What is cost-benefit analysis?

Cost-benefit analysis (CBA) is a technique for evaluating a project or investment by comparing the economic benefits with the economic costs of the activity. This may sound remarkably straightforward; during the course of the class you will learn that it is everything but.

Policy decisions always require trade-offs, some more difficult than others. Given scarce resources, deciding how to allocate funding requires careful thinking about what the opportunity costs of those funds are. If we devote more resources to, say, reducing pollution or boosting the resources available to public schools, the money spent can no longer be used for other purposes. CBA can be used as a decision rule to determine whether a project should be carried out, or to compare competing projects. In general, CBA aims to pin down what policy-options will maximize social welfare.

Course objectives

Throughout the course of the semester, you will learn the basics of CBA and discuss the advantages and limitations of the approach. At the end of the semester, I want each of you to be critical consumers of CBAs and to be able to identify weaknesses of existing CBAs – as well as ways of addressing these shortcomings.

Some of the readings might be challenging, as they occasionally make use of math or economic theory that you might not be 100% comfortable with. You should persevere. In your professional life, you are likely to encounter papers and reports outside your comfort zone and you will be forced to extract information from them. I won’t expect you to understand all of the mathematical details; strive instead to grasp the gist of the arguments presented.

Course requirements & grades

Participation and attendance

Class sessions will mix lectures, discussion, and case studies to explore both the practical and conceptual aspects of CBA. I expect active participation in class and diligence in the completion of problem sets and other assignments, since class discussions will only be productive if you all do the assigned readings and/or problems prior to class, show up, and participate in the discussions.

If a religious observance will require you to miss class time, please notify me *within the first two weeks of class* of the specific days or dates on which you request relief. If the date you will miss is an exam, we will schedule a make-up exam time either before or after the regularly scheduled exam.
Grading

Your final grade will be composed of the following components:

**Attendance and participation:** 10%

**Problem sets:** 5 problem sets @ 10% each. Think of these as a means to putting the things we are learning in class into practice. You are welcome to collaborate on the problems, but I want you write up your solutions independently.

**Midterm:** 20%

**Take-home final:** 20%

I may occasionally ask you to prepare other exercises for class. While these will not be part of your problem set grade, they may instead affect your participation grade.

I strongly prefer that you submit course materials electronically through Learn@UW.

Academic integrity

By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison’s community of scholars in which everyone’s academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Dean of Students Office for additional review. For more information, or if you have any doubts about how the above terms are defined, please refer to http://www.students.wisc.edu/doso/academic-integrity/.

The UW Writing Center has a handout on acknowledging, paraphrasing and quoting sources. For the take-home exam in particular, please read this handout – especially if you have any doubts about how to cite sources.

Course materials

We will rely extensively on the assigned (required) textbook:


I will additionally make other readings and class materials available via Learn@UW.
Schedule/overview

Rough outline of topics. Please note that I may add or drop readings during the semester; I will announce changes in class and update the syllabus on Learn@UW.

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Topic</th>
<th>Book chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wed, Sep 02, 2015</td>
<td>Intro: What is Cost-Benefit Analysis? How is it used?</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Mon, Sep 07, 2015</td>
<td>Labor Day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wed, Sep 09, 2015</td>
<td>Case: Water, sanitation &amp; health in developing countries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mon, Sep 14, 2015</td>
<td>Conceptual foundations: CBA decision rules</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Wed, Sep 16, 2015</td>
<td>Conceptual foundations: CBA decision rules [PS 1]</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Mon, Sep 21, 2015</td>
<td>Conceptual foundations: Welfare measures</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Wed, Sep 23, 2015</td>
<td>Valuing C &amp; B when markets exist - primary markets</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Mon, Sep 28, 2015</td>
<td>Valuing C &amp; B when markets exist - primary markets</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Mon, Oct 05, 2015</td>
<td>Discounting: mechanics</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Wed, Oct 07, 2015</td>
<td>Discounting/social discount rate</td>
<td>6, 10</td>
<td></td>
</tr>
<tr>
<td>Mon, Oct 12, 2015</td>
<td>Social discount rate, time preferences</td>
<td>6, 10</td>
<td></td>
</tr>
<tr>
<td>Mon, Oct 19, 2015</td>
<td>Uncertainty: Value of information; quasi-option values</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Wed, Oct 21, 2015</td>
<td>Guest lecture: Bill Provencher – Evaluating consumer energy demand programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mon, Oct 26, 2015</td>
<td>Uncertainty, cont.</td>
<td>7, 8</td>
<td></td>
</tr>
<tr>
<td>Wed, Oct 28, 2015</td>
<td><strong>Midterm</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mon, Nov 02, 2015</td>
<td>Uncertainty: Option price &amp; value</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Wed, Nov 04, 2015</td>
<td>Implications of behavioral economics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mon, Nov 09, 2015</td>
<td>Case: Early childhood interventions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wed, Nov 11, 2015</td>
<td>Canceled due to LFS in DC [PS 4]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mon, Nov 16, 2015</td>
<td>Revealed preferences: experiments and quasi-experiments</td>
<td>11, 12</td>
<td></td>
</tr>
<tr>
<td>Wed, Nov 18, 2015</td>
<td>Revealed preferences: demand curves and shadow prices</td>
<td>13, 14</td>
<td></td>
</tr>
<tr>
<td>Mon, Nov 23, 2015</td>
<td>Valuing life</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Wed, Nov 25, 2015</td>
<td>Valuing time</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Mon, Nov 30, 2015</td>
<td>Canceled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wed, Dec 02, 2015</td>
<td>Existence value and stated preferences [PS 5]</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Mon, Dec 07, 2015</td>
<td>CV in more depth</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Wed, Dec 09, 2015</td>
<td>Environment: externalities, regulation, and subsidies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mon, Dec 14, 2015</td>
<td>Developing countries</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cost-effectiveness</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TBD. #WormWars? Climate change? Review and discussion?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Detailed schedule

