



**2003 EAERE-FEEM-VIU Summer School
in Resources and Environmental Economics**

POLITICAL ECONOMY OF THE ENVIRONMENT

SUMMER SCHOOL OVERVIEW



EAERE FEEM VIU

European Summer School

IN RESOURCE AND ENVIRONMENTAL ECONOMICS

Venice, September 1st - 6th, 2003



Index

Index	1
Introduction	2
Practical Information	2
Subsistence	2
Computer facilities	2
Programme overview	3
Lecturers' profile	4
Lecturer's Outlines	10
Students' papers	16
List of participants	27
Venice International University	29
Useful (telephone) numbers	30
The organisers	30
The map	31



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● Introduction

Welcome to the EAERE 2003 EAERE–FEEM–VIU European Summer School in Resource and Environmental Economics. The school takes place at the Venice International University, Isola di San Servolo.

The aims of the EAERE-FEEM-VIU Summer school are:

- (i) to provide advanced training for European postgraduate students in Environmental and Resource Economics by bringing together postgraduate students with leading researchers to teach the latest developments in their field of specialisation;
- (ii) to allow European postgraduate students to meet other postgraduate students working in closely related topics to both learn what research is being undertaken elsewhere that they might not otherwise be aware of, and to share experiences of doing research so that they can learn about different methodological approaches, data bases etc which might be useful in their own research.

In the six days of intensive lectures and seminars, experienced researchers will give survey lectures focused on topics such as perspectives on non-market valuation; contingent valuation; choice experiments; travel cost and other indirect methods; valuation and the policy process.

Students will give talks on their dissertation. They can present dissertation projects, first draft of dissertation chapters or newly completed papers. Private consultations with lecturers and reading times are also scheduled.

● Practical Information

The School will be held in Room 5X.

The Secretariat Office will be in Room 5S, next to the room 5X.

Subsistence

Lunches and dinners will be provided in the Cafeteria in the Building 11 (please see the enclosed map of the VIU Campus).

Computer facilities

An advanced PC laboratory is located on the second floor of building 7 next to Room 1E. 19 PC and printing facilities are available to the participants of the EAERE FEEM VIU Summer School.

Programme overview

Monday 1 st September	Tuesday 2 nd September	Wednesday 3 rd September	Thursday 4 th September	Friday 5 th September	Saturday 6 th September
9.00-9.15 WELCOME AND INTRODUCTION ANTHONY HEYES	9.00-10.30 COMMON AGENCY APPROACHES I PER G. FEDRIKSSON	9.00-10.30 EMPIRICAL METHODS I JOHN LIST	9.00-10.30 EXPERIMENTAL METHODS JASON F. SHOGREN	9.45-10.30 Student Talk 12 <i>A methodology for policy analysis in water resources management</i> JACOBO FEAS VAZQUEZ	9.00-9.45 Student Talk 16 <i>Recursive Utility, Pollution and Optimal Growth</i> EL HADJI FALL
9.15-10.45 VOTING MODELS I TOKE AIDT	10.30-11.00 BREAK	10.30-11.00 BREAK	10.30-11.00 BREAK	10.30-11.00 BREAK	9.45-10.30 Student Talk 17 <i>Comparing Alternative Regulation Policies: and Environmental Law and Economics Approach</i> MARIACHIARA ALBERTON
10.45-11.15 Break	11.00-12.30 INTERNATIONAL AGREEMENTS JASON F. SHOGREN	11.00-12.30 VOTING MODELS II TOKE AIDT	11.00-12.30 COMMON AGENCY APPROACHES II PER FREDRIKSSON	11.00-12.30 EMPIRICAL METHODS II JOHN LIST	10.30-11.30 CONCLUDING SESSION
11.15-12.45 ENVIRONMENTAL CONFLICTS JASON F. SHOGREN	12.30-14.00 Lunch	12.30-14.00 Lunch	12.30-14.00 LUNCH	12.30-14.00 LUNCH	12.30-14.00 LUNCH
12.45-14.15 Lunch	14.15-15.00 Student Talk 3 <i>Resource Collapse & Hyperbolic Discounting</i> CAMERON HEPBURN	14.15-15.00 Student Talk 6 <i>The Political Economy of Emissions trading design</i> JULIEN HANOTEU	14.15-15.00 Student Talk 9 <i>Early Action vs. Early Emissions Reduction - Evaluation of Policy Proposal for Kyoto Compliance</i> VERONIKA NEMES	14.15-15.00 Student Talk 13 <i>Emission Trading and the Stability of Environmental Agreements</i> GERGELY UJHELYI	
14.15-15.15 Reading time	15.00-15.45 Student Talk 4 <i>International Competitiveness and Strategic Distribution of Emission Permits</i> FLORENT PRATLONG	15.00-15.45 Student Talk 7 <i>Optimal Governmental Decentralization for Environmental Regulation</i> CYNTHIA LIN	15.00-15.45 Student Talk 10 <i>The Logic of Two-Level Games with endogenous lobbying: Case of international environmental agreements</i> HAFFOUDHI HOUDA	15.00-15.45 Student Talk 14 <i>The Role of Warnings in Regulation: Keeping Control with Less Punishment</i> KJETIL E. TELLE	
15.15-16.00 Student talk 1 <i>The Effect of Membership Rules and Voting Schemes for the Success of International Climate Agreements</i> ALTAMIRANO CABRERA	15.45-16.30 Student Talk 5 <i>The Political Economy of Land Use and Logging in Presence of Externalities</i> JOHANNA JUSSILIA	15.45-16.30 Student Talk 8 <i>A Multi-object Auction for Selling Fishing Permits in the Venice Lagoon</i> ALBERTO LONGO	15.45-16.30 Student Talk 11 <i>Game structures and equilibrium conditions in environmental regulation with heterogeneous players</i> MANUEL CABUGUEIRA	15.45-16.30 Student Talk 15 <i>Does Pollution affect Economic Growth?</i> GIOVANNI BELLA	
16.00-16.45 Student Talk 2 <i>Corruption, Growth and Sustainability</i> LORENZO PELLEGRINI	16.30-17.00 Break	16.30-17.00 Break	16.30-17.00 Break	16.30-17.00 Break	
16.45-17.15 Break	17.00-18.45 Studying Time and Consultation	17.00-18.45 Studying Time and Consultation	17.00-18.45 Studying Time and Consultation	17.00-18.45 Studying Time and Consultation	
17.15-18.00 Consultation					20.00 Social Dinner



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● Lecturers' profile

Prof. Toke Aidt

**Cambridge University
Faculty of Economics and Politics**

e-mail: Toke.aidt@econ.cam.ac.uk

URL: <http://www.econ.cam.ac.uk/faculty/aidt/>

Academic Experience

1998 - University Lecturer at Faculty of Economics and Politics, University of Cambridge and Jesus College.

Some Publications

Political Internalisation of economic externalities and environmental policy, *Journal of Public Economics* 69, 1998, 1-16.

Economic Analysis of Corruption: a survey. *Economic Journal*, forthcoming, 2003.

