Curriculum vitae
October 2023

1. Full name: Olli Ilari Tahvonen

2. Date and place of birth: February 15th, 1958, Raasepori, Finland

3. Education:

Docent in Environmental and Natural Resource Economics, Helsinki School of Economics, 1995-

Docent in Environmental and Natural Resource Economics, University of Oulu, 1994-

D. Sc. (Econ.) 1991, (Economics), Helsinki School of Economics (HSE)

M. Sc. (Econ.) 1986 (Economics, Business Economics and Administration), HSE

Studies in Anthropology and Philosophy at the University of Helsinki, 1981-1986

5. Linguistic skills

Finnish (mother tongue), English, Swedish

6. Current position:

Professor of Forest Economics and Policy, University of Helsinki, Department of Forest Sciences, Department of Economics (permanent position, started August 2010)

7. Previous professional appointments:

Senior Research Fellow, Academy of Finland, Aug 2007-Aug 2008

Professor in Environmental Economics (tenure), Finnish Forest Research Institute, Helsinki, Aug 1998-2010

Professor in Economics (tenure), University of Helsinki, Department of Economics, Jan 1997 (leave of absence Jan 1997-Aug 1998; resigned Aug 1998)

Professor in Environmental Economics, Finnish Forest Research Institute, Helsinki, April 1996-April 2001 (5 year period)

Research Fellow, Academy of Finland, Jan 1991-Jul 1993 and Aug 1993-Apr 1996

Research Fellow, Grants from Maj and Tor Nessling Foundation and The Foundation for Research of Natural Resources in Finland, 1990 (total 6 months)

Associate Professor (acting), University of Helsinki, Department of Economics, 1990 (total 6 months)

Assistant, Helsinki School of Economics, Jan 1990-Dec 1992

Research Assistant, Helsinki School of Economics, Jan 1987-Jan 1990

Assistant, Helsinki School of Economics, 1986 (total 6 months)

Research visits (one month or longer)

Visiting scientist, Max Planck Institute for Meteorology, Hamburg, March-April 1992

Visiting Professor, University of California, Berkeley, Department of Agricultural and Resource Economics, Mar 1995-Aug 1995

Visiting Professor, Cornell University, Department of Agricultural and Resource Economics, Aug 1995-Mar 1996

Visiting Professor, University of Queensland, Department of Economics, Nov 2005-May 2006

8. Major research funding, leadership and supervision

Business Finland Research to business project, 2020-2022, €200 000.

Academy of Finland Research project, 2020-2024, €480 000.

NordForsk project (WP5) Reindeer management in globalizing North, 2016-2021, €200 000.

Academy of Finland Research project, 2016-2020, €474 000.

Foundations' Professor Pool Grant for 2015, 25 000€ from Yrjö Jahnsson Foundation

Academy of Finland, FICCA Research project, 2011-2014, 300 000€.

Academy of Finland and Tor Nessling Foundation Sustainable Energy Program, 2008, 220 000 €

Academy of Finland, Senior research fellow grant, 2007, 126 000 €

Yrjö Jahnsson Foundation, travel grant, 2005, 16 000 €

Grant for the group organizing the Argumenta –workshop series, Finnish Cultural Foundation, 2004, 1 000 000 €

Research grant, State auditors, 2004, 16 000 €

Academy of Finland, Sustainable Use of Natural Resources Program, 2002, 140 000 €

Academy of Finland, grant for organizing a workshop in forest economics, 2000€, 5000 €

Academy of Finland, Finnish Biodiversity Research Program, 1999, 200 000 FIM

Academy of Finland, Finnish Biodiversity Research Program, 1996, 120 000 FIM

Nordic Council of Ministers, research grant, 1995, 120 000 FIM

Academy of Finland, travel grant, 1994, 50 000 FIM

Academy of Finland, Junior research fellow grant, 1993-1996, 360 000 FIM

Academy of Finland, Research fellow grant, 1991-93, 200 000 FIM

Foundation for Research of Natural Resources in Finland, 1990, 30 000 FIM

Maj and Tor Nessling Foundation, 1990, 30 000 FIM

Leadership in Scientific programmes

Business Finland project leader, AIFORE –next generation forest management project, 2020-2022.

