Workshop in Sustainability Economics: Experiments on Intergenerational Justice under Uncertainty

October 11–14, 2015 | Camp Reinsehlen, Germany

Chair of Environmental Economics and Resource Management, University of Freiburg, Germany
Sustainability Economics Group, *Leuphana University of Lüneburg, Germany*
Environmental, Resource and Ecological Economics Group, *University of Kiel*, Germany

Background

The vision of sustainability requires that development paths be equitable across and within generations, while human-made and natural resources be allocated such that none are wasted in the pursuit of increasing human well-being. Sustainability is thus essentially a normative concept. It requires taking into consideration the claims of future, not yet existing persons – also addressing trade-offs between inter- and intragenerational justice goals. Investigating the long-term future necessarily implies dealing with fundamental uncertainty, because uncertainty and uncertainty-attitudes affect how societies distribute resources to insure against such uncertainties.

Behavioral economics and experimental methods (in the lab and in the field) have substantially altered the way economists perceive the world and how they derive policy recommendations. For the emerging field of *sustainability economics* the question thus arises in what way one can and should employ experimental approaches to generate insights into a just and efficient intergenerational distribution of resources under conditions of uncertainty.

Aims and Scope

The workshop aims at developing a better understanding of how and to what extent experiments can contribute to advancing the economics and policy of sustainability. For this, we want to take stock of existing scholarly work at the intersection of sustainability and experimental economics. Furthermore, we would like to discuss and identify promising elements of a research agenda for experimental sustainability economics. Questions to be discussed at the workshop include, but are not limited to, the following:

- How to set up experiments that generate insights into intergenerational relations and very long time horizons?
- How to set up experiments studying fundamental uncertainty?
- To what extent and how can one employ experimental observations on individual or collective behavior to improve theories of sustainability, especially with respect to the normative content of sustainability conceptions?
- What is the contribution of experimental methods for sustainability economic research, compared to modelling, non-experimental empirics, and philosophical-conceptual reflection?
- On what theoretical basis and assumptions do experiments have to rest if their results should be instructive for sustainability policy?

Format

The workshop brings together a small and focused group of approximately 25 participants, including about ten eminent invited speakers and about ten junior researchers, in a stimulating environment for an intensive and fruitful discussion. While invited speakers provide longer keynote lectures, junior researchers present their research in shorter sessions.

Invited Speakers

Astrid Dannenberg	University of Kassel
Anke Gerber	University of Hamburg
Andreas Lange	University of Hamburg
Arno Riedl	Maastricht University
Daan van Soest	Tilburg University
Sabrina Teyssier	INRA Versailles
Alexander Vostroknutov	Maastricht University
Kimberly Wade-Benzoni	Duke University

Venue

The workshop will take place at the conference guest house Camp Reinsehlen in the heart of the Lüneburg Heath, a short hour from Hamburg. The quietness and vastness of its traditionally conserved landscape provides a peaceful atmosphere and recreational environment which should build the basis to stimulate fruitful discussions and productive research. The guest house's philosophy to live in harmony with nature and among each other, which serves the topic of the event, is furthered by the cheerful atmosphere and the celebration of the deliberate and exquisite slow food concept. Last, not least, the heathlands are a nice example of a strongly coupled ecological–economic system.

http://www.campreinsehlen.de

Program

Sunday, October 11, 2015

before 6:00 pm	arrival and check-in
6:00 pm	welcome reception
7:00 pm	dinner

Monday, October 12, 2015

full day	scientific program

Tuesday, October 13, 2015

full day	scientific program, hike in the Lüneburg Heath

Wednesday, October 14, 2015

after breakfast	check-out

Hosts

The workshop is organized by the *Chair of Environmental Economics and Resource Management* at *University of Freiburg* (Prof. Dr. Stefan Baumgärtner, Stephan Wolf), the *Sustainability Economics Group* at *Leuphana University of Lüneburg*, and the *Environmental, Resource and Ecological Economics Group* at *University of Kiel* (Prof. Dr. Martin F. Quaas, Moritz A. Drupp):

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Travel

By plane:

The closest international airport is Hamburg (HAM). There will be a shuttle transfer from/to the airport for workshop participants.