Strategic Political Participation and Redistribution, *Economics and Politics* 14(1), 2002, 19-40.

Redistribution and deadweight costs: the role of political competition. *European Journal of Political Economy* 19(2), 205-226. 2003

Transitional Politics: Emerging Incentive-based Instruments in Environmental regulation (with J. Dutta), Working paper University of Cambridge, 2002.

Political Acceptability, Reimbursement and endogenous environmental policy, working paper, University of Cambridge, 2002.

Sharing the climate policy burden in the EU (with Sandra Greiner). HWWA discussion paper 176, 2002.

Prof. Per Fredriksson
Ph.D. in Economics
University of Pennsylvania, 1995.

e-mail: pfredrik@mail.smu.edu
URL: <http://faculty.smu.edu/pfredrik/>

Academic Experience

Visiting Professor, University of Gothenburg, 2003.
Assistant Professor, Southern Methodist University (SMU), 1999-present.
Consultant, The World Bank, 1997-1999.
Lecturer, University of Adelaide, 1995-1999.

Some Publications

- Fredriksson, P.G. (1997), "The Political Economy of Pollution Taxes in a Small Open Economy," *Journal of Environmental Economics and Management* 33(1): 44-58.
- Damania, R. and P.G. Fredriksson (2000), "On the Formation of Industry Lobby Groups," *Journal of Economic Behavior and Organization* 41(4): 315-35.
- Fredriksson, P.G. and D.L. Millimet (2002), "Strategic Interaction and the Determination of Environmental Policy Across US States," *Journal of Urban Economics* 51(1): 101-22.
- Fredriksson, P.G. and R. Damania (2003), "Trade Reform, Endogenous Lobby Group Formation, and Environmental Policy," *Journal of Economic Behavior and Organization* 52(1): 47-69.
- Fredriksson, P.G., D.L. Millimet, and J.A. List (2003), "Bureaucratic Corruption, Environmental Policy and Inbound US FDI: Theory and Evidence," *Journal of Public Economics* 87: 1407-30.



European Summer School

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Prof. Anthony Heyes
School Coordinator
Royal Holloway, University of London

E-mail: a.heyes@rhul.ac.uk

URL: <http://www.rhul.ac.uk/Economics/About-Us/heyes.html>

Academic Experience

Fellow of Nuffield College Oxford.

BSc (Cambridge), PhD (McGill) is Professor of Economics at London University.

Research interests in environmental regulation and political economy.

Some Publications

"Environmental Regulation by Private Contest" *Journal of Public Economics* 1997, 61(2), 407-428.

"A Theory of Regulatory Dealing: Revisiting the Harrington Paradox" (with Neil Rickman) *Journal of Public Economics* 1999: 72(3): 362-78.

"Honesty in a Regulatory Context - Good Thing or Bad?" *European Economic Review* 2001: 45(2), 215-235.

A theory of filtered enforcement, *Journal of Environmental Economics & Management*, 2002, vol. 43 (1), 34-46.

A theory of Regulatory Dealing: Revisiting the Harrington Paradox, *Journal of Public Economics*, 1999, vol. 72 (3), 362-78.

The Law & Economics of the Environment, ed. Anthony Heyes. 2001, Edward Elgar, Cheltenham, England.

Prof John A. List

**Professor University of Maryland
Agricultural and Resource Economics Department
University of Maryland, College Park**

e-mail: jlist@arec.umd.edu
URL: <http://www.arec.umd.edu/jlist/>

Academic Experience

March 2003-present: NBER (National Bureau of Economic Research) Faculty Research Fellow.

June 2002-present: President's Council of Economic Advisors, Senior Economist, Environmental and Resource Economics

August, 2001 – present: Professor, AREC and Department of Economics, University of Maryland

August, 2000 – August 2001: Associate Professor, University of Arizona

Summer, 1998, 2000. Visiting Scholar, CentER for Economic Research, Tilburg, Holland

August, 1996 – August 2000: Assistant Professor, University of Central Florida

Some Publications

List, J., Millimet, D., and McHone, W. "Effects of Air Quality Regulation on the Destination Choice of Relocating Plants," *Oxford Economic Papers* (2003), forthcoming.

Millimet, D. and List, J. "A Natural Experiment on the "Race to the Bottom" Hypothesis: Testing for Stochastic Dominance in Temporal Pollution Trends," *Oxford Bulletin of Economics & Statistics* (2003), forthcoming.

List, J. "Does Market Experience Eliminate Market Anomalies?," *Quarterly Journal of Economics* (2003), forthcoming.

Damania, R., Fredriksson, P., and List, J. "Trade Liberalization, Corruption, and Environmental Policy Formation: Theory and Evidence," *Journal of Environmental Economics and Management* (2003), forthcoming.

Fredriksson, P., List, J. and Millimet, D. "Bureaucratic Corruption, Environmental Policy and Inbound US FDI: Theory and Evidence," *Journal of Public Economics* (2003), forthcoming.

List, J. and Mason, C. "Optimal Institutional Arrangements for Pollution Control: Evidence from a Differential Game with Asymmetric Players," *Journal of Environmental Economics and Management* (2001), 42 (3): pp. 277-296.



European Summer School

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Prof . Günther G. Schulze
University of Freiburg
Institut für Allgemeine Wirtschaftsforschung

e-mail: Guenther.Schulze@vwl.uni-freiburg.de
<http://www.vwl.uni-freiburg.de/fakultaet/sopo/sopo.htm>

Academic Experience

1988 -1995 Research associate with the Long-Term Research Program 178 (funded by the German Research Foundation) „Internationalization of the Economy“ Project “International trade in goods and factors”

09/95 - 09/96 visiting scholar, Stanford University, Dept. of Economics invited by Prof. Ronald McKinnon

10/96 – 09/00 assistant professor University of Konstanz - Konstanz (on leave 1.10.2000-31.12.2001)

10/00 - 03/01 Visiting Associate Professor for Resource Economics Freiberg University of Technology and Mining (TU Bergakademie Freiberg), Saxony.

04/01– 12/01 Visiting Full Professor of Economic Policy at the University of Freiburg i. Br.

Since 01/02 - Full Professor of Economic Policy at the University of Freiburg i. Br.