Academy of Finland financed project leader on Forestry under climate change, 2020-2024.

Academy of Finland financed project leader on the economics of renewable resources, 2017-2020.

NordForsk project leader (WP5) Reindeer management in globalizing North, 2016-2021.

Project leader in research project financed by the Academy of Finland (FICCA program)

Consortium leader in 'Economic-ecological optimization of timber and bioenergy production and sequestration of carbon in Norway spruce stands, 2008-2012, Academy of Finland and Maj and Tor Nessling Foundation

Project leader in 'Profitability of forestry and economically optimal timber production', 2007-2011, FFRI

Project leader in 'On the Economic basis of Finnish Forest Legislation', 2004, State auditors

Project leader in 'Economic-Ecological Interactions in Sustainable Use of Forest Resources', 2001-2004, Academy of Finland, Sustainable Use of Natural Resources Program

Consortium leader in “Biodiversity and Economics of Forestry”, 1996-1999 and 1999-2002, Academy of Finland, Biodiversity Program

Project leader in 'Carbon Balance of the Finnish Forest Sector', 1995-1998, FFRI

Student supervision

Under supervision, PhD students: Matti Laukkanen, Samuli Korhonen.

PhD thesis supervision: Kari Hyytiäinen, 2004 (thesis was approved with distinction and ranked as the best PhD thesis at University of Helsinki, Faculty of Agriculture and Forestry, year 2005),

Licentiate thesis supervision: Esa-Jussi Viitala 2003.

PhD thesis supervision: Esa-Jussi Viitala 2016.

PhD thesis supervision: Sampo Pihlainen 2017, (approved with distinction).

PhD thesis supervision: Janne Rämö 2017.

PhD thesis supervision: Antti Juhani Pekkarinen 2018 (approved with distinction).

PhD thesis supervision: Aino Assmuth 2020.

PhD thesis supervision: Vesa-Pekka Parkatti 2022 (approved with distinction).

Master thesis supervision at University of Helsinki, Helsinki School of Economics, University of Oulu and University of Turku.

9. Major teaching duties and pedagogical competence

Courses in economics, mathematics, natural resource and environmental economics at University of Helsinki (1990, 2009-2012), Helsinki School of Economics (1986, 1990, 1996), University of Oulu (1992-1994).

10. Academic awards and honours

Invited as a member to the *Finnish Academy of Science and Letters* (social sciences), 2010.

Fifth annual Dr. S.-Y. Hong Award for Outstanding Article in *Marine Resource Economics: "Optimal Harvesting of Age-structured Fish Populations,"* 2010.

The bronze A.K. Cajander medal from The Finnish Society of Forest Sciences, 2009.

The State Award for Public Information (Valtion tiedonjulkistamispalkinto), 2007 for the book "Uusi Metsäkirja" ("Finnish Forest Policy Revisited", in Finnish) jointly with R. Jalonen, I. Hanski, E. Nikinmaa, T. Kuuluvainen, P., Pelkonen, P. Puttonen, K. Raitio.

Post-graduate stipend 1986, Helsinki School of Economics

11. Other academic and professional activities

Positions of trust

Associate editor for *Natural Resource Modelling*, 2008-2010

Member of the editorial board of *Review of Environmental Economics and Policy* 2006-2020.