By train:

The closest railway station is Schneverdingen.

Detailed travel information will be provided later.

Acknowledgement

The workshop is funded through a grant from the German Federal Ministry of Education and Research as part of its program *Economics of Climate Change*.

Federal Ministry
of Education
and Research

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Workshop program

Experiments on Intergenerational Justice under Uncertainty

October 11–14, 2015 | Camp Reinsehlen, Germany

Sunday, 11 October 2015

from 15:00	Arrival and registration
18:00	Welcome reception and round of introduction (Hotel Lobby)
19:00	Dinner (Hotel Restaurant)

Monday, 12 October 2015

Chair: **Stephan Wolf** (University of Freiburg)

09:00-10:00	**Stefan Baumgärtner** (University of Freiburg and Leuphana University of Lüneburg) and **Martin Quaas** (University of Kiel) *Introduction*
10:00-11:00	**Arno Riedl** (Maastricht University) *Justice under uncertainty*
11:00-11:30	Coffee break
11:30-12:30	**Daan van Soest** (Tilburg University) *Sustainable consumption dilemmas*
12:30-14:30	Lunch break

Chair: **Simeon Schudy** (University of Munich)

14:30-15:30	**Anke Gerber** (University of Hamburg) *Intergenerational preferences and sustainability policy*
15:30-16:00	**Moritz Drupp** (University of Kiel) *Valuing the future: expert recommendations and citizen preferences*
16:00-16:30	Coffee break
16:30-17:30	**Sabrina Teyssier** (INRA-GAEL Grenoble) *Deciding for others: An experimental investigation of preference for shared destiny*
17:30-18:00	**Menusch Khadjavi** (University of Kiel and IfW Kiel) *Social capital and large scale land investments: an experimental investigation in central Zambia*
19:00	Dinner

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Tuesday, 13 October 2015

Chair: **Menusch Khadjavi** (University of Kiel and IfW Kiel)

09:00–10:00	**Astrid Dannenberg** (University of Kassel) *Climate negotiations under scientific uncertainty—experimental evidence*
10:00–10:30	**Michele Griessmair** (University of Vienna) *Legitimate sanctions and communication in the collective-risk social dilemma—an experimental investigation of climate change negotiations*
10:30–11:00	Coffee break
11:00–11:30	**Caroline Schill** (The Beijer Institute Stockholm) *Collective action and the risk of ecosystem regime shifts: insights from a laboratory experiment*
11:30–12:00	**Simeon Schudy** (University of Munich) *Heterogeneous preferences and investments in energy saving measures*
12:30–14:30	Lunch break

Chair: **Moritz Drupp** (University of Kiel)

14:30–15:30	**Kimberly Wade-Benzoni** (Duke University) *Legacies, immortality, & the future: the psychology of intergenerational decisions*
15:30–16:00	**Stephan Wolf** (University of Freiburg) *Intergenerational resource sharing: an experimental study using Rawls's veil of ignorance*
16:00–16:30	Coffee Break
16:30–18:00	Workshop synthesis: lessons learned and perspectives
18:00–18:15	Closing of workshop
19:00	Dinner

Wednesday, 14 October 2015

before 11:00	Check-out

All workshop sessions take place in seminar room "Tagungsraum" (in the restaurant building)

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Book of Abstracts

Acknowledgement
The workshop is funded through a grant from the German Federal Ministry of Education and Research as part of its program *Economics of Climate Change.*

Contents

Keynote presentations

Shorter presentations

Keynote presentations

Climate negotiations under scientific uncertainty—experimental evidence

Astrid Dannenberg[a] and Scott Barrett[b]

[a] Institute of Economics, University of Kassel, Germany
[b] Earth Institute, Columbia University, USA

