“Ambiguity in the Economy and in Economics” conference
http://www.ru.nl/economics/research/conferences/ambiguity-economics/

will be held October 5, 2012 in the Faculty Club Huize Heyendael (Beelkamer/Marijnekamer), Radboud University Nijmegen, The Netherlands. To reach the venue, consult http://www.ru.nl/facultyclub/contact/bereikbaarheid/

Program

10:00-10:20
Opening speech

10:20-11:00
Luigi Guiso: The Role of Intuition and Reasoning in Driving Aversion to Risk and Ambiguity

11:00-11:40
Stefan Trautmann: A review of empirical studies on ambiguity attitudes in economics and psychology

11:40-12:20
Peter Wakker: Using prospect theory to analyze new risks (ambiguity) in a large representative sample and to explain real investment decisions

12:20-14:00
Lunch break

14:00-14:40
Poster session

14:40-15:20
Frans van Winden: Towards a new model of choice under uncertainty

15:20-15:40
Coffee break

15:40-16:20
Dominic Bach: Ambiguity and the brain: a probabilistic perspective

16:20-17:00
Moderated discussion: Stefan Trautman, Peter Wakker, Dominic Bach, Frans van Winden

17:00-
Drinks, dinner (location TBA)
ABSTRACTS: INVITED SPEAKERS

Luigi Guiso: The role of intuition and reasoning in driving aversion to risk and ambiguity

Using a large sample of retail investors as well as experimental data we find that risk and ambiguity aversion are positively correlated. We provide correlational and causal evidence that a common link is decision mode: intuitive thinkers tolerate more risk and ambiguity than effortful reasoners. One interpretation is that intuitive thinking confers an advantage in risky or ambiguous situations. We present supporting lab and field evidence that intuitive thinkers outperform others in uncertain environments. Finally, we find that risk and ambiguity aversion vary with individual characteristics and wealth. The wealthy are less risk averse but more ambiguity averse, which has implications for financial puzzles.

Peter Wakker: Using prospect theory to analyze new risks (ambiguity) in a large representative sample and to explain real investment decisions (joint with Mohammed Abdellaoui, Aurélien Baillon, & Laetitia Placido; and with Roy Kouwenberg & Steven Dimmock)

Since Keynes (1921) & Knight (1921) we know that uncertainties in economics usually do not come with objective statistical probabilities. De Finetti (1931) and Savage (1954) proposed to still use probabilities in such cases, which then have to be subjective. However, Ellsberg (1961) showed that in most cases no subjective probabilities can be assigned in any traditional sense (ambiguity). Hence we need fundamentally new models. Only at the end of the 1980s, Gilboa & Schmeidler succeeded in introducing such models. The first ones were all theoretical and normatively motivated, assuming expected utility for known probabilities and focusing on ambiguity aversion. Tversky & Kahneman (1992) incorporated the Gilboa-Schmeidler ideas into prospect theory, leading to the first empirically realistic model of ambiguity. We introduce the source model, a special tractable version of prospect theory. It yields exact predictions and ambiguity premiums, and easy graphs to fully capture ambiguity attitudes. We can now let the data speak on ambiguity, showing a rich set of phenomena beyond the mere ambiguity aversion assumed in the normatively oriented theoretical models such as multiple priors, alpha-maxmin, and smooth utility.

We first implement the source method in a laboratory experiment, and then in an incentivized survey over N=1,935 households, where we investigate the impact of ambiguity on household portfolio choices. In particular, we can now analyze the influence of ambiguity on the nonparticipation paradox of households that invest less in stocks than any normative theory can explain.