Expert member for revision of Finnish silvicultural recommendations, Forestry Development Centre Tapio, 2004-2021

Elected as a member of the Council of the European Association of Environmental and Resource Economists (EAERE) for the period 2000-2001

Expert member in committee planning the conservation of forests in Southern Finland (METSO 2), Ministry of Environment and Ministry of Agriculture and Forestry 2005

Expert member in committee planning the conservation of forests in Southern Finland (METSO 1), Ministry of Environment and Ministry of Agriculture and Forestry 2000

Reviewer for the National Science Foundation, US. 1999

Associate editor of the *European Economic Review*, 1998-2001

Member of the editorial board of the International Yearbook of Environmental and Resource Economics, 1996-2002

Member of the programme committee of the European Association for Environmental and Resource Economics (EAERE) annual meetings, 1995-2009

Auditor of the European Association of Environmental and Resource Economists (EAERE), 1991-1994

Member of the Supervisory Board, Finnish Doctoral Programme in Economics KAVA (responsible for workshops and courses in Environmental Economics) 1990-1996

Member of the Editorial Board of *Environmental and Resource Economics*, 1990-

Member of the Board of the Finnish Society for Environmental Sciences, 1987-1995, treasurer, 1988-1995

Referee activities

Environmental and Resource Economics, Journal of Environmental Economics and Management, Journal of Forest Economics, Forestry, Forest Economics and Policy, European Economic Review, European Journal of Political Economy, Finnish Economic Papers, Natural Resource Modelling, Journal of Economic Behaviour and Organization, Journal of Economic Dynamics and Control, Scandinavian Journal of Economics, Wildlife Biology, Journal of Public Economics, Canadian Journal of Forestry, Forest Science, Mathematical Population Studies, Journal of Theoretical Biology, Journal of the Association of Environmental and Resource Economists, American Economic Review, Journal of Economic Theory

Acting as opponent and external reviewer of academic theses and positions

Opponent in Irmelin Slettemoen Helgesen's doctoral disputation 'On the economics of marine capture

fisheries, University of Trondheim, Norway, 2021.

Member of an evaluation committee for a professorship in Energy, Natural resource and Environmental Economics, Norwegian School of Economics and Business Administration, Bergen, Norway, 2011.

Opponent in Florian Diekert's doctoral disputation 'Fisheries management in a dynamic setting, University of Oslo, Norway, 2011.

Opponent in Renato Nunes Rosa's doctoral disputation 'Essays on Forest Economics', University of Lisboa, Portugal, 2009

Member of an evaluation committee for a professorship in economics, University of Wyoming, US. 2009.

Member of an evaluation committee for a professorship in energy economics, Hedmark University College, Norway, 2007.

Referee for an award of tenure and promotion to associate professor for University of Waterloo, Canada, 2007

Opponent in Knut Einar Rosendahl's doctoral disputation "Economic models on climate change and fossil fuel markets", University of Oslo, Department of Economics, 2002

Opponent in Cathrine Hagem's doctoral disputation "Climate agreement under limited participation, asymmetric information and market imperfections", University of Oslo, Department of Economics, 1997.

Member of an evaluation committee for a professorship in environmental economics, Uppsala University, Sweden, 1997.

Opponent in Bjart Holtsmark' s doctoral disputation "Seven essays on polices and international cooperation to abate emissions of greenhouse gases", University of Oslo, Department of Economics, 2015

Workshops and conferences organized

Main organizer of the 22nd Annual Conference of the European Association of Environmental and Resource Economists **EAERE 2015** in Helsinki, (800 paticipants).

Main organizer of the Fourth Faustmann symbosium, 2012, Saariselkä, Finland.

Main organizer of the World Congress of Natural Resource Modelling Association, Helsinki, Finland, June 2010

Co- chairing and organization of the the 3rd International Faustmann Symposium. 'Faustmann in a dynamic and changing world' Darmstadt, Germany, Oct 2009.

Co- chairing and organization of the the 6th International Faustmann Symposium, Darmstadt, Germany, Oct 2019.

Main organizer of the workshop on the Economics of Age-structured Populations, Helsinki June 2015.

Co- chairing and organization of the Workshop on the Economics of Age-structured Populations, Trondheim, Norway, Aug 2009

Co- chairing and organization of the Workshop on the Economics of Age-structured Populations, Portugal, May 2019.

