Unit Outline*

ECON8501

Resource Economics

Semester 2, 2010
Campus: Crawley

Unit Coordinator
Associate Professor Paul McLeod

* This Unit Outline should be read in conjunction with the Business School Unit Outline Supplement available on the Students web site http://www.business.uwa.edu.au/students
UNIT DESCRIPTION

Introduction

Welcome to Resource Economics and to the world of resource and environmental economics. This course builds on conventional microeconomics and welfare economics theory to develop the theoretical and applied tools required in modern resource and environmental economics.

Unit content

The basic theory of welfare economics, Pareto Optimality and resource allocation efficiency are the building blocks for resource and environmental economics. Much of this will already be familiar to students who have undertaken previous economics studies such as Honours Public Economics or third year Microeconomics. For students who have not had the same exposure, this material will be reviewed in the first part of the course and the associated reading will allow the core theory to be developed to an appropriate level.

Beyond the review of economic principles, the main focus of the course will be specific issues in resource and environmental economics and the models that have been developed to analyse these problems. Particular applications will be considered of the theory as each topic is discussed including: optimal pollution flows and policies to achieve them, optimal depletion of non renewable resources, optimal harvesting of renewal resources, taxation of mineral extraction and valuation of the natural environment.

Throughout the course we will see that the application of economics to resource and environmental problems cannot be done in isolation from resources themselves. Arguably it has been the integration of environmental and ecological concepts into economic theory and modifying economic theory as necessary, that has allowed economics to make a major contribution to dealing with many major resource and environmental problems.

The goal of the unit

The major objective of the course is to further your understanding of the fundamental contribution that advanced microeconomic analysis can make to solving natural resource and environmental management problems.

Most natural resource management problems arise because the sum of the competing demands for the various environmental and consumption services that these resources can supply exceeds the capacity of the natural resources required to provide these services over time. The problem is in this sense one of allocating scarce natural resources between competing uses.

The core focus of microeconomics is the allocating scarce resources to competing uses and the microeconomics framework has been demonstrated to be well suited to analysing various natural resource and environmental management issues.

However, it needs to be recognized that the management of natural resources does pose some unique problems and the principles have been adapted to take account of these. It is these aspects that establish natural and resource economics as a distinct area of economics study. Unique natural resources, like canyons and old growth forest, can be irreversibly damaged through use. Resources like fisheries can be sustainably harvested over time whereas for resources like minerals harvesting
depletes the resource. Environmental pollution is an interaction between production and consumption activities and the assimilation capacity of the environment.

An understanding of the way microeconomic principles have been developed to deal with these complex issues and how this informs the establishment of appropriate policy frameworks designed to deal with a range of natural resource and environmental management issues will be the major outcome of the course.

Learning outcomes

When you have completed the course you will be expected to have achieved:

- An understanding of the basic Pareto model of efficient resource allocation and the way that this underpins economic thinking in analysing natural resource and environmental problems;
- An understanding of the market failure and externalities approaches to environmental management and the way this underpins tax and standard approaches to policy;
- An understanding of the role that markets can play in allocating environmental resources and why policies such as transferable entitlements are now favoured in many areas;
- An understanding of irreversibility in resource use and its implications for making decisions about the preservation versus exploitation of resources;
- An understanding of the basic economic principles behind the analysis of the optimal harvesting of sustainable resources; and
- An understanding of the basic economic principles underpinning the analysis of the optimal extraction of non-renewable resources;
- An understanding of the role that cost-benefit analysis and the valuation of environmental benefits and costs play in policy decisions; and

Based on this knowledge:

- An ability to identify classes of natural resource management problems and to match the appropriate theory to the problem in the design of appropriate policy solutions.

Educational principles and graduate attributes

The study of Resource Economics in this unit will provide you with an opportunity to:

- "Critically evaluate environmental and resource management policies";
- "Develop skills in identifying classes of resource management problems and the analysis required to select the appropriate theory to use in the design of appropriate policy solutions";
- "Write analytically on the application of economic theory to a current natural resource management policy problem".

