

ENVIRONMENTAL ECONOMICS

Lecture in the Master's program in Economics

Course language: English

Prerequisites: E601-603 or equivalent

Examination: Written final exam, 120 min; presentation

ECTS-Credits: 9.5

Instructors: Dr. Andreas Gerster; Prof. Ulrich Wagner, PhD
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Class dates: Wednesday, 17:15 a.m. – 18:45 a.m., P 043
Thursday, 8:30 a.m. – 10:00 a.m., P 043

Exam date: Wednesday, June 5, 2019 (to be confirmed)

Guest Lecturers: Dr. Wolfgang Habla, ZEW Mannheim
Dr. Kathrine von Graevenitz, ZEW Mannheim

Syllabus**Course description:**

This course is an introduction to the field of environmental economics at the graduate level. The first part of the course presents the economic theory of environmental policy. Based on the theory of externalities, a broad range of instruments for environmental policy will be analyzed from an economic point-of-view. The second part of the course extends the discussion to include international aspects of environmental regulation. The third part of the course deals with empirical methods for the valuation of environmental quality, which is required for cost-benefit-analysis and in the implementation of environmental policies. The fourth part of the class integrates behavioral aspects into environmental economics.

Expected Competences acquired after completion of the module:

- Ability to formulate and solve problems in environmental regulation using advanced economic theory and mathematical techniques.
- Ability to estimate willingness-to-pay for environmental quality using statistical methods.
- Understanding of strategic incentives in international negotiations over environmental problems.

Requirements for the assignment of ECTS-credits and grades:

Final exam (120 min) (70%) and presentation of an article (30%)

Go to ILIAS to register your presentation date and to see a list of papers.

Principal textbooks

- [PR] Phaneuf, Daniel J. and Till Requate. A course in environmental economics. Cambridge University Press.
- [BM] Bockstael, Nancy E. and Kenneth E. McConnell. Environmental and Resource Valuation with Revealed Preferences. A Theoretical Guide to Empirical Models. Springer. Available through University at <https://doi.org/10.1007/978-1-4020-5318-4>

Additional textbooks

- [BO] Baumol, William J. and Wallace E. Oates, The theory of environmental policy. Cambridge University Press.
- [K] Kolstad, Charles: Intermediate Environmental Economics. Oxford University Press. International 2nd Edition.
- [T] Tietenberg, Tom: Environmental and Natural Resource Economics. Addison Wesley. *Any edition will do, chapter numbers below refer to the sixth edition.*

Course Program and Readings

N.B. Additional readings are marked with an asterisk ().*

1. Climate Change Economics

A. Assessing Climate Change

[PR] Ch. 3

[IPCC \(2014\). AR5 Synthesis Report: Climate Change 2014. URL: https://www.ipcc.ch/report/ar5/syr/.](https://www.ipcc.ch/report/ar5/syr/)

B. Impact Assessment Models

[Nordhaus, W. \(2014\). Estimates of the social cost of carbon: concepts and results from the DICE-2013R model and alternative approaches. *Journal of the Association of Environmental and Resource Economists*, 1\(1/2\): 273-312.](#)

[Drupp, M. A., M. C. Freeman, B. Groom, and F. Nesje. \(2018\). "Discounting Disentangled." *American Economic Journal: Economic Policy*, 10 \(4\): 109-34.](#)

2. Theory of Environmental Policy

A. Instruments

[PR] Ch. 3

[Goulder, L. and I. Parry \(2008\). Instrument choice in Environmental Policy. *Review of Environmental Economics and Policy*, 2\(2\): 152-174.](#)

[Martin, R., L.B. de Preux, and U.J. Wagner \(2014\). The Impact of a Carbon Tax on Manufacturing: Evidence from Microdata. *Journal of Public Economics*, 117:1-14.](#)

B. Uncertainty

[PR] Ch. 4

[Weitzman, M. \(1973\). Prices vs. Quantities. *Review of Economic Studies*, 41\(4\): 477-491.](#)

C. Pre-existing distortions

[PR] Ch. 7

[Goulder, L. \(1994\). Environmental Taxation and the "Double Dividend:" A Reader's Guide. NBER Working Paper No. 4896.](#)

3. Emissions trading in theory and practice

A. Institutional topics

[PR] Ch. 8

[Fowlie, M., Holland, S. P., and Mansur, E. \(2012\). What do emissions markets deliver and to whom? Evidence from Southern California's NO_x trading program. *American Economic Review*, 102\(2\): 965-993.](#)