Visiting positions in Norway (Norwegian School of Economics), U.S.A. (Stanford University), China (University of International Business and Economics, Beijing), Indonesia (World Bank Resident Mission)

Membership in academic societies

American Economic Association, Association for Cultural Economics International, Econometric Society, European Economic Association, International Institute of Public Finance, Verein für Socialpolitik, member, committee on International Economics, Verein für Socialpolitik (Außenwirtschaftlicher Ausschuß), member, executive board of the Association for Cultural Economics International;

Editorship

Since 2002: *Joint editor*, ***The Journal of Cultural Economics***

Prof. Jason F. Shogren
University of Wyoming
Department of Economics and Finance

E-mail: jramses@uwyo.edu

URL: <http://uwacadweb.uwyo.edu/shogren/>

Academic Experience

- 1995 - present Stroock Distinguished Professor of Natural Resource Conservation and Management & Professor of Economics, Department of Economics, University of Wyoming
1997 - Senior Economist, Environmental and Natural Resource Policy, Council of Economic Advisers, The White House
1993 - Visiting Associate Professor of Natural Resource Economics, School of Forestry and Environmental Science, Yale University
1992-1996 - Associate Professor of Economics, Dept. of Economics, Iowa State University
1990-1992 - Assistant Professor of Economics, Dept. of Economics, Iowa State University
1986-1990 - Assistant Professor of Economics, Dept. of Economics, Appalachian State University

Some Publications

- Risk Reduction Strategies against the 'Explosive Invader', *The Economics of Biological Invasions* (C. Perrings, M. Williamson, and S. Dalmazzone, eds.) Cheltenham, UK: Edward Elgar, 2000.
- Why Economics Matters for Endangered Species Protection, *Conservation Biology* 13, 1999, 1257-1267 (with J. Tschirhart, A. Ando, T. Anderson, S. Beissinger, D. Brookshire, G. Brown, D. Coursey, S. Meyer, S. Polasky).
- Economics of the Endangered Species Act, *Journal of Economic Perspectives* (with G. Brown) 1998.
Protecting Endangered Species in the United States. Biological Needs, Political Realities, Economic Choices, Cambridge: Cambridge University Press (edited with J. Tschirhart) 2001.
- Environmental Economics. Theory and Practice*, Oxford and London: Oxford University Press and MacMillan Publishers (with N. Hanley and B. White), p. 464, 1997.
- Resolving Differences in Willingness to Pay and Willingness to Accept, *American Economic Review* 84, 1994, 255-270 (with S. Shin, J. Kliebenstein, and D. Hayes).
- Hardnose the Dictator, *American Economic Review* (2002) (with T. Cherry and P. Frykblom).
- Skill and the Value of Life, *Journal of Political Economy* (2002) (with T. Stamland).
- Rationality Spillovers, *Journal of Environmental Economics and Management* (2003) (with T.L. Cherry and T.D. Crocker).



Lecturer's Outlines

Prof TOKE AIDT

Voting Models I and II

Elections serve a number of complementary roles in a democracy. They provide a mechanism for aggregating preferences and information and they can be used to hold politicians accountable and to select politicians of a high standing. The two lectures on voting and environmental policy explore some of the implications of these different roles for the conduct of environmental policy in a democracy.

Outline

- Overview of three “workhorse” models: the median voter model, the probabilistic voting model, and the performance voting model.
- The median voter theorem with applications to the environmental Kuznets curve, strategic delegation, and commitment.
- The probabilistic voting model with applications to multidimensional environmental policy problems.
- The performance voting model with an application to the choice of environmental regulation instruments.
- Evaluation: How important is voting for environmental policy?

General readings

Persson and Tabellini. 2000. Political Economics. MIT Press. Chapters 2-5.

Mueller. 2003. Public Choice III, chapters 4, 11-13.

Oates and Portney. 2001. The Political Economy of Environmental Policy. Resources for the Future discussion paper 01-55 (http://www.rff.org/disc_papers/PDF_files/0155.pdf)

Schneider and Volkert. 1999. No chance for incentive-oriented environmental policy in representative democracies? A Public Choice Analysis. *Ecological Economics* 31: 123-38.

Specific readings

Congleton, R.D. 1996. The Political Economy of Environmental Protection. Michigan University Press. Chapter 1, 2, 4 and 8.

Marsiliani, Laura and Renstrom, Thomas. 2000. Time Inconsistency in Environmental Policy: Tax Earmarking as a Commitment Solution. *Economic Journal* 110(462): C123-38.

Brett, Craig and Keen, Michael. 2000. Political Uncertainty and the Earmarking of Environmental Taxes. *Journal of Public Economics* 75(3): 315-40.

Damania, R. 1999. Political Competition, Rent Seeking and the Choice of Environmental Policy Instruments. *Environmental and Resource Economics* 13, 415-433.

Maganani, E., 2000. The environmental Kuznets curve, environmental protection policy and income distribution. *Ecological Economics* 32: 431-443.

Lopez and Mitra. 2000. Corruption, pollution and the Kuznets environmental curve. *Journal of Environmental Economics and Management* 40: 137-150.

W. Buchholz, A. Haupt and W. Peters: Strategic voting and the inefficiency of international environmental agreements, 2000. Working paper.

Aidt and Dutta. 2003. Transitional politics: emerging incentive-based instruments in environmental regulation. <http://www.econ.cam.ac.uk/faculty/aidt/research.htm> or Nota Di Lavoro 78-2001 (Fondazione Eni Enrico Mattei).

Classical readings

Buchanan, James M., and Tullock, Gordon. 1975. Polluters' Profits and Political Response: Direct Controls Versus Taxes. *American Economic Review* 65, 130-147.

Bergstrom, 1979. When does majority rule supply public goods efficiently? *Scandinavian Journal of Economics* 81: 216-27.

Coughlin, Peter and Nitzan, Shmuel. 1981. Electoral Outcomes with Probabilistic Voting and Nash Social Welfare Maxima. *Journal of Public Economics* 15(1): 113-21.

Ferejohn, John. 1986. Incumbent Performance and Electoral control. *Public Choice* 50, nos. 1-3, 5-25.

Oates and Schwab. 1988. Economic Competition among Jurisdictions: efficiency enhancing or distortion inducing. *Journal of Public Economics* 35: 333-54.



Prof. P.G. FREDRIKSSON
Common Agency Approaches
I & II

Outline

1. Introduction: Why Common Agency?
2. The Mechanics of Common Agency
3. Some Applications
 - Environmental Federalism
 - Trade and the Environment
 - Corruption and Political Instability
 - Lobby Group Formation
 - Extensions
4. Some Empirical Evidence

Related Readings

Grossman, G. and E. Helpman (1994), "Protection for Sale," *American Economic Review* 84(4): 833-50.

Aidt, T.S. (1998), "Political Internalization of Economic Externalities and Environmental Policy," *Journal of Public Economics* 69(1): 1-16.

Fredriksson, P.G. and N. Gaston (2000), "Environmental Governance in Federal Systems: The Effects of Capital Competition and Lobby Groups," *Economic Inquiry* 38(3): 501-14.

Damania, R. (2001), "When the Weak Win: The Role of Investment in Environmental Lobbying," *Journal of Environmental Economics and Management* 42(1): 1-22.

Eliste, P. and P.G. Fredriksson (2002), "Environmental Regulations, Transfers, and Trade: Theory and Evidence," *Journal of Environmental Economics and Management* 43(2): 234-50.

Fredriksson, P.G. and J. Svensson (2002), "Political Instability, Corruption and Policy Formation: The Case of Environmental Policy," forthcoming, *Journal of Public Economics* (available at <http://www.sciencedirect.com/science/journal/00472727>).