Abstract. Despite more than two decades of diplomatic effort, concentrations of greenhouse gases continue to trend upwards, creating the risk that we may someday cross a threshold for 'dangerous' climate change. How does uncertainty about 'dangerous' climate change affect the prospects for international cooperation? Climate negotiations usually are depicted as a prisoners' dilemma game; collectively, countries are better off reducing their emissions, but self-interest impels them to keep on emitting. This lecture will present experimental evidence, grounded in an analytical framework, showing that the fear of crossing a dangerous threshold can turn climate negotiations into a coordination game, making collective action to avoid a dangerous threshold virtually assured. These results are robust to uncertainty about the impact of crossing a threshold, but uncertainty about the location of the threshold turns the game back into a prisoners' dilemma, causing cooperation to collapse. This research explains the paradox of why countries would agree to a collective goal, aimed at reducing the risk of catastrophe, but act as if they were blind to this risk.

The experiments also show that the natural tipping point is accompanied by a behavioral tipping point; cooperation differs markedly either side of a dividing line for threshold uncertainty. On one side of the dividing line, where threshold uncertainty is relatively large, free riding proves irresistible and trust illusive, making it virtually inevitable that the tipping point will be crossed. On the other side, where threshold uncertainty is small, the incentive to coordinate is strong and trust more robust, often leading the players to avoid crossing the tipping point. This implies that uncertainty must be reduced to this 'good' side of the dividing line to stimulate the behavioral shift needed to avoid 'dangerous' climate change.

The last part of the lecture looks at the forthcoming climate talks in Paris in late 2015. Climate negotiators are gearing up once again to negotiate a global agreement to limit greenhouse gas emissions. The novelty in the latest effort is the inclusion of process for assessment and review of nationally determined pledges and contributions. Lab experiments are used to investigate the effect of such a process. The results show, first, that a review process increases group targets directly; second, that it increases pledges by individual players indirectly; and third, that it increases contributions in an even more roundabout way, but that the effect is small and statistically insignificant. The results also show that the timing at which the review is done affects targets and pledges but not contributions. Around these

tendencies, we observe enormous variation in group-level contributions. Group composition matters much more than whether or not there is a review process.

Keywords: Climate negotiations, experiments, cooperation

Available background papers:

Barrett, Scott and Astrid Dannenberg (2012), "Climate Negotiations Under Scientific Uncertainty", *Proceedings of the National Academy of Sciences* 109(43): 17372-17376.

Barrett, Scott and Astrid Dannenberg (2014), "Sensitivity of Collective Action to Uncertainty about Climate Tipping Points," *Nature Climate Change* 4: 36-39.

Barrett, Scott and Astrid Dannenberg (2015), "Midnight in Paris: Will the New Climate Agreement Make a Difference?" (Draft, please do not cite or share.)

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Intergenerational preferences and sustainability policy

Anke Gerber

Department of Economics and Social Sciences, University of Hamburg, Germany

Abstract. The presentation explores to what extent there is a similarity between intertemporal choice and intergenerational allocation problems that can be exploited for eliciting intergenerational preferences and designing sustainability policy. The first part builds on Gerber and Rohde (2015) who propose an experimental method to elicit a person's discount function in an intertemporal choice situation, where the pure time preference interferes with expectations about future baseline consumption. The second part investigates how the deposit mechanism introduced by Gerber and Wichardt (2013) in the context of an intertemporal public goods problem can be used to implement an efficient consumption path in an intergenerational allocation problem.

Keywords: Intertemporal choice, discounting, baseline consumption, deposit mechanism

Available background papers:

Gerber, Anke and Philipp C. Wichardt (2009), „Providing public goods in the absence of strong institutions", *Journal of Public Economics* 93: 429-439.

Gerber, Anke and Philipp C. Wichardt (2013), „On the Private Provision of Intertemporal Public Goods with Stock Effects", *Environmental and Resource Economics* 55: 245-255.

Gerber, Anke and Kirsten I.M. Rohde (2015), "Eliciting discount functions when baseline consumptionchanges over time", *Journal of Economic Behavior and Organization* 116: 56-64.