Frans van Winden: Towards a new model of choice under uncertainty

Humans appear to be very smart compared to other animals. Nevertheless, we mostly ‘muddle through’ in our decision-making because of the complexity of our environment and the very limited capacity of our brains. In this presentation I will plead for a new model of choice, incorporating greater input from neurobiology and psychology, to help organize the plethora of anomalies, aversions, and biases that we are witnessing in the literature and to get to better behavioral predictions.
Dominic Bach: Ambiguity and the brain: a probabilistic perspective

Neuroeconomic approaches to economic ambiguity have addressed two questions: how can neuroscience inform our understanding of ambiguity sensitivity; and what can we learn from the phenomenon of ambiguity sensitivity to better understand the brain. In my talk, I will cast economic ambiguity in terms of probabilistic brain function. Uncertainty about transition rules is an aspect of economic ambiguity that is prevalent in many areas of decision making and reinforcement learning. Rule certainty, in this framework, can usually only exist in the laboratory. I will review how rule uncertainty can be distilled from ambiguous situations, and how experimental paradigms and theoretical approaches can be finessed to further our understanding of how the organism deals with rule uncertainty.

ABSTRACTS: POSTER SESSION

Daniel Roemer (University of Heidelberg)
On the stability of ambiguity aversion

The aversion of decision makers to ambiguity is a well studied concept, both in experiments and theory. Implicitly, to make predictions with these theories, one needs to assume that the attitude towards ambiguity is stable in some sense. In this paper we study stability of ambiguity attitudes in subsequent decisions. We use multiple three colour urns for our experiments. To observe two decisions on the same urn that do not include a hedging opportunity, we designed the following setup. In a first round, subjects are asked to make decisions for two three colour urns, only one of which is paid out. A coin flip determines which urn is paid. The other urn is transferred to the second round where subjects again make decisions for two urns. We compare decisions for the transferred urn in the first and second round to test stability of ambiguity attitudes for the same urn. We also test for stability across urns by comparing decisions within each round.

Michael Roos (Ruhr-University Bochum)
Payoff ambiguity in 2-player coordination games

In an experiment, subjects play a modified stag-hunt coordination game. The game is modified by introducing ambiguity about the payoffs in the case of coordination failure. If the players do not coordinate, one of them receives either a high or a low payoff, which is determined randomly with a probability from a set of possible probabilities. The general goal of the paper is to observe how subjects behave under these conditions. I test whether they play according to a max-min strategy assuming the highest possible probability of the low payoff. The preliminary results reject the max-min hypothesis. They rather assume a central probability. Furthermore, subjects respond to higher ambiguity and higher potential losses by playing the safe action more frequently.
Andreas Größler (Radboud University Nijmegen)
Ambiguity of innovation effectiveness and its effect on intra-organisational diffusion processes
The purpose of this study is to investigate how ambiguity in the perceived effectiveness of a process innovation influences the intra-organisational diffusion of this innovation. As methodology we employ a dynamic simulation model which is derived from two separate models described in the literature. The combined model represents innovation diffusion in and between five intra-organisational groups, where the diffusion influences improvement rates in the organisation and, thus, the perceived effectiveness of the innovation. At the same time, adoption of the innovation is dependent on bounded rational decisions of organisation members, based on the ambiguity they perceive regarding the effectiveness of the innovation. Simulation analyses indicate that the introduction of ambiguity can produce substantially different outcomes compared to models without this feedback structure. The study contributes to the innovation and organisation science literature by combining well-known models via a mechanism that explicitly includes ambiguity. The practical relevance of the research lies in the formulation of structural requirements for the successful diffusion of innovations in organisations.

Sara Fogelberg (Stockholm University)
Giving in ambiguous payoff environments
This project investigates how social preferences extend to ambiguous decision environments. In particular, it explores the sensitivity of altruistic behavior to ambiguous environments in comparison to environments where the payoff for the recipient of altruistic giving is certain or associated with risk. Many real-life decisions involve uncertainty in which risks can at most be approximated. To account for this fact is of central importance when trying to extend experimental results to actual decision making. This issue applies to individual interactions in situations that are not covered by complete contracts or are subject to unpredictable changes in the environment, including decisions made on behalf of future generations and charitable donations. The project is thus also a case study of the more general question of how sensitive social preferences are to environmental conditions, which contributes to understanding the stability of individual preferences. Even though social preferences have been found to be an important aspect of economic behavior, it remains largely unexplored how social preferences extend to variation in the decision environment, most notably to the presence of uncertainty. In a dictator game experiment, we test for the effect of uncertain payoff environments on giving behavior by exposing the dictator’s contribution to different degrees of ambiguity and risk. Preliminary results show that dictators’ contributions decrease when the recipients payoff is associated with risk, and decreases even more when the recipient’s payoff is associated with ambiguity.

