Metrics	Case 1 due (in class)
***** SPRING BREAK *****		
Week 10		
M 3/20 W 3/22	Case 2 Overview Valuation Continued	Case 2 assigned
Unit 6 – Distribution, Politics, and CBA		
Week 11		
M 3/27; W 3/29	Distribution and CBA Case 3 Overview	Case 2 Due Case 3 Assigned
Week 12		
M 4/3 W 4/5	Distribution and CBA Distribution and CBA	Case 3 Due

Semester Schedule (continued)

Presentation Period (Weeks 13-14)

Week 13

**M 4/10;
W 4/12**

**Student Presentations
Student Presentations
(Outside-Class Presentation Periods as needed)**

Week 14

**M 4/17
W 4/19**

**Student Presentations
Student Presentations**

Final Paper Due

(Outside-Class Presentation Periods as needed)

Week 15

**M 4/24
W 4/26**

**Student Presentations
Student Presentations**

(Outside-Class Presentation Periods as needed)

Readings

Unit 1: Unit 1: Introduction/ Microeconomics Overview

Lecture notes and web-based readings

Unit 2: Introduction to CBA fundamentals

Lecture notes

Howe, C.W., Project benefits and costs from national and regional viewpoints: Methodological issues and case study of the Colorado-Big Thompson Project, *Natural Resources Journal* 26: 77-93, 1986

Krutilla, K. Using the Kaldor-Hicks Tableau Format for Cost-Benefit Analysis and Policy Evaluation, *Journal of Policy Analysis and Management* 864-875, Fall 2005.

Unit 3: Investment Analysis

Lecture Notes; also refer to web-posted CBA guidelines as necessary

Unit 4: CBA Fundamentals Continued

Lecture Notes and Handouts

Unit 5: Benefit Valuation

Lecture Notes

Passel, P. Economic Watch: Polls may help government decide the worth of nature, *New York Times*, September 6, 19-21.

Hanely, Splash, and Shogren, Methods for valuing environmental costs and benefits, Chapter 13, in "Environmental Economics".

Portney, P. The Contingent valuation debate: Why economists should care *Journal of Economic Perspectives* 8(4):3-17, 1994.

Hanemann, W.H. Valuing the Environment Through Contingent Valuation, *Journal of Economic Perspectives* 8(4):19-43, 1994.

Diamond, P.A., and J.A. Hausman, Contingent valuation: Is some number better than no number?, *Journal of Economic Perspectives* 8(4): 45-64, 1994.

Krupnick, A.J. Benefit Transfers and Valuation of Environmental Improvements, *Resources* 110, 1-7

James Hammit, *Risks in Perspective*

Readings Continued

Unit 6: Distribution and CBA

Lecture Notes

Gramlich, E., *The Gains and Losses of Different Groups*, Benefit-Cost Analysis, Prentice Hall, Englewood Cliffs, New Jersey, 1990

Boardman, A. A. Vining, W.G. Waters, II, *Costs and Benefits through Bureaucratic Lenses: Example of a Highway Project*, *Journal of Policy Analysis and Management* 12 (3): 532-555 (1993).

Benefit-Cost Analysis in a Bureaucratic Setting: The Strategic Petroleum Reserve

Courant, P. N., *How would you know a good economic development policy if you tripped over one? Hint: don't count the jobs*, *National Tax Journal* 47(4): 863-881, 1994.

Attachment 1: Some final paper topics from previous years

The Use of Cost-Benefit Analysis in the Valuation of Dam Decommissioning for Restoration of Salmon Runs on the Columbia and Snake Rivers

An Analysis of Court-Ordered Desegregation in St. Louis, Missouri

Cost Benefit Analysis Applied to Micro Credit Program Evaluation

Valuation in Health-Care Cost-Effectiveness, Cost-Utility, and Cost-Benefit Analysis

Marginal Valuation of Ecosystem Services

The Kyoto Protocol: Application of Interest-Based Regime Formation and Cost-Benefit to Ratification Decisions

Risk Determination and the Use of Economic Analysis in Superfund Remediation Projects

Using a Zero Discount Rate in Cost-Benefit Analysis: Is it Appropriate and Feasible in the Context of Intergenerational Equity.

A Critique of the Cost-Benefit Analysis of the Kunda Cement Factory, Estonia

An Economic Analysis of Sports Stadium Subsidies

Salmon Recovery in the Pacific Northwest

Cost Analysis of Department of Energy Plans for the Conversion of Depleted Uranium Hexafluoride

Prison Privatization: Is it really Cost-Effective?

The Costs and Benefits of Adopting the Death Penalty

World-Bank Project Appraisal and Environmental Evaluation

A Qualitative and Quantitative Study of the Costs and Benefits of Urban Sprawl

Cost-Benefit Analysis of the El Sauz Water Project

Benefit-Cost Analysis of New York City's Syringe Exchange Program

Environmental Regulation and International Competitiveness

Columbia River Economic Analysis and the Fish and Wildlife Decision-making Progress

Considering the Cost Estimates for Climate Change Mitigation

The EPA Acid Rain Program: The Costs and Benefits

The Costs and Benefits of Federal Regulation

Estimation Methods of the Marginal Valuation of Safety

International Environmental Conservation and Free Trade: An Analysis of Potential Conflicts and Solutions

Attachment 2: Writing Style

Grades for case write-ups and the final paper will be based both on the rigor of the analysis and on the clarity of the presentation. Here are some basic writing principles: Avoid redundancy. Select words to precisely describe the meanings and nuances you wish to convey. Develop themes clearly and logically. Use adverbial and adjectival qualifiers judiciously, e.g., “brilliant,” rather than “incredible genius,” “poses a risk,” rather than “threatens all humanity.” Finally, use the active voice most of the time.

