



International Workshop “Experiments for Environmental Policy Formation”

Date: 13-14 April

Venue: Stirling Court Hotel

Organised by: Dr Danny Campbell and Prof Frans de Vries, University of Stirling Management School with Centre for Sustainable Practice and Living (CSPL) as sponsoring partner and supported by SEPA

The workshop provides a platform to bring together researchers in environmental and resource economics who use lab, field and choice experiments. By bringing these strands together, the workshop provides an opportunity to exchange ideas, produce new research topics, share insights on how to deal with some of the methodological and conceptual challenges in these areas, and map out a research agenda.

The workshop will present state-of-the-art research, showcasing how experiments can be used to design and evaluate environmental policy mechanisms, and build an interface between academic research and practitioners in the field.



Confirmed speakers include:

- Prof Daan van Soest (Tilburg University)
- Prof Brett Day (Exeter University)
- Prof Sophie Thoyer (Montpellier SupAgro)
- Prof George Hutchinson (Queen’s Belfast)

There are limited travel grants for Ph.D. students on the basis of first booked first offered. If you wish to be considered for funding, then please indicate this when registering. We will let you know the outcome as soon as we can.

There is no registration fee.

However, if you wish to attend please register at <https://goo.gl/Y04AaI>

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International Workshop
“Experiments for Environmental Policy Formation”

13–14 April 2016

Day 1

08:45–09:15 Registration and coffee

09:15–09:30 Welcome

09:30–10:15 Sophie Thoyer (Economic, Social and Management Science Department, Montpellier SupAgro, France)
Compensating losses versus creating gains: implications for biodiversity offsets and agri-environmental contracts

10:15–10:45 Daniel Römer (Centre for European Economic Research (ZEW), Mannheim, Germany)
The power of active choice: field experimental evidence on repeated contribution decisions to a carbon offsetting program

10:45–11:15 Coffee break

11:15–11:45 Laure Kuhfuss (Department of Geography and Sustainable Development, University of St Andrews, Scotland)
Nudging farmers to enrol land into agri-environmental schemes: the role of a collective bonus

11:45–12:15 Frans de Vries (Economics Division, Stirling Management School, University of Stirling, Scotland)
Transaction costs, communication and spatial coordination in payment for ecosystem services schemes

12:15–12:45 Anna Bartczak (Warsaw Ecological Economics Center, University of Warsaw, Poland)
Buying spatially-coordinated ecosystem services: an experiment on the role of auction format and communication

12:45–13:45 Lunch break

13:45–14:30 Daan van Soest (Tilburg School of Economics and Management, Tilburg University, Netherlands)
Habits, intrinsic motivation and environmental policy: a field experiment on household waste sorting

14:30–15:00 Prasenjit Banerjee (School of Social Sciences, University of Manchester, England)
Does bounded self-interest matter in Coasean bargaining over insecure property?

15:00–15:30 Coffee break

15:30–16:00 Bouwe Dijkstra (School of Economics, University of Nottingham, England)
Environmental policy and simultaneous incentives for process and product innovation: theory and experimental evidence

16:00–16:30 Timo Goeschl (Alfred-Weber-Institute for Economics, Heidelberg University, Germany)
Clubbishness vs. efficiency in the provision of pure public goods: an online experiment on social identity