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Justice under uncertainty

Arno Riedl

Department of Economics, Maastricht University, The Netherlands

Abstract. Uncertain outcomes are an inevitable feature of policy choices and their public support often depends on their perceived justice. We theoretically and experimentally explore just allocations when recipients are exposed to certainty and uncertainty. In the experiment, uninvolved participants unequivocally choose to allocate resources equally between recipients, when there is certainty. In stark contrast, with uncertainty just allocations are widely dispersed and recipients exposed to higher degrees of uncertainty are allocated less. The observed allocations can be well organised by four different theoretical views of justice, indicating that uninvolved participants differ fundamentally in their views on justice under uncertainty.

Keywords: Justice, uncertainty, experiment

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Deciding for others: An experimental investigation of preference for shared destiny

Antoine Nebouta[a] and Sabrina Teyssier[b]

[a] INRA-ALISS, Ivry-sur-Seine, France
[b] INRA-GAEL, Grenoble, France

Abstract. The existence and utility of future generations depend on actual behaviors of individuals and especially on the sustainability of their decisions. Uncertainty is key to understand how individuals make their decisions regarding sustainability and therefore to determine the optimal distribution of resources among individuals in this context. In this paper, we present the results of an experiment on social choice under uncertainty. Because in many situations decisions are made on behalf of others, i.e. social planner, parents, doctors or bankers, we use an experimental design where individuals make decisions for others by choosing between uncertain gains allocations for two other participants. Based on the model of Chew and Sagi (Journal of Economic Theory, 2012), we elicit equivalences between different types of allocations and reveal individual preferences for fairness and shared destiny as well as "other-regarding" risk attitudes. We find strong evidence of risk and inequality aversion for others and of preference for shared destiny. In particular, we calibrate a measure of preference for "shared destiny" at an individual level. We test and confirm that this measure does not depend on the gain and likelihood components of the uncertain allocations.

Keywords: Behavioral economics, ex-post and ex-ante inequality, "other-regarding" risk attitudes, preference for shared destiny, social risk measurement

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Sustainable consumption dilemmas

Daan van Soest

Department of Economics and Tilburg Sustainability Center,

Tilburg University, The Netherlands

Abstract. Economists typically view sustainability issues as a social dilemma; if we all purchase sustainable products varieties, society is better off, but each individual is even better off by purchasing a conventional consumption goods – because sustainable product varieties are typically more expensive than their conventional counterparts. Other disciplines viewsustainability predominantly as a moral dilemma – we should buy sustainable product varieties because it is morally correct to do so. We implement a large scale (semi-) field experiment to test whether observed behaviour is more in line with participants viewing sustainable consumption as a social dilemma rather than as a moral dilemma. We find support for the latter view, and speculate about the (differential) policy implications of this insight.

Keywords: Sustainable consumption, field experiment, social dilemma, moral dilemma.

Available background papers:

Kortenkamp, Katherine V. and Coleen F. Moore (2001), "Ecocentrism and Antropocentrism: Moral Reasoning about Ecological Commons Dilemmas", *Journal of Environmental Psychology* 21: 261-272.

Aalbers, Tob, Eline van der Heijden, Jan Potters, Daan van Soest and Herman Vollebergh (2009), "Technology adoption subsidies: An experiment with managers", *Energy Economics* 31: 431-442.

Vringer, Kees, Eline van der Heijden, Dann van Soest, Frank Dietz and Herman Vollebergh (2015), "Sustainable consumption dilemmas", unpublished manuscript, please do not cite!

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Legacies, immortality, & the future: the psychology of intergenerational decisions

Kimberly A. Wade-Benzoni

Fuqua School of Business, Duke University, USA

Abstract. In my presentation, I will discuss a line of research that explores the psychological dynamics of intergenerational decisions. In this research, we specifically look at intergenerational dilemmas, which we define as decisions that entail a tradeoff between one's own self-interest in the present and the interests of other people in the future. Our research on intergenerational dilemmas has focused on identifying central barriers to advancing intergenerational beneficence and principal variables that lead the present generation to act generously on the behalf of future generations. My goal for this talk is to give you a conceptual overview of this research program, explain the experimental paradigm we have used to investigate the psychology of intergenerational decisions, and to share with you several representative studies from recent and ongoing research projects.