TEACHING AND LEARNING RESPONSIBILITIES

Teaching and learning strategies

Besides lectures, the main learning instrument in this course is the essay where you will have an opportunity to develop you interpretative and analytical skills in resource economics.
The essay is to be chosen from a number of topics on natural resource management that will be provided to you during the third week of class. The topics will be of an applied nature. The idea of the essay is to allow students to demonstrate how well they have mastered the application of economic theory to resource and environmental policy areas. In particular the essay will require you to:

- Select an applied natural resource management topic (eg climate change policies);
- Choose an appropriate theoretical construct (e.g. marketable permits);
- Demonstrate why the chosen theory is appropriate; and
- How it can be used to develop policy solutions to dealing with the nominated problem;
- How it has been applied in designing policy solutions dealing with the nominated problem.

The list of topics provided are suggestions. You will also be free to nominate a topic of your choice but approval for the nominated topic will be required. If you nominate your own topic, the exact topic must be agreed with me prior to commencing work on the essay.

Note: Results may be subject to scaling and standardisation under faculty policy and are not necessarily the sum of the component parts.

**Teaching and learning evaluation**

You may be asked to complete two evaluations during this unit: The Student Perception of Teaching (SPOT) and the Students' Unit Reflective Feedback (SURF). The SPOT is optional and is an evaluation of the lecturer and the unit. The SURF is completed online and is a university wide survey and deals only with the unit. You will receive an email from the SURF office inviting you to complete the SURF when it is activated. We encourage you to complete the forms as your feedback is extremely important and can be used to make changes to the unit or lecturing style when appropriate.

**Attendance**

Participation in class, whether it be listening to a lecture or getting involved in other activities, is an important part of the learning process. It is therefore important that you attend classes. More formally, the University regulations state that ‘to complete a course or unit students shall attend prescribed classes, lectures, seminars and tutorials’. Students should not expect to obtain approval to miss more than two classes per unit unless there are exceptional circumstances.
CONTACT DETAILS

We strongly advise students to regularly access their student email accounts. Important information regarding the unit is often communicated by email and will not be automatically forwarded to private email addresses.

<table>
<thead>
<tr>
<th>Unit coordinator/lecturer</th>
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<tbody>
<tr>
<td><strong>Name:</strong> Dr Paul McLeod</td>
<td><strong>Email:</strong> <a href="mailto:paul.mcleod@uwa.edu.au">paul.mcleod@uwa.edu.au</a></td>
</tr>
<tr>
<td><strong>Phone:</strong> 6488 2498</td>
<td><strong>Consultation hours:</strong> TBA</td>
</tr>
<tr>
<td><strong>Lecture venue and times:</strong> <a href="http://www.timetable.uwa.edu.au/">http://www.timetable.uwa.edu.au/</a></td>
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TEXTBOOK(S) & RESOURCES

Unit website

A variety of material for the course will be made available through WebCt. This will include;

- Reading lists for each topic;
- Essay topics and guide;
- Reading material in PDF format;
- Lecture slides (powerpoint or other).

All students in Resource Economics (ECON8501) will be authorised for the site. You access Webct via your normal Webct student login and the course should be available to you: http://www.webct.uwa.edu.au

Recommended/required text(s)

The recommended text is:

There will be chapters from this book prescribed for all sections of the course.

Additional resources & reading material

There are a number of excellent books in Resource and Environmental Economics. They operate at various levels of technical and mathematical complexity. Some focus on graphical analysis and basic principles whereas others favour mathematical analysis. The following is a list of very good backup books which cover relevant material for the course.
You should scan these texts and seek one that suits – a little more graphical/descriptive or a little more mathematical depending on your background and use in tandem with the main text.

You can check with me as to whether any particular book outside of this list is a good reference for you to use.

- Pearce D.W and Turner R K, Economics of Natural Resources and the Environment, London: Wheatsheaf, 1st or 2nd editions.
  