Co- chairing and organization of the Workshop on Uneven-aged forestry, Fiskars, Finland, Mar 2009

Co- chairing seven Argumenta Workshops 'Tutkijoiden Metsäpalaveri' ('Scientists' forest workshops), funded by the Finnish Cultural Foundation, Koli, Finland, 2004

Co- chairing the Workshop on Stochastic and Age-structured Models on Forestry, Helsinki, Finland, 2003

Co-chairing the Workshop on Economics and Social Sciences in Forestry, Hämeenlinna, Finland, May 2000

Co- chairing the International Workshop on Natural Resource and Environmental Economics, Espoo, Finland, May 1999

Co-chairing the Finnish Government Workshop on the Economics of Sustainable Development, Hyvinkää, Finland, 1999

Main organizer of the Nordic Workshop on Dynamic Models in Resource and Environmental Economics, Espoo, Finland, May 1994.

12. Scientific and social impact of research

Number of publications:

A. Peer-reviewed scientific articles: 100. B: Non-reviewed scientific articles: 1. C. Scientific books: 2

D. Publications intended for professional communities: 55 E: Publications intended for the general public: 27 F: Thesis: 3

Google scholar: Total number of citations, (October 2023): 6212, h-index: 45.

Scopus: Total number of citations, (October 2023): 3087, h-index 35.

In a study by Kivinen and Hedman (Tiedepolitiikka 2019:1), my h-index (30) was found the highest among the Finnish professors in economics.

In the 2020 PlosBiology journal world ranking of top 2% forest scientists: placement 63/515.

Provisional patent:

IPID2448 (2020 with P. Malo, A.Suominen, and P. Back), Method for machine learning in the context of forest valuation and management

Social impact: Direct influence on the design of the Southern Finland forest conservation program 1998-. Direct influence on the redesign of the Finnish forest legislation and silvicultural instructions (Tapio) 2006 and 2014, 2015, 2018, 2019.

Ten television interviews, several radio interviews, participation in a radio program and panel discussions on Finnish forestry, climate and mining polices. Newspaper interviews in Finland, Sweden and Netherlands.

Peer Reviewed Publications in Journals and Books
June, 2023

A1. Journal Articles, original research

1. Österberg, N, Parkatti, V.P and Tahvonen, O. Comparing stand growth models in optimizing mixed-species forest management. *Scandinavian Journal of Forest Research*, in print, 2023.
2. Laukkanen, M. and Tahvonen, O. Wood product differentiation in age-structured forestry, *Resource and Energy economics*, 2023, 73, 101374.
3. Parkatti, V.P., Tahvonen, O., Viskari, T. and Liski, J. Including soil alters the optimization of forestry with carbon sinks. *Canadian Journal of Forest Research*, | dx.doi.org/10.1139/cjfr-2022-0226.
4. Tahvonen, O., Suominen, A., Malo, P., Viitasaari, L. and Parkatti, V.P. Optimizing high-dimensional stochastic forestry *via* reinforcement learning, *Journal of Economic Dynamics and Control*, 2022, 145, 104553.
5. Pekkarinen, A.-J., Rasmus, S. Kumpula, J. and Tahvonen, O. Winter condition variability decreases the economic sustainability of reindeer husbandry. *Ecological applications*, 2023; 33:e2719.
6. Parkatti, V.P. and Tahvonen, O. Economics of multifunctional forestry in the Sámi people homeland region. *Journal of Environmental Economics and Management*, 110, 2021 102542.
7. Assmuth, A., Rämö, J. and Tahvonen, O. Optimal carbon storage in mixed-species size-structured forests. *Environmental and Resource Economics*, 79.2: 249-275, 2021.
8. Malo, P., Tahvonen, O., Suominen, A., Beck, P. and Viitasaari, L. Reinforcement learning in optimizing forest management. *Canadian Journal of Forest Research*, 51(10), 1393-1409, 2021.
9. Pekkarinen, A.-J., Kumpula, J. and Tahvonen, O. Predation costs and compensations in reindeer husbandry. *Wildlife Biology*, 2020(3), 1-14, 2020.
10. Parkatti, V.P. and Tahvonen, O.: Optimizing continuous cover and rotation forestry in mixed-species boreal forests, *Canadian Journal of Forest Research*, 50(11), 1138-1151, 2020.