Keywords: Intergenerational, legacy, stewardship, discounting

Available background papers:

Wade-Benzoni, Kimberly A., Morela Hernandez, Victoria Medvec, and David Messick (2008), "In fairness to future generations: The role of egocentrism, uncertainty, power, and stewardship in judgments of intergenerational allocations", *Journal of Experimental Social Psychology* 44: 233-245.

Wade-Benzoni, Kimberly A. and Leigh Plunkett Tost (2009), "The Egoism and Altruism of Intergenerational Behavior", *Personality and Social Psychology Review* 13(3): 165-193.

Wade-Benzoni, Kimberly A., Leigh Plunkett Tost, Morela Hernandez, and Richard P. Larrick (2012). *Psychological Science* 23(7): 704-709.

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Shorter presentations

Valuing the future: expert recommendations and citizen preferences

Moritz A. Drupp

Department of Economics, Christian-Albrechts-University of Kiel, Germany

Abstract. A central question for sustainability policy is how to strike the balance between the well-being of current and future generations. Within the economics literature, this question is often set in terms of the discussion around the social discount rate (SDR), and indeed, discounting the distant future has been described as “one of the most critical problems in all of economics” (Weitzman 2001). Which SDRs governments should use for the appraisal of long-term public projects has been subject to a vigorous debate, as is the informational bases for determining the SDR, ranging from revealed preferences in the market place, stated preferences of citizens or expert opinions (Dasgupta 2008, Nordhaus 2007, Stern 2007, Sunstein 2014).

The first part of the talk briefly summarizes the results of an expert survey on the determinants of the long-term SDR (Drupp/Freeman/Groom/Nesje 2015). Besides eliciting expert's recommended SDRs, we disentangle central discounting components, such as the rate of pure time preference, elasticity of marginal utility and risk-free interest rate. The mean (median) recommended SDR is 2.25% (2%). 92% of experts find SDRs somewhere in the interval of 1% to 3% acceptable. We find that, in contrast to standard policy guidance, only a minority of experts recommends SDRs based on the simple Ramsey Rule

Instead, governments should consider issues such as uncertainty, relative prices of non-marketed goods, and alternative approaches to intergenerational justice for evaluation long-term public policies. The results also unambiguously show that engaging with both disagreement about values and uncertainty over forecasts is an essential task for long-term policy appraisal. This is of particular importance, as the informational context of individual responses matter greatly for how expert opinions ought to be combined (Freeman/Groom 2015; Heal/Millner 2014). Although experts currently play a special role in informing governments on how to devise and evaluate intergenerational public projects, ultimately it’s the preferences of the electorate that should be considered at least alongside expert advice. The second part of this talk therefore presents work-in-progress ideas on how comparable information can be gathered from non-experts using choice experiments. The aim is to generate responses from the general public in a format that enables comparability with expert recommendations.

Keywords: Social discount rate, expert advice, project evaluation, disagreement, social time preferences, choice experiment

Available background paper:

Drupp, Moritz A., Mark C. Freeman, Ben Groom and Frikk Nesje (2015), "Discounting Disentangled: An Expert Survey on the Determinants of the Long-Term Social Discount Rate", *LSE Grantham Research Institute Working Paper* No. 172

Other references:

Dasgupta, P. (2008), "Discounting Climate Change", *Journal of Risk and Uncertainty* 37(2): 141-169.

Freeman, M.C. and B. Groom (2015), "Positively Gamma Discounting: Combining the Opinions of Experts on the Social Discount Rate", *The Economic Journal* 125: 1015-1024.

Heal, G. and A. Millner (2014), "Agreeing to Disagree on Climate Policy", *PNAS* 111(10): 3695-3698.

Nordhaus, W.D. (2007), "A review of the "Stern Review on the Economics of Climate Change", *Journal of Economic Literature* 45(3): 686-702.