Damania, R., P.G. Fredriksson, and J.A. List (2002), "Trade Liberalization, Corruption, and Environmental Policy Formation: Theory and Evidence," forthcoming, *Journal of Environmental Economics and Management* (available at <http://www.sciencedirect.com/science/journal/00950696>).

Fredriksson, P.G., H.R.J. Vollebergh, and E. Dijkgraaf (2003), "Corruption and Energy Efficiency in OECD Countries: Theory and Evidence," forthcoming, *Journal of Environmental Economics and Management* (available at <http://www.beijer.kva.se/publications/pdf-archive/Disc176.pdf>).



Prof JOHN LIST
Empirical Methods
I et II

1. Introduction
2. Regulatory federalism
 - 2.1 Regulation and competitiveness
 - 2.2 Capital flows and the environment
3. Empirical models
 - 3.1 Cross-sectional
 - 3.2 Panel
 - 3.3 Extensions
4. Other areas

Readings

2. Oates, W. "A Reconsideration of Environmental Federalism," in *Recent Advances in Environmental Economics*, editors J.A. List and A.J. deZeeuw, Edward Elgar Publishers, 2002
 - 2.1 Jaffe, A., S. Peterson, P. Portney, and R. Stavins. 1995. "Environmental Regulation and the Competitiveness of US Manufacturing: What Does the Evidence Tell Us?" *Journal of Economic Literature*, XXXIII, 132-163.
 - Mulatu, A. Florax, R.J.G.M., Withagen, C.A.A.M. "Environmental Regulation and Competitiveness," Tinbergen Institute Rotterdam (RePEc:fh:tinber:2001-039)
 - 2.2 Jeppessen, T., List, J. and Folmer, H. "Environmental Regulations and New Plant Location Decisions: Evidence from a Meta-Analysis," *Journal of Regional Science* (2002), 42 (1): pp. 19-49.
3. Henderson, J.V. 1996. "Effects of Air Quality Regulation," *American Economic Review*, 86, 789-813.
4. Levinson, A. Environmental regulations and manufacturers' location choices: evidence from the Census of Manufacturers, *J. of Public Econom.* 62, 5-29 (1996).
4. Greenstone, M. 2003. "The Impacts of Environmental Regulations on Industrial Activity: Evidence from the 1970 and 1977 Clean Air Act Amendments and the Census of Manufactures," *Journal of Political Economy*, forthcoming.
4. List, J., Millimet, D., Fredriksson, P., and McHone, W. "Effects of Environmental Regulations on Manufacturing Plant Births: Evidence from a Propensity Score Matching Estimator," *Review of Economics and Statistics* (2003), forthcoming.



Prof GUNTHER SCHULZE

International Political Economy I et II

Related Readings

Antweiler, W.; Copeland, B.R.; Taylor, M.S. (2001): Is Free Trade Good for the Environment?, *American Economic Review*, 91, 4, 877-908

Levinson, A. (1996) Environmental Regulations and Manufacturers' Location Choices: Evidence from the Census of Manufacturers, *Journal of Public Economics*, 62: 5-29

Schulze, G. and Ursprung H. (2003) *International Environmental Economics: A Survey of the Issues*, Oxford: Oxford University Press, pbck. <http://www.oup.co.uk/isbn/0-19-926111-3>, chs. 1-3. (hardcopy from 2001)

Prof JASON F. SHOGREN

Environmental conflicts Experimental methods

Outline

Lecture 1. Environmental Conflict

- Symmetric Model
- Asymmetries
- Environmental Institutions
- Cooperation

Lecture 2. Experimental methods

- Method and mindset
- Conflict
- Coordination
- Cooperation

Background Reading

Environmental Conflict

Schelling, T. C. (1960). *The Strategy of Conflict*. Cambridge, MA: Harvard University Press.

Dixit, A. (1987). Strategic Behavior in Contests, *American Economic Review* 77: 891-898.

Naysnerski, W. and T. Tietenberg (1992). Private Enforcement of Federal Environmental Law. *Land Economics* 68: 28-48.

Baik, K. H. and J. F. Shogren (1994). Environmental Conflicts with Reimbursement for Citizen Suits. *Journal of Environmental Economics and Management* 27: 1-20.

Heyes, A. G. (1997). Environmental Regulation by Private Contest. *Journal of Public Economics* 63: 407-428.

Hurley, T. M. and J. F. Shogren (1997). Environmental Conflicts and the SLAPP. *Journal of Environmental Economics and Management* 33: 253-273.

Alston, L., G. Libecap, and B. Mueller (2000). Land Reform Policies, the Sources of Violent Conflict, and Implications for Deforestation in the Brazilian Amazon. *Journal of Environmental Economics and Management* 39: 162-188.

Coase, R. (1960). The Problem of Social Costs. *Journal of Law and Economics* 3: 1-44.

Zivin, J. and A. Small (2003). Risk sharing in Coasean contracts. *Journal of Environmental Economics and Management* 39: 162-188.

Experimental methods

Smith, V.L. (1982). Microeconomic systems as an experimental science. *American Economic Review* 72: 923-955.

Plott, C. (1991). Will Economics Become an Experimental Science?," *Southern Economic Journal* 57: 901-919.

McKelvey, R.D., and T.R. Palfrey (1992). An experimental study of the centipede game. *Econometrica* 60: 803-836.

Camerer, C. (1997). Progress in Behavioral Game Theory. *Journal of Economic Perspectives* 11: 167-188.

Goeree, J. and C. Holt (2001). Ten Little Treasures of Game Theory and Ten Intuitive Contradictions. *American Economic Review* 91: 1402-1422.

Ochs, J. (1995). "Coordination Problems" *Handbook of Experimental Economics*. J. Kagel and A. Roth, eds. Princeton, NJ: Princeton University Press.

Cooper, R. W., D. V. DeJong, R. Forsythe, and T. W. Ross (1990). "Selection Criteria in Coordination Games: Some Experimental Results," *American Economic Review* 80, 218-233.

Raiffa, H. (1982), *The Art and Science of Negotiation* (Belknap Press of Harvard University Press, Cambridge, MA).

Roth, A. (1995). "Bargaining experiments," *Handbook of Experimental Economics*, J. Kagel and A. Roth, eds. Princeton, NJ: Princeton University Press.

Harrison, G. and M. McKee (1985). "Experimental Evaluation of the Coase Theorem." *Journal of Law and Economics* 28: 653-70.

Rhoads, T. and J. Shogren (2003). Regulation through Collaboration: Final Authority and Information Symmetry in Environmental Coasean Bargaining. *Journal of Regulatory Economics* (forthcoming).

● **Students' papers**

Saturday 6th September

9.45-10.30
Student Talk 16

Comparing Alternative Regulation Policies: and Environmental Law and Economics Approach

MARIACHIARA ALBERTON
University of Siena

The comparison of alternative regulation policies in the environmental field, following a traditional positive economic analysis of law (EAL) approach, lies on the assumption that people act rationally and respond to incentives, as stated by the price theory. "To speak coherently of the legal implications of viewing law as a series of incentives, analysts have to make assumptions about the consequences of those incentives to the people subject to the legal system. To satisfy this need, early law-and-economics scholars imported from economics a series of assumption about how people respond to incentives, known generally as 'rational choice theory'" (Korobkin, Ulen, 2000).