11. Rämö, J., Assmuth, A. and Tahvonen, O.: Optimal continuous cover management with lower bound constrains on deadwood. *Forest Science*, 66: 201-209 2019.
12. Tahvonen, O., Rämö, J., and Mönkkönen, M.:Economics of mixed forests with ecosystem services. *Canadian Journal of Forest Research*, 49: 1219-1232, 2019.
13. Quaas, M. and Tahvonen, O. Strategic harvesting of age-structured populations. *Marine Resource Economics*, 34: 291-309.
14. Parkatti, V-P., Assmuth, A., Rämö, J. and Tahvonen, O.: Economics of boreal conifer species in continuous cover and rotation forestry. *Forest Policy and Economics,* 100: 55-67, 2019.
15. Assmuth, A., Rämö, J. and Tahvonen, O.: Economics of size-structured forestry with carbon storage. *Canadian Journal of Forest Sciences*, 48: 11–22, 2018.
16. Assmuth, A. and Tahvonen, O.: Optimal carbon storage in even- and uneven-aged forestry. *Forest Policy and Economics*, 93-100, 2018.
17. Tahvonen, O., Quaas, M. and Voss, R. Harvesting selectivity and stochastic recruitment in economic models of age-structured fisheries. *Environmental Economics and Management,* 92: 659-676, 2018.
18. Tahvonen, O. and Rautiainen, A.: Economics of forest carbon storage and the additionality principle. *Resource and Energy Economics* 50: 124-134, 2017.
19. Pekkarinen, A., Kumpula, J. and Tahvonen, O.: Parameterization and validation of an herbivore-plant model. *Ecology and Evolution,* 1-21, 2017.
20. Sinha, A., Rämö, J., Malo, P., Kallio, M. and Tahvonen, O.: Optimal management of naturally regenerating uneven-aged forests. *European Journal of Operational Research*, 256: 886-900, 2017.
21. Tahvonen, O. and Rämö, J. Optimality of continuous cover vs. clear-cut regimes in managing forest resources. *Canadian Journal of Forest Research* 46: 891-901, 2016.
22. Rämö, J. and Tahvonen, O.: Economics of harvesting boreal uneven-aged mixed-species forests. *Canadian Journal of Forest Research* 45: 1102-1112, 2015.
23. Rämö, J. and Tahvonen, O.: Optimizing the harvest timing in continuous cover forestry. *Environmental and Resource Economics*, DOI 10.1007/s10640-016-0008-4, 2016.
24. Tahvonen, O.: Economics of rotation and thinning revisited: the optimality of clearcuts versus continuous cover forestry. *Forest policy and Economics*, 62, 88-94, 2016.
25. Quaas, M., Reusch, T.H.B., Schmidt, J.Ö., Tahvonen, O. and Voss, R.: It is economics, stupid! Projecting the fate of fish populations using ecological-economic modeling. *Global Change Biology* 22:1, 264-270, 2015.
26. Pekkarinen, A-J., J. Kumpula. and O. Tahvonen: Reindeer management and winter pastures in the presence of suplementary feeding and government subsidies. *Ecological Modelling,* 2015 312: 256-271.
27. Tahvonen, O.: Economics of naturally regenerating heterogeneous forests. *Journal of the Association of Environmental and Resource Economists*, 2015 (2): 309-337.
28. Voss, R., Quaas, M.F., Schmidt, J.O., Tahvonen,.O., Lindgren, M. and C. Möllmann: Assessing social-ecological trade-offs to advance ecosystem-based fisheries management. PLOS ONE, September 30, 2014.
29. Rämö, J. and Tahvonen, O.: Economics of harvesting uneven-aged forest stands in Fennoscandia. *Scandinavian Journal of Forest Research*, 2014, 29(8): 777–792.
30. Pihlainen, S. O. Tahvonen, and S. Niinimäki. Economics of timber and bioenergy production and carbon storage in Scots pine stands. *Canadian Journal of Forest Research*, 2014, 44(9), 1091-1102.
31. Tahvonen, O, Kumpula, J and Pekkarinen A-J: Optimal harvesting of an age-structured two sex herbivore-plant system. *Ecological Modelling* 272: 348-361, 2014.
32. Tahvonen O, Pihlainen S, Niinimäki S: On the economics of timber production in boreal Scots pine stands. *Canadian Journal of Forest Research* 43: 719-730, 2013.

