The grind of the assignments in the Gateways is over. Now you can begin to apply the new knowledge and techniques to real issues and decisions — the main piece of work for this subject is a project on a topic of your choice, done individually or with one or two colleagues.

EIA is designed to help today's private- or public-sector manager reach "bottom-line" decision — in which all aspects of a project can be expressed in dollar terms — in an increasingly complex world in which he or she must cope with the effects of such things as

- inflation,
- exchange-rate movements,
- taxation, and
- environmental constraints, in addition to
- the pervasive uncertainty attached to any long-term project.

Unfortunately, even being able to cope with these complexities is not enough. Increasingly, decision makers must pay heed to non-monetary costs and benefits of projects, and to conflicting claims and effects which have ramifications beyond the direct environs of the project itself. Because of the interaction among the multitude of factors affecting small and large projects, it is essential for the manager to identify the important ones and to determine the degree to which they affect each other before making a clear decision. This subject will also examine ways of evaluating such projects, to identify the decision criteria and other factors—whether intangible or concrete—to measure the interactions among them in a simple way, and to synthesize all information in order to achieve a simpler decision.

The subject is divided into three sections:

a. cost-benefit analysis from the perspective of both private- and public-sector organizations;

b. multi-attribute decision analysis, which extends cost-benefit analysis to situations in which complex projects with uncertainty cannot be reduced to a single criterion or unit of account such as dollars; and

c. class discussion of a variety of actual projects and case-studies, in which learning takes place by a consideration of the often severe problems which confront those who evaluate projects and make decisions. Ways in which studies and decisions might have been improved upon will be a feature of these discussions.
The subject will culminate with sessions in which students present and if need be defend their own draft evaluations of private- or public-sector projects or decisions. One example of an excellent study done for the subject in 1985 critically evaluates the site for the second Sydney airport (section 7.5 below and Package, 5).

The recommended prerequisite for this subject is AGSM 200 Markets and Prices or its equivalent (such as AGSM 206 Microeconomic Analysis). Teaching will mostly be lectures, with student presentations. There will be no final exam. Assessment will be based on a term project, on a midterm and two assignments, and on a classroom rôle-playing exercise on a topic to be announced. A Package of readings is on sale at Reception.

**Outline:**

Week

1. Introduction
   - Decision-maker’s objectives: efficiency v. equity.
   - Financial appraisal v. cost-benefit analysis.

2. Basics of Project Evaluation
   - Criterion: NPV (VOC, annuities), IRR, payback period, B/C ratio.
   - Inflation, taxes, discount rates.
   - Capital rationing.

3. Shadow Pricing

4. Effects of Price Changes & Welfare Economics
   - Producer’s and consumer’s surplus.

5. Indirect Price-Change Effects
   - Pecuniary external effects.

6. Valuing the Environment & Other Unmarketed Goods
   - Value of time saved.
   - Valuing the environment.
   - Contingent valuation
   - Value of human life.

7. Risk-Benefit Analysis
   - Encoding uncertainty.
   - Certainty equivalent.
   - The value of perfect information.

8. Multi-Attribute Decision Analysis
   - Pairwise comparisons, satisficing.
   - Lexicographic ordering.
   - Additive value models.

9. Case Studies & the Rôle-Playing Exercise

10. Student Presentations

**Readings:**

The required text is:

As well, the following books may be found useful:

Majone G. and E. S. Quade (eds), Pitfalls of Analysis, NY: IIASA/Wiley, 1980. AGSM 003/10
NSW EPA, ENVVALUE NSW EPA Environmental Valuation Database, Chatswood: NSW EPA, 1995. AGSM SW 3

Additional readings will be found below. Recommended readings are marked with an asterisk (*); the others are included for your interest.