[Curtis Carlson & Dallas Burtraw & Maureen Cropper & Karen L. Palmer, 2000. Sulfur Dioxide Control by Electric Utilities: What Are the Gains from Trade? *Journal of Political Economy*, 108\(6\): 1292-1326.](#)

[Novan, K. \(2017\). Overlapping Environmental Policies and the Impact on Pollution. *Journal of the Association of Environmental and Resource Economists*, 4\(S1\): S153-S199. <https://doi.org/10.1086/691994>](#)

[Muller, N.Z. and R. Mendelsohn \(2009\). Efficient Pollution Regulation: Getting the Prices Right. *American Economic Review*, 99\(5\): 1714-1739.](#)

B. The European Union Emissions Trading System (EU ETS)

Ellerman, A.D., Marcantonini, C. and A. Zaklan (2016). The European Union Emissions Trading System: Ten Years and Counting. *Review of Environmental Economics and Policy*, 10 (1): 89-107.

[Martin, R., M. Muûls and U.J. Wagner \(2016\). The Impact of the European Union Emissions Trading Scheme on Regulated Firms: What Is the Evidence after Ten Years? *Review of Environmental Economics and Policy*, 10 \(1\): 129-148.](#)

[Calel, R., and Dechezleprêtre, A. \(2016\). Environmental policy and directed technological change: Evidence from the European carbon market. *Review of Economics and Statistics*, 98\(1\): 173-191.](#)

[Bushnell, James B., Howard Chong & Erin T. Mansur \(2013\). Profiting from Regulation: Evidence from the European Carbon Market. *American Economic Journal: Economic Policy*, 5\(4\): 78-106.](#)

4. International Aspects of Environmental Regulation

[PR] Ch. 12

[Barrett, S. \(2003\). Environment and Statecraft. Oxford University Press. Oxford, UK. Chapters 3.1-3.9, 3.14, 3.20](#)

[Martin, R., M. Muûls, L.B. de Preux, and U.J. Wagner \(2014\). Industry Compensation Under Relocation Risk: A Firm-level Analysis of the EU Emissions Trading Scheme. *American Economic Review*, 104\(8\): 2482-2508.](#)

[Wagner, U.J. \(2016\). Estimating Strategic Models of International Treaty Formation. *Review of Economic Studies*, 83\(4\): 1741-1778.](#)

5. The “Green Paradox”

[Harstad, B. \(2012\). Buy Coal! A Case for Supply-Side Environmental Policy, *Journal of Political Economy* 120\(1\): 77-115.](#)

[Jensen, S., Mohlin, K., Pittel, K., and T. Sterner \(2015\). An Introduction to the Green Paradox: The Unintended Consequences of Climate Policies. *Review of Environmental Economics and Policy* 9\(2\): 246-265.](#)

[Sinn, H.-W. \(2008\). Public Policies Against Global Warming: A Supply Side Approach. *International Tax and Public Finance* 15: 360-394.](#)

[Van der Ploeg, R., and C. Withagen \(2015\). Global Warming and the Green Paradox: A Review of Adverse Effects of Climate Policies. *Review of Environmental Economics and Policy* 9\(2\): 285-303.](#)

6. Valuation

A. Welfare measurement and revealed/stated preferences

Valuation with Revealed Preferences

[PR] Ch. 14 & 15, [BM] Ch. 2 & 3

[Kuminoff N.V., Parmeter C.F., Pope, J.C. \(2010\). Which hedonic models can we trust to recover the marginal willingness to pay for environmental amenities? *Journal of Environmental Economics and Management*, 60: 145-160.](#)

Valuation with stated preferences

[PR] Ch. 19, [K] Ch. 8-10.

[Portney, P.R. \(1994\). The Contingent Valuation Debate: Why Economists Should Care. *Journal of Economic Perspectives*, 8: 3-17.](#)

B. Hedonic pricing of environmental (dis-)amenities

[PR] Ch. 18

[Abbott, J. & H. Klaiber \(2013\). The value of water as an urban club good: a matching approach to community-provided lakes. *Journal of Environmental Economics and Management*, 65\(2\).](#)

[Greenstone, M. and J. Gallagher \(2008\). Does Hazardous Waste Matter? Evidence from the Housing Market and the Superfund Program. *Quarterly Journal of Economics*, 123 \(3\): 951–1003.](#)

[Gamper-Rabindran, S. and Ch. Timmins \(2011\). Does cleanup of hazardous waste sites raise housing values? Evidence of spatially localized benefits. *Journal of Environmental Economics and Management*, 65\(3\): 345-360.](#)

C. Wage hedonics and the value of a statistical life

[PR] Ch. 20

Viscusi, W.K., 1993. The Value of Risks to Life and Health. *Journal of Economic Literature*, 31(4): 1912-1946.