In the EALE literature, environmental regulation has been seen as it may play the role to stimulate desirable conduct and to limit undesirable conduct considering the efficiency in terms of reaching a result, such as for example a certain level of pollution.

The first part of the paper aims to provide an overview of the literature within the traditional EAL approach about the comparison between different environmental policies, such as liability and regulation. So in the following paragraph, these different forms of regulation are described and focus is made on the liability assignment system considering, in particular, the environmental damage liability system that is being defined within the framework of the community legislation.

Then, we will analyse some contributions in the EAL literature that compare alternative regulatory policies in terms of the conditions under which one regulatory system is better than another: first of all *ex ante* regulatory system, such as command-and-control policies; secondly, *ex post* regulatory system, such as a civil liability system.

The second part of the paper considers the behavioral approach to economic analysis: "Behavioral Economics helps to model and predict behavior of relevance to law with the tools of traditional economic analysis, but with more accurate assumptions about human behavior, and more accurate predictions about law" (Sunstein Cass, 2000). The behavioral approach to economic analysis of law (BEAL) will be applied to the comparison of alternative regulatory policies to see if inefficiency of some environmental regulation instruments could be discussed in terms of people's preferences and biases.

Finally, we will examine the contribution of the BEAL approach in choosing the most suitable regulatory policy, with particular reference to the European environmental regulation system.



Monday 1st September

15.15-16.00
Student talk 1

The Effect of Membership Rules and Voting Schemes for the Success of International Climate Agreements

J.CARLOS ALTAMIRANO CABRERA

Wageningen University, Environmental Economics and Natural Resources Group

Co authors: Michael Finus, Hagen University ,
Ekko van Ierland, Wageningen University

We empirically test the role of membership rules and voting schemes for climate change coalitions with the STABILITY of COalitions model (STACO). The model comprises 12 world regions and captures important dynamic aspects of the climate change problem. We apply three stability concepts that capture the notion of open membership and exclusive membership with majority and unanimity voting. We show that exclusive membership leads to superior outcomes than open membership and that unanimity voting is preferable to majority voting in welfare and ecological terms. Our results suggest restricting membership in future international environmental agreements and they provide a rationale for unanimity voting as applied in many international organizations.

JEL-Classification: C72, D72, H41, Q25

Keywords: international environmental agreements, Kyoto-Protocol, public choice, non-cooperative game theory

Friday 5th September

15.45-16.30
Student Talk 13

Does Pollution affect Economic Growth?

GIOVANNI BELLA

University of Cagliari

The notion of sustainable growth has established itself as a main goal in the theoretical and political debate on the potential conflict between economic growth and environmental quality. Empirical evidence suggests that development gives rise to a structural transformation in what and how an economy produces towards cleaner activities. This work provides a new theoretical model *à la* Romer with pollution as a crucial variable and with a technological sector devoted to research in pollution-abatement programmes. Nevertheless, the only way for the economy to show a positive balanced growth is when the principles of weak sustainability are dealt with.

Keywords: Environmental quality; Endogenous economic growth; Pollution-augmenting technology.

JEL Classification: O41, Q01, Q32



Thursday 4th September

15.45-16.30
Student Talk 10

Game structures and equilibrium conditions in environmental regulation with heterogeneous players

MANUEL CABUGUEIRA
Fondazione Eni Enrico Mattei

“Voluntary Approaches” to environmental protection are environmental policy instruments that have been widely implemented in different European countries.

Has main characteristic this are instruments which are “voluntary in nature”, meaning that the participating firms have the option to participate or not to participate, and after the program is implemented they maintaining the option of abandoning it at any moment.

To induce firms to participate this voluntary action create benefits through: production improvements, commercial image improvement and public regulation pre-emption. On the case of the last two benefits they present characteristics of imperfect public good opening the door to options of free-riding.

Once the voluntary programs are normally participated by groups of firms, the conditions are created for the existence of a “collective action phenomenon”.

We analyse this phenomenon in a three stage regulation game two heterogeneous groups of firms. With the objective of identifying the game structures that are created and characterising the equilibrium conditions

Key words: Voluntary Approaches, collective action, regulation games, incentives to participation.

Thursday 4th September

9.00-9.45
Student Talk 15

Recursive Utility, Pollution and Optimal Growth

EL HADJI FALL
University Paris 1, Pantheon-Sorbonne

This paper develops a simple model of economic growth with pollution and recursive utility. We assume a social discount rate depending on the stock of pollution for the social planner's problem with the assumption of marginal decreasing impatience. The conditions for the existence, unique-ness and saddle point property of the steady state are given. We study also the conditions under which the socially optimal path of the economy with endogenous discounting can be attained in a decentralized economy where the representative private consumer uses an exponential discount rate.

Keywords: Environment - Pollution - Preferences - Growth.
JEL Classification: Q20-D63-O40.



Saturday 6th September

11.00-11.45
Student Talk 17

A methodology for policy analysis in water resources management

JACOBO FEÁS VÁZQUEZ
Fondazione Eni Enrico Mattei.

This paper illustrates the adoption of the DPSIR conceptual framework in the structuring phase in a Multicriteria Analysis (MCA) concerning the evaluation of water policies. In this paper we propose part of a methodology to facilitate the decision making process in water resources management under the perspective of the WFD, that has been developed in the MULINO project.

Keywords: Water Policy, DPSIR, Multicriteria Analysis, Water Resources Management.

Wednesday, 3rd September

17.00-17.45
Student Talk 8

The Political Economy of Emissions trading design

JULIEN HANOTEU
Groupe d'Economie Mondiale - Institut d'Etudes Politiques, Paris

This paper develops a common agency relation of politics in order to explain the endogenous design of an emissions trading system. A Regulator has still to decide on the emissions cap and whether to auction the permits, this authorizes a green fiscal reform, to give them for free, this raises the polluting industry's profits or a mix of the two. We show that shareholders lobby's interest in emission regulation and the government's tradeoff between the two policy variables depend on the value of the marginal ecological rent. When shareholders desire a lax environmental regulation, under certain conditions, the regulator should trade free permits against emissions abatement. When shareholders have a net interest in emissions reduction, the distribution of free permits according to an equity neutrality principle doesn't lead to a stable political equilibrium as it doesn't discourage lobbying. Industry and ecologists lobbies may have converging interests in emissions reduction. In that case, we show that the first may cooperate or "instrumentalize" the second.