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Day 2

- 09:30–10:15 Brett Day (Land, Environment, Economics and Policy Institute, University of Exeter, England)
Auctions for countryside stewardship
- 10:15–10:45 Katherine Simpson (Economics Division, Stirling Management School, University of Stirling, Scotland)
Does what you know and what we tell you influence your willingness to pay for a new form of flood defence?
- 10:45–11:15 Coffee break
- 11:15–11:45 Israel Waichman (Alfred-Weber-Institute for Economics, Heidelberg University, Germany)
Asymmetry and coordination in avoiding a collective catastrophic event
- 11:45–12:15 Erlend Dancke Sandorf (Faculty of Biosciences, Fisheries and Economics, Arctic University of Norway, Norway)
Dishonest respondents in discrete choice experiments: an example using a probability based internet panel
- 12:15–13:15 Lunch break
- 13:15–14:00 George Hutchinson (Gibson Institute, Queen's University of Belfast, Northern Ireland)
Exponential or hyperbolic? Identifying and testing the predictive power of time preference over unhealthy behaviours
- 14:00–14:30 Keila Meginnis (School of Social Sciences, University of Manchester, England)
Strategic bias in discrete choice experiments
- 14:30–15:00 Coffee break
- 15:00–15:30 Mikołaj Czajkowski (Department of Economics, University of Warsaw, Poland)
Marine trade-offs: comparing the benefits of off-shore wind farms and marine protected areas
- 15:30–16:00 Danny Campbell (Economics Division, Stirling Management School, University of Stirling, Scotland)
A comparison of aspatial and spatial latent class models for analysing stated preferences
- 16:00–16:30 Panel discussion and close



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Sophie Thoyer

Economic, Social and Management
Science Department, Montpellier
SupAgro, France

Day 1: 09:30–10:15

Compensating losses versus creating gains: implications for biodiversity offsets and agri-environmental contracts

In the economic literature on the motivations underlying voluntary contributions to environmental public goods, many studies describe the drivers of pro-environmental behaviour but relatively little attention is granted to the way the overall objective of the environmental program is framed. A program which contributes to an increase of environmental quality can be perceived differently from a program designed to bring back the environmental quality to its original level, after it was damaged by human intervention. How does it impact participation rates and contribution levels? This paper addresses this issue in the context of agri-environmental contracts for biodiversity conservation. It compares farmers' willingness to participate in two equivalent agri-environmental schemes, one being framed as part of a biodiversity offset program, the other one as a biodiversity conservation program. We demonstrate with a discrete choice experiment run with farmers located in the South-East of France that biodiversity-offsets programs must offer a greater payment to enroll farmers compared to the latter. This is explained by behavioural factors such as warm glow, green guilt, and loss aversion.

Daniel Römer

Centre for European Economic Research (ZEW), Mannheim, Germany

Day 1: 10:15–10:45

The power of active choice: field experimental evidence on repeated contribution decisions to a carbon offsetting program

We study the effect of a small change in the choice architecture on offsetting behavior. In a large-scale field experiment we examine repeated voluntary contributions to a carbon offsetting program during the online purchase of a ticket for long-distance bus travel. All travelers had the option to offset the carbon emissions resulting from their bus trip. In the control group they could simply ignore the offer. In the treatment group, travelers were forced to actively choose whether to offset their carbon emissions or not. This “active choice” requirement increased the share of travelers who offset their carbon emissions by almost 50% in the first booking decision. Investigating repeated bookings, we found similar effect sizes for returning customers. In the active choice condition, the share of customers who deliberately participate remained rather stable while it significantly dropped over time in the control group. Forcing those without a deliberate participation to make an active decision still increased the share of carbon neutral trips but with decreasing efficiency over time.

Laure Kuhfuss

Department of Geography and Sustainable Development, University of St Andrews, Scotland

Day 1: 11:15–11:45

Nudging farmers to enrol land into agri-environmental schemes: the role of a collective bonus

This article shows that the introduction of a conditional collective bonus in an agri-environmental scheme (AES) can improve farmers' participation and increase land enrolment for lower overall budgetary costs. This monetary bonus is paid in addition to the usual AES payment if a given threshold is reached in terms of aggregate farmer participation. Using a choice experiment, we estimate the preferences of winegrowers in the South of France for such a bonus. We show that it contributes to increased expectations of farmers on others' participation, therefore shifting a pro-environmental social norm and favouring the adoption of less pesticide-intensive farming practices.