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Sunstein, C.R. (2014), "On Not Revisiting Social Discount Rates: Institutional Inertia and the Social Cost of Carbon", *American Economic Review: P&P* 104(5): 547-551.

Weitzman, M.L. (2001), "Gamma Discounting", *American Economic Review* 91(1): 260-271.

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Legitimate sanctions and communication in the collective-risk social dilemma—an experimental investigation of climate change negotiations

Michele Griessmair, Madeline Schneider, Franz Wirl

University of Vienna

One of the greatest challenges the international community is facing is human-induced climate change. Whereas in the scientific literature exists overarching consensus on the existence of anthropogenic global warming, the international community and the public still debates its existence and whether and which kind of measures should be undertaken to prevent it. Yet, collective action is required to prevent dangerous climate change.

A recent stream of research uses behavioral experiments to investigate this dilemma, particularly the collective-risk social dilemma pioneered by Milinski et al. [PNAS, 105, 7, (2008)]. In this experiment, each participant is endowed with €40 and must decide whether to contribute €0, €2, or €4 to a public account. The experiment is played in groups of six over ten consecutive rounds. If the group succeeds to collectively contribute the target sum of €120 to the public account, each participant receives the money left in his/her private account for sure. If the group fails to reach the threshold, the participants lose all their money left in the private account with a certain probability. In Milinski et al.'s original experiment none of the ten groups in the 10% failure chance condition, one out of ten groups in the 50% failure chance condition, and 5 out of 10 groups in the 90% failure chance condition succeeded in avoiding dangerous climate change. Since the original seminal experiment a number of studies have employed the collective-risk social dilemma to investigate issues critical to climate change prevention. We extend this research by investigating the effectiveness of sanctions and communication as measures to ensure compliance in the collective-risk social dilemma.

We conducted four treatments. The baseline treatment (BL, 11 groups) replicated Milinksi et al.'s experiment with 50% failure chance. In the legitimate sanctions treatment (LS, 10 groups), participants could impose costly sanctions on other participants after the 3rd, 6th, and 9th round. We implemented a legitimate sanctioning mechanism in which participants could only sanction individuals who have contributed less than themselves and the maximum amount they could sanction others was the difference between their actual contribution over the three rounds prior to the sanctioning round and the fair-share required to reach the threshold (€6). In the communication treatment (C, 10 groups) participants had the opportunity to communicate for four minutes before the start of the game and after the 3rd,

6th, and 9th round. The final treatment (CLS, 10 groups) combined both the sanctioning mechanism and the opportunity to communicate.

Our results show that neither communication nor sanctions alone are sufficient to prevent dangerous climate change, but in combination ten out of ten groups succeeded in avoiding the collapse of the public good. Most interestingly, whereas in standard public good games sanctioning has proven to be an effective mechanism for fostering cooperation, in the collective-risk social dilemma only three out of ten groups reached the threshold, comparable to the BL treatment with no mechanism to enhance cooperation (in BL three out of eleven groups reached the target sum). Additionally, almost all of the failing groups in LS were very close to reach the target sum and contributed more than €100. This represents the worst possible outcome with low individual savings and no collective benefit. Initial analyses suggest that sanctioning prevents the "strong" free riding observed in the BL treatment (individuals contributing consistently €0) but not "weak" free-riding. That is, individuals contribute just enough in order not to get punished, but not enough to reach the target sum. In the communication treatment considerably more groups reach the target sum (seven out of ten), however, when they fail they resemble the "strong" free-riding behaviour observed in BL and overall the percentage of fair-share contributions (€2) is not significantly higher than in the sanctioning treatment. Although communication allows for agreeing on a common strategy prior to the game, convince individuals that cooperation is advantageous, and perform corrective steps during the game, communication alone provides neither a mechanism to enforce discussed arrangements nor a motivation for "strong" free riders to contribute to the common goal. Apparently, to prevent failure in the collective-risk social dilemma both the carrot and the stick are required: The sanctions deter individuals from "strong" free-riding and communication allows individuals to coordinate and avoid near misses resulting from weak free-riding.