JEL classification: D78, H21, H23, Q28



Tuesday, 2nd September

17.00-17.45
Student Talk 5

Resource Collapse & Hyperbolic Discounting

CAMERON HEPBURN
Oxford University

This paper shows that the use of hyperbolic discounting in environmental regulation can have unfortunate consequences. In a three-period model we demonstrate that a planner who 'naively' employs hyperbolic discounting and fails to anticipate problems of dynamic inconsistency, can oversee a collapse of a renewable resource. If the regeneration rate of the resource is within a given range, and stock levels are close to the 'minimum viable population', then an unforeseen collapse will result. This basic result is shown to hold in an infinite-horizon, continuous-time model with hyperbolic discounting of the sort examined in Barro (1999) and Li and Löfgren (2001). Here, the naive planner does not anticipate extinction of its resource stock because it always plans to lower consumption (but it never does). Two conclusions follow from these results. First, the model provides an explanation for resource collapses such as that of the Peruvian anchovy and Atlantic cod. Second, governments should think carefully before they employ hyperbolic discounting in policymaking.

JEL Classification Numbers: Q21, Q28, E61.

Keywords: hyperbolic discounting, time-inconsistency, renewable resources

Thursday, 4th September

15.00-15.45
Student Talk 9

The Logic of Two-Level Games with endogenous lobbying: Case of international environmental agreements

HAFFOUDHI HOUDA
Laboratoire d' Economie Publique (LAEP)
Université de PARIS I Panthéon Sorbonne

All works studying the problem of IEAs stability and abatement level have the inconvenient of assuming that governments maximise welfare function. We argue that there are political constraints that bind the hands of national governments and affect the international negotiation process. The aim of our paper is to develop an international framework in which the government's decisions about IEAs' participation and abatement level (international level) are influenced by pressures of interest groups who make electoral contributions (national level). We present an endogenous lobbying model in which lobbies try to influence the policy choice of governments by offering contributions in exchange for policy compromise. Our work attempts to answer to the following questions: What will be the size of the politically stable coalition? How political competition between lobby groups shapes the outcome of international agreements?

JEL: Q280, D720, D780



Tuesday, 2nd September

15.45-16.30
Student Talk 4

The Political Economy of Land Use and Logging in Presence of Externalities

JOHANNA JUSSILIA
University of Gothenburg

This paper develops a political economy model with menu auctions between a government and lobbies to determine the environmental policy. Two of the (three) production sectors share a common sector-specific factor of production, namely land, which has two externalities connected to it: a positive one arising from forest amenities and a negative one arising from logging. The government has two policy instruments at its disposal: a land tax-cum-subsidy and a production tax-cum-subsidy. The interdependence between the two land using sectors is shown to impact the setting of respective land tax-cum-subsidy. Consequently, land use in logging will be subsidized and that in agriculture will be taxed. Production of logs will be taxed. Moreover, the paper also studies the effect of property rights. It is found that the worse the property rights regime, the lower the tax on agricultural land use and subsidy on logging will be. This leads to more land being allocated to agriculture than would be optimal were the property rights to (forest) land well defined. Further, the worse the property rights regime, the more the logging sector has at stake. This leads to a lower production tax imposed on logging and higher production of logs. Thus, the model can explain some factors that can lead to the disappearance of forests from countries with corruptible governments and poorly defined property rights to forests.

Wednesday, 3rd September

15.00-15.45
Student Talk 6

Optimal Governmental Decentralization for Environmental Regulation

CYNTHIA LIN
Harvard University

“Environmental federalism is a complicated issue. Both theory and practice suggest the existence of real tensions and a certain ambivalence about the roles of the different levels of government in environmental management (Oates, 2001, p. 31). The optimal degree of decentralization for the provision of public goods has been of interest to economists at least since the time Tiebout (1956), Olson (1969) and Oates (1972) published their pioneering works. When applied to the American political system, the issue of federalism, defined as the distribution of power in an organization (as a government) between a central authority and the constituent units” (Webster’s, 1991, p. 454), is often framed as the appropriate division of regulatory responsibility between the federal government on the one hand and the state or local governments on the other.

In this paper, I investigate the optimal degree of decentralization in the governmental regulation of transboundary pollutants such as ozone smog. In determining the optimal distribution of power between central and local governments, one should consider the tradeoffs involved in switching from complete centralization on the one hand to complete decentralization on the other. At one extreme, centralized, or federal, control has many advantages over decentralized, or local, environmental management even when the federal government is constrained to treat all local districts uniformly. First, centralized control can internalize any externalities that exist among local districts. Such an



externality arises with transboundary pollutants because if the pollutant crosses state boundaries, then one state's pollution control efforts will affect another state's environmental quality. Under a decentralized system, the upwind (or upstream) state is less likely to account for the beneficial impact of its pollution control policy on its downwind (or downstream) neighbor than a central government under a centralized system would. In addition to internalizing externalities, a second advantage of federal control is that it mitigates the "race to the bottom" that may ensue from decentralized decision-making and interjurisdictional competition. In contrast, it is often argued, local control may lead to the underprovision of public goods because local officials would set excessively lax environmental standards in order to attract businesses to and create jobs in their respective districts (Oates, 2001). Economists have only recently begun to find empirical evidence that environmental regulations affect polluting industries' plant location, employment or investment decisions (see Levinson, 2003, & references therein). A third advantage of centralization is that manufacturers may prefer a uniform federal standard to heterogeneous local standards because the latter may require them to modify their product for each local market. Fourth, centralization may be justified on environmental justice grounds, for the federal government may be able to induce more equitable or redistributive outcomes than would otherwise arise from decentralized control. Fifth, the federal government may be the tier of government best suited for the gathering and dissemination of information about environmental damages and pollution-control techniques, and for the support and funding of research to generate such information. Sixth, if there are bureaucracy costs to increasing the number of tiers of government involved, costs analogous to those Qian (1994) studied in his model of hierarchies within firms, centralized control may be preferred to any system of partial decentralization in which both the federal and state levels of government play a role. When the federal government is able to treat local districts non-uniformly, the case for centralization is strengthened further. If the choices of the local governments under decentralization are feasible under centralization, then centralization can achieve at least as much welfare as decentralization can. In particular, the federal government may be able to impose different standards on different states in order to best internalize any externalities among the states; it may also be able to exploit the information it acquires from all the states to best filter out common weather shocks in order to better determine the effort levels of individual states. Although centralized control has many advantages, a case can be made for the opposite extreme of completely decentralized management as well, even when the federal government can treat local districts non-uniformly. One advantage of local control is that local governments are better able to tailor their policy to the preferences of their particular local constituents. A second possible advantage of decentralization is that local governments may have better or more information about local polluters, and, as a consequence, may be better able to monitor their activity than the federal government is. Third, local governments may have better or more information about local abatement costs, local pollution control technology and/or any local environmental conditions that may affect the effectiveness of pollution abatement efforts. A fourth reason why decentralization may be preferred is that imperfections in the decision making institutions at the federal level may dissipate some of the potential benefits of centralization; Besley and Coate (1999) present a model in which decentralization may outperform centralization even when the central government is allowed to provide non-uniform levels of local public goods. There are thus many tradeoffs between centralized and decentralized systems of public goods provision.