Frans de Vries

Economics Division, Stirling Management School, University of Stirling, Scotland

Day 1: 11:45–12:15

Transaction costs, communication and spatial coordination in payment for ecosystem services schemes

Landowner participation and spatial coordination of land use decisions are key components for enhancing the effective delivery of ecosystem services from private land. However, inducing landowner participation in Payment for Ecosystem Services schemes for coordinating land management choices is challenging from a policy design perspective owing to transaction costs associated with participation. This paper employs a laboratory experiment to investigate the impact of such costs on participation and land use in the context of an Agglomeration Bonus (AB) scheme. The AB creates a coordination game with multiple Nash equilibria relating to alternative spatially-coordinated land use patterns. The experiment varies transaction costs between two levels (high and low), which affects the risks and payoffs of coordinating on the different equilibria. Additionally, the possibility of communication is implemented between neighboring landowners arranged on a local network to facilitate spatial coordination. Results indicate a significant difference in participation under high and low transaction costs, with a lower uptake when transaction costs are high. This effect is, however, impacted by transaction costs faced in the past. Communication improves AB performance with the effect being greater for participants facing high transaction costs.

Anna Bartczak

Warsaw Ecological Economics Center, University of Warsaw, Poland

Day 1: 12:15–12:45

Buying spatially-coordinated ecosystem services: an experiment on the role of auction format and communication

Procurement auctions are one of several policy tools available to incentivise the provision of ecosystem services and biodiversity conservation. Successful biodiversity conservation often requires a landscape-scale approach and the spatial coordination of participation, for example in the creation of wildlife corridors. In this paper, we use a laboratory experiment to explore two features of procurement auctions in a forest landscape: the pricing mechanism (uniform vs. discriminatory) and availability of communication (chat) between potential sellers. We modify the experimental design developed by Reeson et al. (2011) by introducing uncertainty (and hence heterogeneity) in the production value of forest sites as well as an automated, endogenous stopping rule. We find that discriminatory pricing yields to greater environmental benefits per government dollar spent, chiefly because it is easier to construct long corridors. Chat also facilitates such coordination but also seems to encourage collusion in sustaining high prices for the most environmentally attractive plots. These two effects offset each other, making chat neutral from the viewpoint of maximizing environmental effect per dollar spent.

Daan van Soest

Tilburg School of Economics and Management, Tilburg University, Netherlands

Day 1: 13:45–14:30

Habits, intrinsic motivation and environmental policy: a field experiment on household waste sorting

In many instances pollution is the consequence of every-day activities that are better described as habits than as the outcomes of day-to-day decision making. This is especially the case on the consumption side of the economy. Commuter modal transportation choice, residential energy and water usage, and household waste production and recycling are examples of persistent behaviors the desirability (or if you like, optimality) of which is only quite infrequently (re-) evaluated by the agent undertaken these activities. From an environmental policy perspective, the notion of pollution-intensive behaviors being habitual implies that the focus should shift from influencing cost-benefit ratios to policies targeted at breaking old habits and introducing new ones. At the same time, intervening in consumer and household behaviors is oftentimes viewed as hazardous because of the risk of crowding out citizens' intrinsic motivation to mitigate the negative environmental consequences of their lifestyles. We implement a large-scale field experiment, targeted at improving waste sorting by 60,000 households in the city of Tilburg, and compare the relative effectiveness of two sets of interventions—an enforcement policy aimed at changing sorting habits by means of intensive monitoring and fines, and a policy aimed at crowding in the intrinsic motivation to sort using moral suasion and social norms. We find that the enforcement policy is very effective in improving waste sorting not only in the short run but also in the long run, with the effect remaining long after the enforcement actions ceased—suggesting that

the impact of enforcement on changing habits dominates its possible negative impact on households' intrinsic motivation to help protect the environment. We find long-lasting effects for neither the interventions aimed at either strengthening the household's motivation to sort nor of the interventions aimed at strengthening norms regarding the social necessity of waste sorting.

Prasenjit Banerjee

School of Social Sciences, University of Manchester, England

Day 1: 14:30–15:00

Does bounded self-interest matter in Coasean bargaining over insecure property?