Ashenfelter, O. and Greenstone, M., 2004. Using Mandated Speed Limits to Measure the Value of a Statistical Life. *Journal of Political Economy*, 112(S1): 226-267.

[Kniesner, TJ, K. Viscusi, C. Woock, and JP Ziliak \(2012\). The Value of a Statistical Life: Evidence from Panel Data. *The Review of Economics and Statistics*, 94\(1\): 74-87.](#)

[DeLeire, T., Khan, S. and Timmins, C. \(2013\), Roy Model Sorting and Nonrandom Selection in the Valuation of a Statistical Life. *International Economic Review*, 54: 279–306.](#)

D. Travel cost method

[PR] Ch. 17

7. Behavioral environmental economics

A. Introduction to behavioral public finance:

Congdon, W., J. Kling, and S. Mullainathan (2011), *Policy and Choice – Public Finance Through the Lens of Behavioral Economics*, Brookings Institution Press.

Mullainathan, S., Schwartzstein, J., Congdon W.J. (2012), Reduced-Form Approach to Behavioral Public Finance, *The Annual Review of Economics*, 4:17.1–17.30.

Farhi, E., and Gabaix, X. (2017), Optimal Taxation with Behavioral Agents, *NBER Working Paper* No. 21524.

B. Libertarian paternalism

Camerer, C., S. Issacharoff, G. Loewenstein, T. O'Donoghue, and M. Rabin (2003), Regulation for Conservatives: Behavioral Economics and the Case for Asymmetric Paternalism. *University of Pennsylvania Law Review*, 151: 1211–1254.

Thaler, R. H., and C. R. Sunstein. (2003), Libertarian Paternalism. *American Economic Review*, 93 (2): 175-179.

C. Applications of behavioral public finance in environmental economics

Allcott, H., S. Mullainathan, D. Taubinsky (2014), Energy Policy with Externalities and Internalities. *Journal of Public Economics* 112: 72–88.

Allcott, H., D. Taubinsky (2015), Evaluating Behaviorally Motivated Policy: Experimental Evidence from the Lightbulb Market. *American Economic Review* 105 (8): 2501–2538.

Weekly planning (version 0.1. as of Feb 11)

WEEK	DATE	DESCRIPTION	LECTURE	TUTORIAL
1	13.2.	Course overview. Organizational aspects of the class. Scheduling of make-up classes	L1	
1	14.2.	Introduction: Economics of Climate Change	L2	
2	20.2.	Introduction: Economics of Climate Change	L3	
2	21.2.	Environmental Policy: Instruments	L4	
3	27.2.	Environmental Policy: Imperfect information	L5	
3	28.2.	Environmental Policy: Pre-existing distortions, spatial aspects	L6	
4	6.3.	Emissions Trading: Institutional topics	L7	
4	7.3.	Student Presentations I		T1
5	13.3.	Emissions Trading: Institutional topics	L8	
5	14.3.	Monitoring, Reporting, Verification, and Enforcement of Environmental Policies	L9	
6	20.3.	Environmental Policy & Emissions Trading: Problem set		T2
6	21.3.	International environmental problems	L10	
7	27.3.	Student Presentations II		T3
7	28.3.	The "green paradox" <i>Guest lecture by Wolfgang Haba</i>	L11	
8	3.4.	Valuation: Welfare Measurement and Revealed/Stated Preferences	L12	
8	4.4.	Valuation: Hedonic pricing of environmental (dis-)amenities <i>Guest lecture by Kathrine von Graevenitz</i>	L13	
9	10.4.	Valuation Travel cost method Valuation: Wage hedonics and the value of statistical life <i>Additional class: 19:00-20:30 → block session 17:15-20:30, room L9 1-2, 009</i>	L14, L15	
9	11.4.	Valuation: Computer exercise <i>Guest lecture by Kathrine von Graevenitz</i>		T4
		EASTER BREAK		
10	1.5.	<i>No class (Public Holiday)</i>		
10	2.5.	<i>No class (additional class held on April 10)</i>		
11	8.5.	Student Presentations III		T5
11	9.5.	Student Presentations IV		T6
12	15.5.	Behavioral environmental economics	L16	
12	16.5.	Behavioral environmental economics	L17	
13	22.5.	Behavioral environmental economics	L18	
13	23.5.	Behavioral environmental economics: Problem set		T6
14	29.5.	Student presentations V, exam preparation, Q&A		T7
14	30.5.	<i>No class (Public Holiday)</i>		