  Excellent and comprehensive – mostly graphical – chapters on environmental economics and theory of sustainability are very good.

  
  Especially good on natural resources – fisheries economics, minerals economics and optimal mineral depletion

  
  Not as analytical as the other two. Comprehensive and a great overview of the field. Especially good for an overview/policy perspective on a range of topics.

A range of journal articles will be required reading for the course. These will be referred to in the reading lists, and will be available in the journals in the library. Most will be available electronically (e.g. in JSOR in the Library). Where required they will be made available to you via the WEBCT site for the course.

A number of journals exist dealing largely with resource related issues. In addition to the reading lists that will be handed out for each topic, students are encouraged to use these to seek out relevant material. These include:

- Journal of Environmental Economics and Management
- Land Economics
- Resources Policy
- Natural Resource Journal.
UNIT SCHEDULE

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<tr>
<th>Week #</th>
<th>Topic</th>
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<tr>
<td>1</td>
<td>Introduction to unit – the interaction between the economy and natural resources and the environment</td>
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<td>2</td>
<td>The economic approach to sustainability</td>
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<td>3</td>
<td>Welfare economics foundations of resource and environmental economics</td>
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<td>4</td>
<td>Environmental pollution Part 1 – pollution as an externality</td>
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<td>5</td>
<td>Environmental pollution Part 2 – environmental standards and marketable permits as solutions to externality problems</td>
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<td>6</td>
<td>Environmental pollution Part 3 – climate change as an externality problem and the role of carbon taxes and carbon trading in dealing with it</td>
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<td>7</td>
<td>Depletable resources 1 – economics of the mine</td>
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<td>8</td>
<td>Depletable resources 2 – optimal depletion of a mineral resource, optimal; taxation of a mineral resource</td>
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<td>9</td>
<td>Study Break – 27th September – 1st October</td>
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<td>10</td>
<td>Renewable resources 1 – bioeconomic model of the fishery</td>
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<tr>
<td>11</td>
<td>Renewable resources 2 – optimal management of the fishery</td>
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<tr>
<td>12</td>
<td>Allocation of finite harvests – allocation of fish and water harvests</td>
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<tr>
<td>13</td>
<td>Cost benefit analysis and resource economics 1- Irreversibility and the choice of the social discount rate and 2- Valuing natural resources – contingent valuation and travel cost methods</td>
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ASSESSMENT MECHANISM

The purpose of assessment

There are a number of reasons for having assessable tasks as part of an academic program. The assessable tasks are designed to encourage you to explore and understand the subject more fully. The fact that we grade your work provides you an indication of how much you have achieved. Providing feedback on your work also serves as part of the learning process.
Assessment mechanism summary

The recommended assessment is as follows:

Final exam (3 hours)  70%
Essay            30%

Note 1: Results may be subject to scaling and standardisation under faculty policy and are not necessarily the sum of the component parts.
Note 2: Your assessed work may also be used for quality assurance purposes, such as to assess the level of achievement of learning outcomes as required for accreditation and audit purposes. The findings may be used to inform changes aimed at improving the quality of Business School programs. All material used for such processes will be treated as confidential, and the outcome will not affect your grade for the unit.

Assessment components

The nominated essay topic is designed to allow you to undertake and evaluation of a natural resource management policy. The focus is the application of relevant economic theory to the policy problem.

Marking will be based around how well you have mastered the application of economic theory to natural resource problem and how well the theory is integrated into the analysis.

In particular the essay will require you to:

• Select an applied topic and choose the appropriate theoretical construct for its analysis;
• Demonstrate why the chosen theory is the most appropriate; and
• Demonstrate how it can be used to develop policy solutions for dealing with the nominated problem; and
• Illustrate how it has been applied in designing policy solutions dealing with the nominated problem.

Submission of assignments

The essay assignment for this course should be lodged online through the WebCt course page.

Student Guild

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