Available background papers: –

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Other references

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Barrett, Scott (1998) "Political economy of the Kyoto Protocol", *Oxford Review of Economic Policy* 14(4): 20-39, doi: 10.1093/oxrep/14.4.20.

Barrett, Scott (2011), "Avoiding disastrous climate change is possible but not inevitable", *Proceedings of the National Academy of Sciences of the United States of America* 108 (29): 11733–11734.

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Faillo, Marco, Daniela Grieco, and Luca Zarri (2013), "Legitimate punishment, feedback, and the enforcement of cooperation", *Games and Economic Behavior* 77: 271–283, doi: 10.1016/j.geb.2012.10.011.

Fehr, Ernst, and Simon Gächter (2000), "Cooperation and punishment in public goods experiments", *American Economic Review* 90(4): 980-994, doi: 10.1257/aer.90.4.980.

Fehr, Ernst, and Simon Gächter (2002), "Altruistic punishment in humans", *Nature* 415: 137-140, doi: 10.1038/415137a.

Greenwood, Gregory (2011), "Evolution of strategies for the collective-risk social dilemma relating to climate change", *Europhysics Letters* 95(4): 40006/p1-40006/p7, doi: 10.1209/0295-5075/95/40006.

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Milinski, Manfred, Ralf D. Sommerfeld, Hans-Jürgen Krambeck, Floyd A. Reed, and Jochen Marotzke (2008), "The collective-risk social dilemma and the prevention of simulated dangerous climate change", *Proceedings of the National Academy of Sciences of the United States of America* 105(7): 2291–2294.

Oliver, John (2014), "Last Week Tonight with John Oliver: Climate Change Debate", URL: https://www.youtube.com/watch?v=cjuGCJJUGsg (accessed 07/22/2015)

Schiermeier, Quirin (2012), "The Kyoto Protocol: Hot air." *Nature* 491(7426): 656–658, doi: 10.1038/491656a.

Tavoni, Alessandro, Astrid Dannenberg, Giorgos Kallis, and Andreas Löschel (2011) "Inequality, communication, and the avoidance of disastrous climate change in a public goods game", *Proceedings of the National Academy of Sciences of the United States of America* 108(29): 11825–11829, doi: 10.1073/pnas.1102493108

Tian, Huifang, and John Whalley (2010), "Trade sanctions, financial transfers and BRIC participation in global climate change negotiations", *Journal of Policy Modeling* 32: 47–63, doi: 10.1016/j.jpolmod.2009.09.004.

Social capital and large scale land investments: an experimental investigation in central Zambia

Menusch Khadjavi[a,b], Kacana Sipangule[a] and Rainer Thiele[a]

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Abstract. Our project aims to advance the knowledge on the determinants of social capital in the context of rural Zambia. Nearly seventy percent of the population living in rural Zambia is engaged in small scale subsistence agricultural activities. Despite inefficient production techniques and no formal title of land, smallholders have been living peacefully in rural communities for generations. Their communities are governed under a system of customary land rights and informal institutions which resemble economic activity in common-property situations described in works of Nobel Prize laureate Elinor Ostrom. Taking advantage of the recent large-scale land investments in Central Zambia, we employ an artefactual field experiment to elicit information on the levels of social capital of smallholders residing in villages that lay in the proximity of large-scale land investments. To the best of our knowledge, no literature investigates the indirect effects on social capital within these communities. Since large-scale land investments typically represent market-based structures that depend on strong formal institutions and market-oriented intensive farming, we have reason to believe that their presence may impact the community-oriented equilibrium of villages in their proximities. To test this hypothesis, we employ a number of well-established experimental methods, such as a variant of the prisoners' dilemma, a truth telling game and a competition task. We complement the experimental data with survey data to enable us to further identify relations between the socio-demographic characteristics of smallholders and their economic decisions.