This paper presents a model that captures parametrically these tradeoffs, enabling both a comparison of the extreme cases of federal control and local control with each other and with several forms of partial delegation, as well as a characterization of the optimal degree of decentralization. My results show that in some cases partial delegation can be preferred to both complete centralization and complete decentralization. I also find that, in certain cases, the particular form of delegation currently used to regulate ozone smog in the United States can be less efficient than either state control or federal control, and that a reverse form of delegation may be more efficient than all three. Although I apply my model to ozone smog regulation in particular, the implications of my model are generalizable to other public goods and, even more generally, to any problem of organizational choice in the presence of interjurisdictional externalities.

Wednesday, 3rd September

15.45-16.30

Student Talk 7
A Multi-object Auction for Selling Fishing Permits in the Venice Lagoon

ALBERTO LONGO
University of Venice

The lack of well-defined property rights on renewable resources results, in many situations, in the overexploitation of the resources. In recent years, the lagoon of Venice has been subject to intense, and in many cases illegal clam harvesting. In order to regulate the fishery and to limit the clam harvesting, the local authorities have decided to assign property rights to fishermen. This paper investigates the advantages of adopting an auction for the selling of the permits for the clam harvesting in the Venice lagoon. An overview of the auction mechanisms reveals that the optimal mechanism for selling fishing permits has to reach the best outcome in terms of efficiency, equity, expected revenue, cost minimization, complexity of the rules, and avoidance of collusive behaviors. Finally, the paper suggests that an experiment would be the best method to choose which mechanism would best fit the Venice lagoon case.

Keywords : lagoon, fishery, auction theory, property rights

Thursday, 4th September

17.00-17.45
Student Talk 11

Early Action vs. Early Emissions Reduction - Evaluation of Policy Proposal for Kyoto Compliance

VERONIKA NEMES
Fondazione Eni Enrico Mattei

The increasing "Kyoto gap" has raised concerns about the likely costs for businesses to meet the target if early action is not taken to help smooth the transition. Meeting the targets of significantly lower level of GHG emissions will require major technological adjustments such as R&D and capital investments. This adjustment process will likely be less costly if action is initiated well before the compliance period. The purpose of this paper is to assess the main early action policy proposals currently under consideration in several countries using a simple, two period model. The simulation is calibrated to the Australian economy.

In the model, time is divided into two periods. In Period 1 (2003-2008) there are no internationally binding restrictions on GHG emissions. In Period 2 (2008-2012) the total emissions reduction is fixed, relative to BAU baseline. In the model, there are two types of action by the firms to reduce GHGs: Research and development investments (R&D) and capital investments. Both R&D and CI change the underlying technology and therefore the relationship between the economic activity and the associated level of GHG emissions. While CI, however, results in GHG emissions reduction in the period when they were undertaken, R&D investments in Period 1 result in emissions reduction only with a lag, in Period 2.

The scenarios considered are:



- No Policy Tool (Benchmark)
- International Emissions Trading (ET) in Period 2 only
- Emissions Tax in Period 1 and International ET (Auction) in Period 2
- Credits for Early Action Program in Period 1 and International ET in Period 2 (Auction)
- Public Early Action Program in Period 1 and International ET in Period 2
- International ET (Grandfathering with Baseline Protection) in Period 2
- Banking Early Emission Credits
- International ET (Grandfathering with No Baseline Protection) in Period 2
- Cap-and-Trade Program in Period 1 and International ET in Period 2
- Trading in Emissions Futures

The environmental benefits of early reductions are due to the associated actual early emissions reduction, while the compliance cost savings stem from well planned early action that *may* or *may not* yield early actual emissions reduction. This has important implications for the design of the policy.

This paper argues some policies have the potential to be highly distorting. The policy approach advocated in this paper is a early cap-and-trade (CAT) program in Period 1, coupled with emissions trading in Period 2 or an emissions trading system in Period 1 with Grandfathering and Baseline Protection.

JEL Classification: D44, Q28

Keywords: Emissions Trading, Research & Development, Capital Investment, Government Policy, Early Action

Monday, 1st September

16.00-16.45

Student Talk 2
Corruption, Growth and Sustainability

LORENZO PELLEGRINI

IVM, Institute for Environmental Studies, Vrije Universiteit Amsterdam

Co author : Suncica VUJIC 2
Tinbergen Institute Amsterdam (TIA)

Institutions have recently become the centre of attention of much empirical analysis in economics. Increasing evidence has given support to the hypotheses that institutions are persistent over centuries and that they are fundamental determinants of the economic performance. In this paper we put forward some evidences on the causal relationship of corruption on economic development and we perform an empirical analysis checking two hypotheses: the first one is that institutions, via economic development, can explain the stringency of environmental policy; the second hypothesis is that, even controlling for actual income, institutions still have an important effect on environmental policy. Our empirical analysis, performed through OLS and 2SLS regressions with the use of instrumental variables, confirms both hypotheses. Increasing empirical evidence is available to justify the interest that part of the economic science has always shown with respect to institutions. Since long, theoretical arguments have been put forward to suggest that "institutions matter" and that they are "the underlying determinant of the long-run performance of economies" (North, 1990, p.107). Empirical literature (e.g. Mauro, 1995 and Knack and Keefer 1995) has shown the presence of correlation between measures of institutional quality and economic development. A new stream of literature, making use of data on institutions, which became available relatively recently, found evidence of the persistence of institutions and of their exogeneity with respect to economic development. i.e. evidence has been produced supporting the hypothesis that the causal relationship between sound (inappropriate) institutions and good

(bad) economic performance runs from the former to the latter and not vice versa. Acemoglu, Johnson and Robinson (2001) have shown that settlers' mortality rates, used as an instrument for the quality of institutions at the time of early colonization, can explain the institutional quality of former colonies at present days (after over four centuries). Furthermore, they provided evidence supporting the hypothesis that institutional quality can explain income levels. Easterly and Levine (2001), performed a similar analysis, making use of a much wider set of explanatory variables (other than settlers' mortality rates) for the quality of institutions in colonial times and reached similar conclusions. Engerman and Sokoloff (2002) demonstrated the effect of income inequality on institutions that were set at the time colonisation started. They show the effect of inequality on the inclusiveness of the institutions that were shaped at that time, underline the persistence over centuries of these institutions and the effects of their characteristics on present economic performance. Acemoglu, Johnson and Robinson (2002) show that the reversal of fortune that took place in the 18th and 19th century among European colonies, with the poorest colonies developing quickly and the richest lagging behind, can be explained through the institutional setting of those countries in the 16th century (rejecting the hypothesis that they were geographical factors to determine economic development paths). There is a rich literature also on the effects of institutions on policies' formulation and implementation: political economy (e.g. Kreuger 1993a, 1993b) ascribes socially sub-optimal public policies not to a lack of cognitive capabilities but to the efforts of policy makers to capture rents. Many authors have been explaining phenomena of under-provision of public goods through models of self-interested policy-makers' behaviour (e.g. Deacon, 1999 provided a model and a detailed empirical analysis relating the level of government inclusiveness with the availability of public goods). The case of environmental policy deserves to be further investigated being an example of policies, involving many aspects of public goods or common pool resources' problems, that clearly ask for sensible public intervention. The presence of institutional deficiencies that can induce policy makers to follow their own interests rather than societal ones, seems to be a major challenge for attaining sensible policies regarding public goods in general and environmental quality in particular. Due to the importance of institutional soundness for economic development and for the quality of public policies, it appears that the increasing stringency of environmental policy related to increasing income could be due to different reasons. On the one hand, it is possible that income affects environmental policies because citizens will ask for environmental quality improvements, as their income increases, and governments are responsive. On the other hand it is possible that, income *paribus*, governments will respond in different ways, depending on their institutional characteristics, to the claims of their citizens. In the next section we present the data used in the paper. In section 3 the theoretical hypothesis are stated, tested and then checked for robustness. Section 4 concludes and indicates scope for future research.