33. Niinimäki S, Tahvonen O, Mäkelä A and Linkosalo T: On the economics of Norway spruce stands and carbon storages. *Canadian Journal of Forest Research* 43: 637-648, 2012.
34. Tahvonen O, Quaas M, Schmidt J and Voss R: Optimal harvesting of age-structured schooling fishery. *Environmental and Resource Economics* 54:21-39, 2012.
35. Kuuluvainen T, Tahvonen O, and Aakala T: Even-aged and uneven-aged forest management in boreal Fennoscandia. *Ambio* 41: 720-737, 2012.
36. Tahvonen O: Optimal structure and development of uneven-aged Norway spruce forests. *Canadian Journal of Forest Research*, 41: 2389–2402, 2011.
37. Niinimäki S, Tahvonen O, Mäkelä A: Applying a process-based model in Norway spruce management. *Forest Ecology and Management* 265:102-115, 2011.
38. Voss R, Hinrichsen H, Quaas M, Schmidt J and Tahvonen O: Temperature change and Baltic sprat: from observations to ecological–economic modelling. *ICES Journal of Marine Science*, doi:10.1093/icesjms/fsr063, 2011.
39. Mäkipää R, Linkosalo T, Niinimäki S, Komarov A, Bykhovets S, Tahvonen O and Mäkelä A: How forest management and climate change affect the carbon sequestration of a Norway spruce stand. *Journal of Forest Planning* 16: 107-120, 2010.
40. Tahvonen O, Pukkala T, Laiho O, Lähde E, and Niinimäki S: Optimal management of uneven-aged Norway spruce forests. *Forest Ecology and Management* 260: 106-115, 2010.
41. Tahvonen O: Optimal choice between even- and uneven-aged forestry. *Natural Resource Modelling* 22: 289-321, 2009.
42. Tahvonen O: Economics of harvesting age-structured fish populations. *Journal of Environmental Economics and Management 58*: 281-299, 2009.
43. Tahvonen O: Optimal harvesting of age-structured fish populations. *Marine Resource Economics* 24: 147-169, 2009.
44. Tahvonen O: Harvesting age-structured populations as a biomass. Does it work? *Natural Resource Modelling* 21: 525-550, 2008.
45. Tahvonen O and Viitala E.-J: Does Faustmann rotation apply regulated forest. *Forest Science* 52: 23-30, 2006.
46. Tahvonen O and Kallio M: Optimal harvesting of forest age classes under price uncertainty and risk aversion. *Natural Resource Modelling* 19: 557-586, 2006.
47. Cao T, Hyytiäinen K, Tahvonen O and Valsta L: Effects of initial stand states on optimal thinning regime and rotation of *Picea abies* stands. *Scandinavian Journal of Forest Research* 21: 388-398, 2006.
48. Hyytiäinen K, Tahvonen O and Valsta L: Optimum juvenile density, harvesting and stand structure in even-aged Scots pine stands. *Forest Science* 51: 120-133, 2005.
49. Tahvonen O: Timber production vs. old growth conservation with endogenous prices and forest age classes. *Canadian Journal of Forest Research* 34: 1296-1310, 2004.
50. Tahvonen O: Optimal harvesting of forest age classes: a survey of some recent results. *Mathematical Population Studies* 11: 205-232, 2004.
51. Salo S and Tahvonen O: Renewable resource management with endogenous evolution of age classes and allocation of land. *American Journal of Agricultural Economics* 86: 513-530, 2004.
52. Liski M and Tahvonen O: Can carbon tax eat OPEC´s oil rent? *Journal of Environmental Economics and Management* 47: 1-12, 2004.
53. Li C-Z, Kuuluvainen J, Pouta E, Rekola M and Tahvonen O: Using choice experiments to value the Natura 2000 nature conservation programs in Finland. *Environmental & Resource Economics* 29: 361-374, 2004.
54. Hyytiäinen K, Hari P, Kokkila T, Mäkelä A, Tahvonen O and Taipale J: Connecting a process-based forest growth model to a stand level economic optimization. *Canadian Journal of Forest Research* 34: 2060-2073, 2004.