1. Introduction
Dept. of Finance, Chapter 1, Cost-benefit analysis as a process; Chapter 2, The conceptual basis of cost-benefit analysis.
*Perkins, Chapter 1, An introduction to the cost benefit analysis of projects; Chapter 6, The rationale for economic cost benefit analysis.
Sugden & Williams: Chapter 1, The framework; Chapter 3, Costs and returns in financial appraisal; Chapter 7, The objective in cost-benefit analysis.
Pearce & Nash: Chapter 2, The rationale of cost-benefit analysis.
Majone G, A anatomy of pitfalls, in Majone & Quade: Chapter 2.
*Economist, Private profit, public service, 9 Dec 1995 (Package, 3)

2. Basics of Project Evaluation
*Perkins, Chapter 2, The valuation of financial costs and benefits; Chapter 3, The cash flow in financial analysis; Chapter 4, Time preference, discounting, and the financial discount rate; Chapter 5, Discounted project assessment criteria.
Dept. of Finance, Chapter 4, Computing present values; Chapter 5, Setting discount rates.
Sugden & Williams: Chapter 4, The discount rate in financial appraisal, Chapter 2, Time; Chapter 15, The discount rate in cost-benefit analysis.
Pearce & Nash: Chapter 3, The welfare foundations of cost-benefit analysis; Chapter 4, Investment criteria in the public sector.
Stokey & Zeckhauser: Chapter 9, Project evaluation: benefit-cost analysis.

*Dept. of Finance, Chapter 3, Valuing costs and benefits.
Perkins, Chapter 7, Economic evaluation in a closed economy; Chapter 8, The economic evaluation of tradeables; Chapter 9, The economic valuation of foreign exchange; Chapter 10, The economic cost of primary factors — labour, land, and natural resources.
Sugden & Williams: Chapter 8, Shadow pricing; Chapters 9,10, The direct and indirect effects of price changes.
Pearce & Nash: Chapter 6, Valuing costs and benefits when prices change.

4. Valuing the Environment and Other Unmarketed Goods

*Perkins, Chapter 11, Valuing externalities including environmental impacts.
*Diamond & Hausman, On contingent valuation measurement of nonuse values. (Package, 9)
*Pearce, Markandya and Barbier, Valuing the environment. (Package, 14)
Sugden & Williams: Chapter 11, Unmarketed Goods.
Pearce & Nash: Chapter 8, Externalities and public goods.

5. Decision Analysis and Risk-Benefit Analysis

*Stokey & Zeckhauser: Chapter 12, Decision analysis. (Package, 26)
*Morgan M. G., Risk analysis and management, Scientific American, July 1993, pp. 32-41. (Package, 27)
Perkins, Chapter 15, Handling risk and uncertainty in cost benefit analysis.
Pearce & Nash: Chapter 5, Risk and uncertainty.
Clement R.T., Making Hard Decisions: An Introduction to Decision Analysis, Van

6. Multi-Attribute Decision Analysis


Zeleny: Chapter 3, The decision process and its stages; Chapters 7, Measuring attribute importance; 12, Multiattribute utility theory.

7. Case Studies

7.1 Greenhouse

*Marks and Swan, Abatement. (Package, 15)
*Nordhaus, Greenhouse. (Package, 16)
*Economist, Reading the patterns, 1 April 1995 (Package, 17).

7.2 Drugs Policy

*Marks, R. E.: The costs of Australian drug policy. (Package, 18)
*NORC, Executive Summary, Evaluating Recovery Services: The California Drug & Alcohol Treatment Assessment. (Package, 19)

Marks, R. E.: Prohibition or regulation, Australian and New Zealand Journal of Criminology, 65–87, 1990. (Reserve)

7.3 General cost-benefit studies

*Economist, The MBA cost-benefit analysis, 1 April 1995 (Package, 6).
*Economist, Dam good business this, chaps, 26 Aug. 1995 (Package, 4).

*Economist, The price of imagining Arden — valuing the environment, 3 Dec 1994 (Package, 8)

*Pearce D., A case study: the Gordon-below-Franklin dam. (Package, 10)
*Emerson C., Economic evaluation of mineral-processing projects. (Package, 12).

*Dept. of Finance, The new international gateway at Townsville, (Package, 23).

7.4 Case studies in decision analysis and risk

*Economist, Apocalypse maybe, 30 March 1996 (Package, 30).

Keeney R.L.: Chapters 11,12,13

Hax A. C. and K. M. Wiig, The use of decision analysis in capital investment

Howard R. A. et al., The decision to seed hurricanes, in Kaufman & Thomas: Chapter 15.