We examine whether behavioural economics can provide additional insight into observed behaviour within a classic environmental policy context—the Coase theorem. We investigate whether property owners go beyond their self-interested motive in capital investment and distributing the wealth from production in a face-to-face Coasean bargaining with the distribution phase is preceded by a production phase. Our controlled lab experiment considers the trade-off between expected private and social gains from private investment to improve protected assets, given secure property rights and transaction costs. Overall, we observe secure property rights appealed self-interest motive: the average secure property holders were not boundedly self-interested; rather they produced and distributed the wealth selfishly. To secure their private gain, property owners went so far as to (1) over-capitalize in production and (2) give up smaller but still positive gains. Bargainers in a face-to-face bargaining seem to be less concerned about fairness when property right is secure.

Bouwe Dijkstra

School of Economics, University of Nottingham, England

Day 1: 15:30–16:00

Environmental policy and simultaneous incentives for process and product innovation: theory and experimental evidence

This paper studies incentives to simultaneously invest in process and product innovations in an oligopolistic market. We compare the effects of four policy instruments - emission standards, performance standards, tradeable permits, and auctioned permits. For homogeneous firms, grandfathered permits always yield the lowest level of process innovation while performance standards induce the highest level unless investment costs are very high. With respect to the capacity to induce product innovation performance standards strictly dominate all other instruments independent of the investment costs. Combining both effects in a welfare analysis shows that performance standards lead to the highest level of welfare, again unless investment costs are very high. Experimental evidence confirms the superiority of performance standards.

Timo Goeschl

Alfred-Weber-Institute for Economics, Heidelberg University, Germany

Day 1: 16:00–16:30

Clubbishness vs. efficiency in the provision of pure public goods: an online experiment on social identity

Efficiency dictates that pure public goods be provided to the greatest possible number of beneficiaries. Recent research on the economics of social identity has given reason to believe that individuals who privately provide pure public goods may be willing to sacrifice this efficiency in order to restrict the circle of beneficiaries to 'members of their club'. We present experimental evidence that tests the presence and political relevance of this hypothesis in an inter-city multilevel public goods game using neighborhood affiliation as a naturally occurring and politically consequential form of chosen social identity. In total, 616 inhabitants of two adjacent German cities take part in an online experiment in which they can allocate an initial endowment between three accounts: a private account, a pure public good provided to a group of eight beneficiaries, and a pure public good provided only to a subset of four of the eight beneficiaries. We vary two treatment conditions: One is the relative efficiency of the accounts. The other is whether subjects only know that beneficiaries can come from both cities versus one in which subjects know that the subset of beneficiaries is restricted to members of their own neighborhood. We find that only when the local and the regional public goods are equally efficient, individuals who strongly identify with their local neighborhood contribute significantly more to the local public good when the local affiliation of the other three participants is revealed. When the social efficiency of the non-clubbish provision is higher, the treatment effect vanishes. Priming participants on their local affiliation has affects contributions in a similar way.

Brett Day

Land, Environment, Economics and Policy Institute, University of Exeter, England

Day 2: 09:30–10:15

Auctions for countryside stewardship

Countryside Stewardship is the latest incarnation of agri-environment schemes for England and Wales. Administered by the government under Pillar II of the Common Agricultural Policy, the scheme distributes hundreds of millions of pounds to farmers each year in return for their commitments to adopt certain environmentally-friendly farm management practices.

The allocative mechanism used by the scheme is essentially a priced menu; farmers choose which practices they would like to adopt and get paid a fixed price for those efforts. Naturally, problems of adverse selection ensue; farmers tend to choose options that require little or no changes to their farm management and, as a result, offer relatively little by way of environmental improvements. This presentation will report on a research project carried out on behalf of the UK government investigating the best design and possible efficiency savings that might result from moving to an alternative allocation mechanism based on auctions. In exploring possible designs, the research team used various experimental methods including laboratory experiments, simulation experiments using agent-based modelling and interactive experimental workshops. The talk will relate the design and implementation of those experimental methods and how the evidence they provided was used to support the research team's recommendations for a new auction mechanism for Countryside Stewardship.

Katherine Simpson

Economics Division, Stirling Management School, University of Stirling, Scotland

Day 2: 10:15–10:45

Does what you know and what we tell you influence your willingness to pay for a new form of flood defence?