55. Salo S and Tahvonen O: On the Economics of forest vintages. *Journal of Economic Dynamics and Control* 27: 1411-1435, 2003.
56. Hyytiäinen K and Tahvonen O: Maximum Sustainable Yield, forest rent or Faustmann, does it really matter? *Scandinavian Journal of Forest Research* 18: 457-469, 2003.
57. Salo S and Tahvonen O: On the optimality of a normal forest with multiple land classes. *Forest Science* 48: 530-542, 2002.
58. Salo S and Tahvonen O: On equilibrium cycles and normal forests in optimal harvesting of tree vintages. *Journal of Environmental Economics and Management* 44: 1-22, 2002.
59. Pouta E, Rekola M, Kuuluvainen J, Li C-Z and Tahvonen O: Willingness to pay in different policy-planning methods: insights into respondents' decision-making processes. *Ecological Economics* 40: 295-311. 2002.
60. Hyytiäinen K and Tahvonen O: The effects of legal restrictions and recommendations in timber production: the case of Finland. *Forest Science* 47: 443-454, 2002.
61. Hyytiäinen K and Tahvonen O: Economics of forest thinnings and rotation periods for Finnish conifer cultures. *Scandinavian Journal of Forest Resources* 17: 274-288, 2002.
62. Tahvonen O, Salo S and Kuuluvainen J: Optimal forest rotation and land values under a borrowing constraint. *Journal of Economic Dynamics and Control* 25: 1595-1627, 2001.
63. Tahvonen O and Salo S: Economic growth and transitions between renewable and nonrenewable resources. *European Economic Review* 45: 1379-1398, 2001.
64. Salo S and Tahvonen O: Oligopoly equilibria in nonrenewable resource markets. *Journal of Economic Dynamics and Control* 25: 671-702, 2001.
65. Rekola M, Pouta E, Kuuluvainen J, Tahvonen O and Li C-Z: Incommensurable preferences in contingent valuation: the case of Natura 2000 Network in Finland. *Environmental Conservation* 27: 260-268, 2000.
66. Pouta E, Rekola M, Kuuluvainen J, Tahvonen O and Li C-Z: Contingent valuation of the Natura 2000 conservation programme in Finland. *Forestry* 73: 119-128, 2000.
67. Tahvonen O and Salo S: Optimal forest rotation with in situ preferences. *Journal of Environmental Economics and Management* 37: 106-128, 1999.
68. Tahvonen O: Forest harvesting decisions: the economics of household forest owners in the presence of in situ benefits. *Biodiversity and Conservation* 8: 101-117, 1999.
69. Kuuluvainen J and Tahvonen O: Testing the forest rotation model: evidence from panel data. *Forest Science* 45: 593-551, 1999.
70. Tahvonen O: Bequest, credit rationing and in situ values in the Faustmann-Pressler-Ohlin forestry model. *Scandinavian Journal of Economics* 100: 781-800, 1998.
71. Tahvonen O: Nonrenewable resources, stock externalities and backstop technology. *Canadian Journal of Economics* 30: 855-874, 1997.
72. Tahvonen O and Salo S: Nonconvexities in optimal pollution accumulation. *Journal of Environmental Economics and Management* 31: 160-177, 1996.
73. Tahvonen O and Withagen C: Optimality of irreversible pollution accumulation. *Journal of Economic Dynamics and Control* 20: 1775-1795, 1996.
74. Tahvonen O: Trade with polluting nonrenewable resources. Journal of *Environmental Economics and Management* 30: 1-17, 1996.
75. Oberle HJ, von Storch H and Tahvonen O: Numerical computation of optimal reduction of CO_2 -emissions for a simplified climate-economy model. *Numerical Functional Analysis and Optimization* 17: 809-822, 1996.
76. Farzin YH and Tahvonen O: Global carbon cycle and optimal time path for the carbon tax. *Oxford Economic Papers* 48: 515-536, 1996.
77. Tahvonen O: Net national emissions, CO_2 taxation and the role of forestry. *Resource and Energy Economics* 17: 307-315, 1995.