JEL codes: C31, E13, K00.

Keywords: Corruption; Development; Environmental Policy; Institutions.

Tuesday, 2nd September

15.00-15.45
Student Talk 3

International Competitiveness and Strategic Distribution of Emission Permits

FLORENT PRATLONG

ERASME and EUREQua, University Paris I, Panthéon-Sorbonne

This paper combines issues related to strategic environmental policy in the case of the design of emissions permits, which aspects the rules of international trade. Indeed, policy makers and industrialists frequently express concern about the impact of environmental policy on potential loss of international competitiveness. Our model, based on strategic trade and environmental policy's frameworks, analyses a class of two stage Cournot game involving two governments (domestic and foreign) and their respective industry, which compete in a third country market. It shows



that the domestic government may have a strong incentive to distort its distribution of emissions permits from the their best rule so as to achieve trade-related policies objectives enabling their domestic producers to improve its market share in non cooperative rivalries with the foreign firms. We find that the domestic government issue a higher strategic distribution of emission permits than the optimal level. Therefore, the environmental damage is no more internalise such that the effects of this strategic policy setting on economic welfare is ambiguous.

Keywords : International Competition, Strategic Policy, Emissions permits
JEL Classification : F13, F18, Q28

Friday, 5th September

15.00-15.45
Student Talk 12

The Role of Warnings in Regulation: Keeping Control with Less Punishment
KJETIL E. TELLE
Satistics Norway, Research Department

Co author. Karine Nyborg, The Ragnar Frisch Centre for Economic Research,

Regulatory agencies frequently present violators with warnings, not pursuing prosecution if the violation ceases upon receipt of the warning. We show how such warnings may help regulators to keep control: Prosecution is costly for the regulator, and insufficient prosecution efforts yield low penalties. Thus, with a limited regulatory budget, threats of harsh sanctions are credible only if the number of violators is low. This produces multiple Nash equilibria. If firms may make mistakes, the economy can accidentally switch from one equilibrium to another. Warnings reduce substantially the probability of such accidental switches from the high to the low compliance equilibrium.

JEL classification: D62, K42, L51, Q28.

Keywords: Enforcement, warnings, multiple equilibria. Acknowledgements:

Friday, 5th September

17.00-17.45
Student Talk 14

Emission Trading and the Stability of Environmental Agreements

GERGELY UJHELYI
Harvard University

This paper is a first step in analysing how a market for tradeable permits created by an environmental agreement aspects the stability of the agreement. I present a model in which the stability implications of (a) the market structure of the permit market and (b) the principle of initial allocation of permits can be analysed. I show that with identical players and an allocation giving every player an equal amount of permits, the market structure has no effect on the stability of the agreement, while for a given market structure this allocation makes the agreement more stable than any other allocation.

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European Summer School

IN RESOURCE AND ENVIRONMENTAL ECONOMICS
Venice, September 1st - 6th, 2003



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Venice International University

The Campus

The island of San Servolo is located in the Venetian lagoon, between Venice city center and the island of Lido. It takes 10 minutes by boat to reach Piazza San Marco, the heart of Venice, 20 minutes to reach Venice International airport Marco Polo. The public transportation boats run hourly.

The island was originally the home of the Venetian Calbana family and in 810 it became the seat of a Benedictine Monastery. Eventually, the monks were joined by a convent of nuns and both the monastery and the convent remained on the island until the mid eighteenth century. In the early 1700s San Servolo became the military hospital of the Venetian Republic and it remained a hospital until its closing in 1978. The island covers an area of over sixteen thousand square meters including the existing park that was once used for vineyards and gardens.

San Servolo is an oasis in a unique urban setting. Students can study, work, and relax in a peaceful park spread across 12 scenic acres with a panoramic view of Venice. In addition to this, students will have an extraordinary opportunity to study under conditions that are significantly different from their normal day-to-day studying environment. Professors, scholars and students from all over the world will be given the chance to interact and to share their experiences and knowledge.

Classrooms and offices

All of the academic and administrative offices of VIU are located in the monumental complex near the main entrance of the island, where there are also fully equipped classrooms and seminar rooms. An auditorium, at disposal of VIU for conferences and main events, is located in the main building. As restoration work progresses, the main teaching activities will be moved to the eight classrooms located in the semicircular building.

Computer facilities

An advanced PC laboratory is located on the second floor of building 7 (see aerial photo map). All the Personal Computers are connected to the worldwide network, giving students and scholars the possibility to access the on-line venetian library catalogues and on-line information resources all over the world. Several points of access to the network are located in all of the buildings on the island.

Housing and dining

There is a 69-bed dormitory on the island of San Servolo. By 2004 VIU will be able to host 200 students and professors in three newly restored and fully-furnished residence halls. Laundry facilities are available for € 1.54 a load. Dining facilities are available in a comfortable cafeteria 5 days a week.

Libraries

In the main building there is a comfortable reading room with reference books, textbooks, dictionaries, and reviews, magazines etc. and a special access pass for libraries and facilities in Venice will be issued for VIU students. Students are supplied with a library pass and a list of the libraries in Venice including opening hours, location and resources available.

Activities

A sport center, and outdoor sports playing fields, are part of the final restoration plan of San Servolo in 2004. For the time being, sports facilities are available to VIU students through Venetian universities' facilities and with private fitness centers, the city's swimming-pools and the well-known Bucintoro rowing club located at the 'Zattere' in Venice. A rowing boat is available on the island for students and professors who know how to row venetian style. There is



also a large lounge area with couches, a television, internet access, vending machines and other items to accommodate the students during their free time.

Dining hall

The dining hall is located on the ground floor of Building 11. Meals are served from Monday to Friday:

- Breakfast: 08.30 - 09.30
- Lunch: 12.00 - 13.30
- Dinner: 18.15 - 19.45

Useful (telephone) numbers

Emergency Numbers

Police emergency call	113
Police-(European Mobile Phone Users)	112
Car breakdown Service	116
First aid	118

operator assisted international calls 170

boat and bus information 041 2424

Lost and Found

Lost items on public water transport	041.2722179
Lost items on public road transport	041.2722838

Airport

Flight Information Office	041.2609260
Lost and Found	041.2609222
Customs Office	041.5415390
Airport Parking	041.5415913

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