FYI, here is a sample of bad writing and why it is bad:

“The government refocused its influence in the agricultural sector by implementing policies such as more rigid production controls, lowering support prices, and more measures intended to increase demand, like school lunch and food welfare programs. Surpluses were lowered, but not significantly. In a related fashion, an exporting program to rid the government of surpluses was implemented. Yet these practices were seen as “dumping” measures to the lesser-developed nations who unavoidably received the surpluses.”

I would give this passage a C grade for the following reasons:

1. It is wordy;
2. It uses the passive voice too much;
3. The language is not precise.

Here is an improved re-write:

“Consequently, the government implemented a battery of policies to reduce growing food surpluses. On the supply side, the government reduced support prices and instituted more rigid production controls. On the demand side, the government started two new programs: school lunch and welfare. Additionally, the government began subsidizing agricultural exports.

Unfortunately, these efforts had little effect. Surpluses dropped, but not significantly. Further, the export promotion program had an obvious side effect: it increased competition for struggling third-world exporters. This consequence undermined other U.S. policies designed to promote economic development in these countries.”

See me if you have any questions about the writing expectations, or contact Campus Writing Tutorial Services, Ballantine 206 (855 6738) to set up an appointment.

Attachment 3: Presentation guidelines

The presentations are a way to informally share the results of your research with your classmates, and encourage intellectual exchange. You do not need to dress up.

If you are concerned about your grade, giving a clear, high quality presentation is a good way to raise it.

In an ideal world, you would be using an already-completed paper as the basis of your presentation. In a less-than-ideal world, you can simply present the intermediate results you have. In that case, presentations offer you some useful feedback for completing your final paper.

The TOTAL time allotted for single-authored presentations is 20 minutes. The presentation itself should be 10-12 minutes. Five minutes are available for Q & A. Five minutes for moving back and forth between the class itself and the front of the class for speaking.

For multiple-authored presentations, the times increases proportionately:

2-authored presentations: approximately 20-25 minutes for the presentation itself; 10 minutes for questions; Total time=40 minutes.

3-authored presentations: approximately 30-35 minutes for the presentation itself; 15 minutes for questions: total time = 60 minutes.

It is essential to record your presentation on transparencies or power point slides. The first slide should give the presentation title, and your name. The second, an outline of the presentation. The third begins the presentation itself. Do not put too much text on slides. Summarize points, so the class can easily read them.

You can, of course, use cue cards or whatever aids you need to conduct the presentation.

For students using this presentation to satisfy the MSES presentation requirements, let me know, to make sure the scheduled time is appropriate for you.

Attachment 4: V541 Survey

I. Willingness to Pay for Rentals (Only answer this if you are renting)

- a. my current monthly rent is: _____
- b. I would move out of my house when the lease expired if my landlord raised the rent to a TOTAL FIGURE of:

II. Your "Labor Supply"

Answer this part if you are now Unemployed

If given the opportunity to work at a reasonably interesting job for \$5 per hour, and the flexibility to choose my weekly work hours, I would be willing to work at most _____ per week.

If given the opportunity to work at a reasonably interesting job for \$10 per hour, and the flexibility to choose my weekly work hours, I would be willing to work at most _____ per week.

If given the opportunity to work at a reasonably interesting job for \$15 per hour, and the flexibility to choose my weekly work hours, I would be willing to work at most _____ per week.

If given the opportunity to work at a reasonably interesting job for \$20 per hour, and the flexibility to choose my weekly work hours, I would be willing to work at most _____ per week.

If given the opportunity to work at a reasonably interesting job for \$25 per hour, and the flexibility to choose my weekly work hours, I would be willing to work at most _____ per week.

If given the opportunity to work at a reasonably interesting job for \$30 per hour, and the flexibility to choose my weekly work hours, I would be willing to work at most _____ per week.

Answer this part if you are now Unemployed (continued)

If given the opportunity to work at a reasonably interesting job for \$40 per hour, and the flexibility to choose my weekly work hours, I would be willing to work at most _____ per week.

If given the opportunity to work at a reasonably interesting job for \$50 per hour, and the flexibility to choose my weekly work hours, I would be willing to work at most _____ per week.

If given the opportunity to work at a reasonably interesting job for \$60 per hour, and the flexibility to choose my weekly work hours, I would be willing to work at most _____ per week.

If given the opportunity to work at a reasonably interesting job for \$70 per hour, and the flexibility to choose my weekly work hours, I would be willing to work at most _____ per week.

If given the opportunity to work at a reasonably interesting job for \$80 per hour, and the flexibility to choose my weekly work hours, I would be willing to work at most _____ per week.

If given the opportunity to work at a reasonably interesting job for \$90 per hour, and the flexibility to choose my weekly work hours, I would be willing to work at most _____ per week.

If given the opportunity to work at a reasonably interesting job for \$100 per hour, and the flexibility to choose my weekly work hours, I would be willing to work at most _____ per week.

II. Answer this if you are now EMPLOYED.

My current hourly wage rate is: _____

I work _____ hours per week.

The maximum number of hours per week I would work at this wage, if I could choose my work hours, would be _____. Note: this answer could be more or less than your current work hours, depending on how you feel about your current level of work, and the level of compensation you are receiving for it.

Qualification: if you are earning some non-hourly wage rate, likely weekly, monthly, or per semester, cross out “hourly” in the first question and substitute your actual pay period. But still provide the number of hours you work per week, and answer the third question based on your current pay.