Available background papers: –

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Collective action and the risk of ecosystem regime shifts: insights from a laboratory experiment

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Abstract. Ecosystems can undergo regime shifts that potentially lead to a substantial decrease in the availability of provisioning ecosystem services. Recent research suggests that the frequency and intensity of regime shifts increase with growing anthropogenic pressure, so understanding the underlying social-ecological dynamics is crucial, particularly in context where livelihoods depend heavily on local ecosystem services. In such settings, ecosystem services are often derived from common-pool resources (CPRs). The limited capacity to predict regime shifts is a major challenge for sustainable CPR management, as well as for systematic empirical analysis of individual and collective behavior, because of the need for extensive preshift and postshift data. Unsurprisingly, empirical research, on how people deal with the possibility that their actions might induce such shifts, has, to our knowledge, gained only little attention. We examine behavioral group responses to a latent endogenously driven regime shift in a laboratory experiment. If the group exploited the common-pool resource beyond a certain threshold level, its renewal rate dropped drastically. To determine how the risk of such a latent shift affects resource management and collective action, we compared four experimental treatments in which groups were faced with a latent shift with different probability levels (0.1, 0.5, 0.9, 1.0). Our results suggest that different probability levels do not make people more or less likely to exploit the resource beyond its critical potential threshold. However, when the likelihood of the latent shift is certain or high, people appear more prone to agree initially on a common exploitation strategy, which in turn is a predictor for averting the latent shift. Moreover, risk appears to have a positive effect on collective action, but the magnitude of this effect is influenced by how risk and probabilities are communicated and perceived.

Keywords: Common-pool resources, cooperation, ecological dynamics, laboratory experiments, regime shifts, risk, social-ecological systems, thresholds, uncertainty

Available background papers:

Schill, C., T. Lindahl, and A.-S. Crépin (2015), “Collective action and the risk of ecosystem regime shifts: insights from a laboratory experiment”, *Ecology and Society* 20(1): 48.

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Heterogeneous preferences and investments in energy saving measures

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Abstract. We investigate whether risk, time, environmental, and social preferences affect single family homeowners' investments in energy efficient renovations and energy quality of their house using established experimental measures and questionnaires. We find that homeowners who report to be more risk taking are more likely to have renovated their house. Pro-environmental and futureoriented renovators, i.e. renovators with lower discount factors, live in homes with higher energy efficiency. Controlling for the energy efficiency of houses, we further find that energy consumption as measured by heating and energy costs are lower for future-oriented and proenvironmental individuals. Social preferences measured in a dictator and a generosity game play a mixed role for investments in energy efficiency and energy consumption.

Keywords: Risk Preferences, Time Preferences, Environmental Preferences, Social Preferences, Energy Efficiency, Artefactual Field Experiment

Available background paper:

Fischbacher, Urs, Simeon Schudy, and Sabrina Teyssier (2015), "Heterogenous Preferences and Investments in Energy Saving Measuers", *Munich Discussion Paper* 2015-11.

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Intergenerational resource sharing: an experimental study using Rawls's veil of ignorance

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Abstract. Based on Rawls's veil, one may question the legitimacy of many decisions made by the currently living where burdens are shifted on future generations. For Rawls, this is normatively inacceptable: knowing their place in the generational sequence, the current generation fails decide from an impartial perspective. Starting from Rawls's theory, we conducted a laboratory experiment on intergenerational resource sharing with 120 student participants. One part had to distribute a given endowment over 5 generations in the form of a sequential dictator game. In a second treatment, people could ex ante agree on a joint distribution; there was no formal enforcement mechanism, and people knew their position in the sequence. The third treatment was similar to the second, but while bargaining, people did not know their later position. As expected, bargaining as such created more equality, but to our surprise, the third treatment produced less egalitarian outcomes than the second one.

Keywords: Intergenerational justice, veil of ignorance, laboratory experiment, social contract

Available background paper:

Wolf, Stephan; Dron, Cameron (2015). "Intergenerational Sharing of Non-Renewable Resources: An Experimental Study Using Rawls's Veil of Ignorance." *Constitutional Economics Network Working Paper* 01-2015.

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