A challenge for survey designers is to provide high quality, readily understandable information in stated preference surveys to mitigate bias in willingness to pay (WTP) estimates. This paper contributes to the information provision literature by examining whether prior knowledge or new information has a greater effect on the WTP estimate when controlling for respondent experience and familiarity with the good.

A contingent valuation survey was designed to determine WTP for a new managed realignment scheme on the Tay Estuary, Scotland. An experiment was embedded within the survey to which tested respondent's prior knowledge; allowed for varying levels of information to be presented to respondents and identify information acquisition for each respondent. Results were mixed: a causal relationship between information provision and learning was established with respondents receiving more information scoring higher a repeat of the quiz. However, there was no relationship identified between prior knowledge, information provision and WTP. Personal motivations were the strongest predictors of WTP: those who were most concerned about flood risk and who lived closest to the proposed flood defence were willing to pay the most. From a policy perspective the high level of support for the new scheme was encouraging and in contrast to previous findings on preferences for managed realignment. From a flood risk management perspective a "miss-match" between actual and perceived flood risk was highlighted, with many respondents stating they were not at risk from flooding when they in fact were. Overall it is recognised that values derived from the CV survey form one small part of the planning process and while informative, the decision for a scheme to take place should not be based on these values alone.

Israel Waichman

Alfred-Weber-Institute for Economics, Heidelberg University, Germany

Day 2: 11:15–11:45

Asymmetry and coordination in avoiding a collective catastrophic event

Avoiding a catastrophic climate change event is a global public good characterized by several dimensions, notably heterogeneity between the parties involved. It is often argued that such heterogeneity between countries is a major obstacle to cooperative climate policy. We challenge this belief by experimentally simulating two important heterogeneities: asymmetry in

wealth and asymmetry in loss when dangerous climate change occurs. We find that under loss asymmetry the success rate in achieving sufficient mitigation to prevent catastrophic climate change is higher than under symmetric conditions. We also observe that neither asymmetric endowment nor the combination of endowment and loss asymmetries lead to significantly different success rates than under symmetry. Our findings suggest that asymmetries may facilitate rather than hinder successful international climate policy negotiations.

Erlend Dancke Sandorf

Faculty of Biosciences, Fisheries and Economics, Arctic University of Norway, Norway

Day 2: 11:45–12:15

Dishonest respondents in discrete choice experiments: an example using a probability based internet panel

While discrete choice experiments are largely considered an accepted method of preference elicitation, practitioners are increasingly concerned with respondent and response quality. We identify a group of respondents who have given a clearly fraudulent answer to a follow-up question. Using a combined modeling framework to disentangle preference-, scale and attribute processing heterogeneity, we find that these “dishonest” respondents have a less deterministic choice process, i.e. higher error variance, and are less likely to attend to the non-cost attributes. Furthermore, we find that dishonest respondents, on average, have lower willingness-to-pay than honest ones.

George Hutchinson

Gibson Institute, Queen's University of Belfast, Northern Ireland

Day 2: 13:15–14:00

Exponential or hyperbolic? Identifying and testing the predictive power of time preference over unhealthy behaviours

It is crucial to distinguish between exponential and hyperbolic discounting functions in a bid to improve our understanding of the mechanism through which time preference drive different health behaviours, as this will have important implications for designing interventions for behavioural change. We provide a novel parametric specification test on the basis of a series of time and risk preference field experiments among 176 civil servants in Belfast, Northern Ireland. Time and risk preferences were estimated simultaneously while controlling for background consumption and probability weighting. The results suggested that hyperbolic discounting performs better than exponential discounting in explaining discounting behaviours. By estimating mixture models, we further compared different specifications of hyperbolic discounting and found that the form of discounting which best represents the choices is that proposed by Loewenstein and Prelec (1992) which decomposes hyperbolic discounting into impatience and present-bias. The sample was found to be risk-averse, present-biased, to over-weight high probabilities and under-weight small probabilities, and to have an annual discount rate of 30%. An investigation into the association of impatience and present-bias and two unhealthy behaviours (smoking and obesity) revealed that impatience is associated with smoking but not with obesity whereas no robust correlation was found between present-bias and smoking and obesity. Smokers are found to be more risk loving. Particularly, obese smokers are more risk loving and have the largest discount rates but are not necessarily more present-biased than the non-obese non-smokers.