Week 1

**Wednesday, September 02, 2015**

Intro: What is Cost-Benefit Analysis? How is it used?

- BGVW, Chapter 1
- EPA. 2014. “Guidelines for Preparing Economic Analyses.” [Sections 1 & 3]
- Copenhagen Consensus, Post-2015 Consensus

Week 2

**Wednesday, September 09, 2015**

Case: Water, sanitation & health in developing countries


Week 3

**Monday, September 14, 2015**

Conceptual foundations: CBA decision rules

- BGVW, Chapter 2
- EPA. 2014. “Guidelines for Preparing Economic Analyses.” [Sections 4.1, 4.6 & 4.7]
Wednesday, September 16, 2015
Conceptual foundations, cont.

• Problem set 1 due

Week 4
Monday, September 21, 2015
Conceptual foundations. Welfare measures

• BGVW, Chapter 3

• Chapter 3 should hopefully feel like review; if you need additional review, you might want to consult a microeconomics textbook. Please let me know if you would like suggestions.

Wednesday, September 23, 2015
Valuing C & B when markets exist - primary markets

• BGVW, Chapter 4


Week 5
Monday, September 28, 2015
Valuing C & B when markets exist - primary markets, cont.

Wednesday, September 30, 2015
Valuing C & B when markets exist - secondary markets

• Problem set 2 due

• BGVW, Chapter 5


Week 6
Monday, October 05, 2015
Discounting: mechanics

• BGVW, Chapter 6

• Skim: OMB Circular A-4, Office of Management and Budget’s guidance to Federal agencies on the development of regulatory analysis: https://www.whitehouse.gov/sites/default/files/omb/assets/omb/circulars/a004/a-4.pdf

Wednesday, October 07, 2015
The social discount rate, time preferences

• BGVW, Chapter 10


Week 7
Monday, October 12, 2015
Social discount rate, time preferences, cont.

Wednesday, October 14, 2015
Uncertainty: Expected values and sensitivity analysis

• Problem set 3 due

• BGVW, Chapter 7, pp. 167-187


Week 8
Monday, October 19, 2015
Uncertainty: Value of information; quasi-option values

• BGVW, Chapter 7, pp. 188-197


Wednesday, October 21, 2015
Guest lecture by Professor Bill Provencher: Evaluating energy demand side management programs

Week 9

Monday, October 26, 2015
Uncertainty, cont.

Wednesday, October 28, 2015
Midterm

Week 10

Monday, November 02, 2015
Uncertainty: Option price & value

- BGVW, Chapter 8


Wednesday, November 04, 2015
Implications of behavioral economics


Week 11

Monday, November 09, 2015
Case: Early childhood interventions


Wednesday, November 11, 2015

- Problem set 4 due
Week 12

Monday, November 16, 2015
Revealed preferences: experiments and quasi-experiments

- BGVW, Chapter 11, 12

Wednesday, November 18, 2015
Revealed preferences: demand curves and shadow prices

- BGVW, Chapter 13, 14

Week 13

Monday, November 23, 2015
Valuing life

- BGVW, Chapter 16, pp. 406 - 419

Wednesday, November 25, 2015
Valuing time

- BGVW, Chapter 16, pp. 419 - 423
Week 14
Monday, November 30, 2015
CANCELED

Wednesday, December 02, 2015
Existence value and stated preferences

• **Problem set 5 due**

• BGVW, Chapter 9


Week 15
Monday, December 07, 2015
CV in more depth
Journal of Economic Perspectives Symposium on Contingent Valuation:

• BGVW, Chapter 15


Wednesday, Dec 09, 2015
Environment: externalities, regulation, and subsidies


Developing countries

- BGVW, Ch 17