7.5 The Second Sydney Airport/ The Third Runway

*Conde, Peter, Paul Collings, and Jeff Oughton, Site selection for a second Sydney airport: a cost-benefit analysis, August 1985. (Package, 5)
Taylor, David, Why Sydney Airport needs its third runway now, Australian Director, Feb/March 1989. (Reserve)

7.6 Alternative transport modes: road versus buses.

*Pearce & Nash: Chapter 11, The social appraisal of transport projects. (Package, 11)

7.7 The Games of the XXVII Olympiad

*Sydney Morning Herald, Sydney projects, August 1995. (Package, 24)

Plus additional items.
Assessment

There will be no final exam. Instead there will be:

- two assignments (each 5%)
- an exam (30%) in Week 6,
- a rôle-playing exercise (5%), and
- a term project (55%).

The rôle-playing exercise, on a topic to be announced, will be performed and marked in designated groups; each group will assess the performance of all other groups, which will provide the basis for students' assessments in the exercise.

The term project should be an attempt to apply some of the theory covered in the subject to a particular project/decision or evaluation/decision-making procedure. If you wish, you may form groups of two (or with my permission of three) for the term project. I'd like an outline of the topic and the approach to be adopted (no more than two pages, please) by Friday, September 27th: the complete paper is due by 4pm on Friday, November 15th. (See the Notes on Writing in the Package.) Each student will give a short briefing (worth 10% of the term-project mark) to the class before the end of term on the contents and conclusions of the paper.

Some possible (but by no means exclusive) areas for projects are:

1. Privatising the AGSM.
2. Using the Internet and its multi-media possibilities to deliver the AGSM’s MBA, EMBA, etc.
3. Faster access to Sydney’s northern beaches.
4. The Sydney airport link railway.
5. The Sydney Olympics.
7. A trans-Australia gas pipeline.
8. Oil drilling on the Great Barrier Reef.
10. The Darwin–Alice Springs railway.
11. Large-scale water desalinisation projects.
12. The Third Runway at Mascot (Sydney) Airport.
14. Sydney’s Inner West Redevelopment Project.
15. The Sydney Water Board’s treatment projects.
16. Turning the rivers inland.
17. The domestic fibre-optic network.
18. The Eastern Creek raceway fiasco.
21. The Bass Strait Electricity Link/National Electricity Grid.
22. Private power stations (building or selling).
23. The Very Fast Train (still!!)
24. A proposal to make the wearing of seat belts/cycle helmet voluntary.
25. Examination of the risk/benefits of (hypothetical?) proposals for improving road safety, or air safety, or the safety of new drugs.
26. Examination of “lumpy” business projects, which might be large in relation to the company, to the local area, or to both. (Evaluation of such projects may benefit from some of the techniques presented.)
29. Examination of a (hypothetical) policy to require adventures (mountaineers, wilderness venturers, sea-faring wind-surfers, white-water canoeists, etc.) to take insurance out against necessity for government search-and-rescue teams to save them.
30. Use of CBA techniques to aid an actual decision, and an evaluation of the procedure. (From your previous work experience, perhaps.)
31. The similarities and differences between public- and private-sector project evaluation.
32. The risks and returns from increasing the allowable blood alcohol content from 0.05% to 0.08%.
33. The Rasmussen report on nuclear safety, risks, and uncertainty.
34. Bond University, or other private universities.
35. The development at Darling Harbour.
36. Sydney freeways.
37. Standardisation of the Melbourne-Adelaide railway.
38. Education vouchers.
39. Privatisation of QANTAS, of the NSW Electricity System.
40. An assessment of the social costs of the AIDS epidemic.
41. The large bank you are working for is considering financing a consortium to undertake some large-scale project which might be the second-stage of the North West Shelf natural-gas development, tourist development, a large new shopping mall, hyper-market or whatever. Use your imagination or your contacts to choose and evaluate the viability of such a project. Evaluate the project from both a “financial” and an “economic” viewpoint and contrast the differences.
42. Approach a company with which either you or Faculty have contacts that is undertaking a new project. Provide an independent evaluation of the project but drawing on information provided by the company where appropriate.
43. The Sydney Harbour Bridge Tollroad.
44. AGSM’s Australian Open Learning Program.
45. The government’s proposed reforms to Medicare.
46. Performance evaluation of public enterprises.
47. Some aspect of the micro-economic reform program.
48. Some aspect of environmental policy or the greenhouse effect.
49. Private toll roads or electronic road pricing.
50. Or anything else you may think of — which may be in your home country, not here.