Keila Meginnis

School of Social Sciences, University of Manchester, England

Day 2: 14:00–14:30

Strategic bias in discrete choice experiments

This paper examines the effect of strategic bias in choice experiments. While the presence of strategic behaviour has been explored in the context of contingent valuation studies, limited research exists to support the claim that the presence of strategic bias is mitigated through the choice experiment structure. In this paper we seek to investigate strategic bias within a realistic context of how choice experiments are used in the real world. In this consideration, strategic behaviour arises when the respondent has a preconceived notion of how the choice experiment will be used, specifically that an agency aims to determine preferences over a discrete set of policy alternatives. First, through a simulated approach we are able to elicit different strategic rules that are dependent on the assumed end use of the discrete choice experiment. We find that only a small percentage of the sample population are needed to behave strategically in order for results to be affected. Second, we outline how the simulated design will be further extrapolated to an induced value lab experiment, pending ethics approval.

Mikołaj Czajkowski

Department of Economics, University of Warsaw, Poland

Day 2: 15:00–15:30

Marine trade-offs: comparing the benefits of off-shore wind farms and marine protected areas

The drive to increase renewable electricity production in many parts of Europe has led to an increasing concentration of new wind energy sites at sea. This results in a range of environmental impacts which should be taken into account in a benefit-cost analysis of such proposals. In this paper, we use choice modelling to investigate the relative gains and losses from siting new windfarms off the coast of Estonia, relative to the option of creating

a new marine protected area. We find that, while respondents are generally opposed to converting marine shoals to conventional wind farms and prefer the establishment of marine protected areas instead, benefits from constructing 'environmentally friendly' wind farms—an alternative program which is also considered by the government—are not statistically different with respect to consumers' welfare to those associated with creating a new marine protected area. Methodologically, the paper makes a contribution by showing the ability of the latent class mixed logit model to represent both within-and between-class preference heterogeneity, and thus its power to provide a more sophisticated representation of preference heterogeneity than stand-alone latent class or mixed logit approaches. The paper is also presents the first use of the latent class mixed logit model in willingness-to-pay space for environmental goods.

Danny Campbell

Economics Division, Stirling Management School, University of Stirling, Scotland

Day 2: 15:30–16:00

A comparison of aspatial and spatial latent class models for analysing stated preferences

Finite mixture models are now widely used to analyse revealed and stated preference data. Their appeal is the flexibility that they afford to the analyst. With the correct assumptions, they can uncover preference heterogeneity, the presence of error variance heteroscedasticity and a range of processing

strategies, most predominately attribute non-attendance. At the heart of these models is the assumption that respondents belong in a given class. However, it is obviously not possible to know membership beforehand with certainty and, thus, it remains latent. To work around this, based on observed choice behaviour, probabilistic conditions are imposed on each class. In doing so, the presence of each class can be established up to a probability, with the full probability per respondent allocated across all classes. Notwithstanding the ability to include individual characteristics in the latent class membership function, there is a possibility that the unobserved factors that explain membership to latent classes may be spatially related. If so, the errors are spatially arranged, meaning that the assumption that the error terms are independent of one another is violated. In this paper we develop a new latent class modelling framework, whereby spatial dependence can enter through the membership function errors. The key assumption of this model is that spatial autocorrelation is treated as a nuisance and as an estimation problem, and as something to be estimated. This is accommodated by decomposing the overall membership error into two components, namely an aspatial error term that is *iid* type I extreme value distributed that satisfies the standard assumption, and a spatial error term that captures the pattern of spatial dependence between errors for connected observations. Our findings confirm the incidence of positive spatial clustering of latent class probabilities (i.e., class membership errors for an observation tend to vary systematically in size with the errors for other nearby observations). Given that this clustering of residuals violates the assumption that the error terms are independent of one another, it raises concerns on the appropriateness of the widespread use of aspatial latent class models. Importantly, we show that not addressing this also has implications for model fit, marginal willingness to pay estimation and for policy evaluation.