78. Tahvonen O: International CO_2 taxation and dynamics of fossil fuel markets. *International Tax and Public Finance* 2: 261-278, 1995.
79. Tahvonen O: Dynamics of pollution control when damage is sensitive to the rate of pollution accumulation. *Environmental and Resource Economics* 5: 9-27, 1995.
80. Tahvonen O: Carbon Dioxide Abatement as a Differential game. *European Journal of Political Economy* 10: 685-705, 1994.
81. Tahvonen O, von Storch H and Storch J: Economic efficiency of CO_2 abatement programs. *Climate Research* 4: 66-90, 1993.
82. Tahvonen O and Kuuluvainen J: Economic growth, pollution and renewable resources. *Journal of Environmental Economics and Management* 25: 101-118, 1993.
83. Tahvonen O, Kaitala V and Pohjola M: A Finnish - Soviet acid rain game: non-cooperative equilibria: cost efficiency and sulphur agreements. *Journal of Environmental Economics and Management* 24: 87-100, 1993.
84. Tahvonen O: Paternalismi, instituutiot ja moraali suomalaisessa ympäristökeskustelussa (Paternalism, institutions and ethics in the Finnish environmental debate), Kansantaloudellinen aikakauskirja 90: 490-489, 1994.
85. Kaitala V, Pohjola M and Tahvonen O: Transboundary air pollution and soil acidification: A dynamic analysis of an acid rain game between Finland and the Soviet Union. *Environmental and Resource Economics* 2: 87-103, 1992.
86. Kaitala V, Pohjola M and Tahvonen O: An economic analysis of transboundary air pollution between Finland and the Soviet Union. *The Scandinavian Journal of Economics* 94: 409-425, 1992.
87. Tahvonen O and Kuuluvainen J: Optimal growth with renewable resources and pollution. *European Economic Review* 35: 650-661, 1991.
88. Kaitala V, Pohjola M and Tahvonen O: An analysis of SO_2 negotiations between Finland and the Soviet Union. *Finnish Economic Papers* 4: 102-118, 1991.
89. Tahvonen O: On the dynamics of renewable resource harvesting and pollution control. *Environmental and Resource Economics* 1: 97-117, 1991.

A3 Chapters in research books

90. Tahvonen O: Optimal harvesting of size-structured biological populations. In *Dynamic Optimization in Environmental Economics*, E. Moser, W. Semmler, G. Tragler, V. Velinov (eds). Springer Verlag, 2014.
91. Tahvonen O: Age-structured optimization models in fisheries economics: a survey, *Optimal Control of Age-structured Populations in Economy, Demography, and the Environment*" R. Boucekkine, N. Hritonenko, and Y. Yatsenko, (eds.), Series "Environmental Economics", Routledge (Taylor & Francis, UK) 2010.
92. Tahvonen O: Energy crises vs. climate change: is there a lesson to be learned?, in Governance, Equity and Global Markets, Proceedings of the World Bank Conference on Development Economics in Europe, La Documentation francaise, Paris 2000.
93. Tahvonen O and Kuuluvainen J: The economics of natural resource utilization, in H. Folmer and H.L. Gabel (eds.) Principles of Environmental and resource economics: A guide for students and decision makers, p. 665-699. Edgar Elgar, 2000.
94. Tahvonen O: Luonnonvarojen ja luonnon arvo kansantaloustieteessä, (The value of nature and natural resources in the science of economics), in A. Haapala and M. Oksanen (eds.), Arvot ja luonnon arvottaminen, (Values and the valation of nature) Gaudeamus, Helsinki, 1996.
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