I have some papers from previous years. Please see me to borrow them, and to discuss perhaps using them to write a new analysis of your own.
<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Pages</th>
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<tr>
<td>Abbott</td>
<td>BHP Mini Steel Mill</td>
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<td>Adams</td>
<td>Harris-Daishowa woodchip project</td>
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<td>Alston</td>
<td>Australian Technology Park</td>
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<td>Arasu</td>
<td>CBA of the MBA</td>
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<td>Bain</td>
<td>Kingsford Smith Airport and the Third Runway</td>
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<td>Baldwin</td>
<td>Heroin Policy Alternatives for Aust</td>
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<td>Blewitt</td>
<td>Proposed Toll Methodology for the Sydney Harbour Tunnel</td>
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<td>Blundell</td>
<td>Social cost of viral hepatitis in Australia</td>
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<td>Brindley</td>
<td>The NSW Rugby League Draft</td>
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<td>Adelaide's Grand Prix</td>
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<td>Carr</td>
<td>Economic Impact of AIDS in Aust</td>
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<td>The Social Cost to Australia of AIDS</td>
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<td>Conde</td>
<td>Site Selection for a Second Sydney Airport: A CBA</td>
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<td>Duck</td>
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<td>Godden</td>
<td>Partnerships for Development or Partnerships for Disaster?</td>
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<td>Gorman</td>
<td>An EIA into a Proposed new Light Rail Link—S.E. Sector</td>
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<td>Harrington</td>
<td>A heliport for Sydney's CBD</td>
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<td>Horstman</td>
<td>CBA of Runway Expansion based on Efficient Pricing</td>
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<td>Hutchinson</td>
<td>The Evaluation of Health Maintenance Organisations</td>
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<td>Jackson</td>
<td>CBA of Woronora River Bridge</td>
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<td>Jayaratne</td>
<td>The Argyle Diamond Mine Project (ADM): A CBA</td>
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<td>Johnson</td>
<td>Oil Drilling on the Great Barrier Reef</td>
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<td>Lee</td>
<td>A Proposed Congestion Tolling System for the Sydney Harbour Bridge</td>
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<td>Mehlung</td>
<td>CBA of Diaper (Nappy) Usage</td>
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<td>Michael</td>
<td>A Fast Railway between Sydney, Canberra &amp; Melbourne</td>
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<td>Mitchell</td>
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<td>O'Donnel</td>
<td>A CBA of the Proposed 1992 Olympic Games in Brisbane</td>
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<td>Oke</td>
<td>Decisions without Market Prices: The Proposed Oxley National Park</td>
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<td>Paul</td>
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<td>Peter</td>
<td>Domestic Waste Disposal &amp; Recycling</td>
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<td>Purves</td>
<td>A CBA of Memtech's Membio project</td>
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<td>Roberts</td>
<td>Bond Corp.'s Skytower project</td>
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<td>Ross</td>
<td>Going on (student) exchange</td>
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<td>Ryan</td>
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<td>Sewell</td>
<td>The Pavilion, Manly: A CBA</td>
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<td>AGSM vs. UBC: a CBA of the MBA Degree</td>
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<td>Tang</td>
<td>Privatisation of Airlines &amp; Deregulation of Domestic Aviation</td>
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<td>Tanner</td>
<td>Access to Ski Resorts in Kosciusko National Park</td>
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<td>Weeks</td>
<td>Going abroad for an MBA</td>
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<tr>
<td>Yan</td>
<td>Evaluation of Random Breath Testing in NSW</td>
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<tr>
<td>Ying</td>
<td>The Shanghai's Pudong New Area in China</td>
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