Daniela Grieco (Bocconi University)
Technological inertia and ambiguity
Breakthrough innovations are an important engine of economic growth. However, technological refinements are much more frequent than disruptive patterns. Whereas incremental improvements deal with familiar technology and can be conceptualized as risky, radical breakthroughs imply ambiguous returns and
innovator’s uncertainty about the model. The innovator’s attitude towards ambiguity could explain their conservative positions on existing products or technologies. We contrast traditional explanation based on convex adjustment costs and sunk costs inertia, and argue that technological conservativeness could be the result of an optimizing choice when breakthrough innovators are exposed to ambiguity. The innovator’s choice between breakthrough and incremental innovations is analyzed in the context of a multiple-priors model (Gilboa and Schmeider, 1989). We discuss practical and policy implications

Aaro Hazak (Tallinn University of Technology)
Bid rigging in simultaneous procurement auctions under oligopoly

The purpose of the paper is to present a theoretical argumentation on the causes and consequences of potential bid rigging in a specific situation, where simultaneous bids for similar services or goods are asked from oligopolists. Bid rigging refers to a price setting or market allocation agreement among two or more competitors in which (better chances of) winning of the bid are channelled to one of the suppliers, while for the sake of appearance other competitors usually also present a bid. Simultaneous procurement auctions are a common practice in Europe (incl. in public sector procurement), e.g. in the procurement of similar services for different geographical areas or different organisational units. It has been advocated (e.g. by OECD) that splitting large scale procurements into smaller parts may attract additional competition. What makes this type of procurement special is that competitors who often face capacity constraints are subject to significant ambiguity regarding the achievement of economies of scale, while a bid under a simultaneous auction cannot be conditional on the outcome of any other of the simultaneous auctions or bids.

It appears from the theoretical argumentation in the paper that calling for similar bids simultaneously would give extra motivation for collusion among bidders. The fact that bids are submitted independently of each other does not mean that the consequences of suppression of combinatorial bidding would not be considered when submitting the simultaneous bids. Arranging several consecutive procurement auctions could be a better alternative for purchasers.

Furthermore, it appears that bid rigging remains more complicated to detect under simultaneous procurement auctions due to a larger degree of uncertainty for bidders, which supports relatively high bid prices that may actually be collusive. Moreover, simultaneous procurement auctions may result in a relatively high cost of supply due to the (seemingly) larger risks involved for bidders. The difficulties in monitoring whether the cartel agreement is being adhered to by all members mean however that the chances of one or more of the conspirators breaking the cartel agreement are higher, but this does not necessarily mean that auction results are as favourable to the auctioneer as under fair competition.

Sascha Fülbrunn (Radboud University Nijmegen)
An experimental consideration of strong ambiguity in call markets and double auction markets

Several individual choice experiments show that decision makers prefer taking gambles with known-risk probabilities over equivalent gambles with ambiguous
probabilities. Thus, subject’s willingness to pay for risky assets tends to be higher than for equivalent ambiguous assets. When it comes to markets, however, subject’s decisions are no longer separated from others and may be reevaluated by market feedback. But is market feedback sufficient to overcome the ambiguity effect? Or do prices reflect ambiguity aversion? To evaluate this question, we conduct laboratory experiments where subjects simultaneously trade risky and ambiguous assets, using an offline version of the source method for Ellsberg-like uncertainties from Abdellaoui et al. (AER, 2011). While recent experimental results from Sarin and Weber (MS, 1993) and Bossaerts et al. (RFS, 2010) suggest that aversion to ambiguity does not vanish in markets, we find no systematic difference between risky and ambiguous assets in terms of prices and bids, volume or portfolio decision. In contrast to other market studies, we consider strong ambiguity (rather than weak) in both double auction markets and call markets. The same source method in a Becker-DeGroot-Marschak treatment, however, confirms ambiguity aversion on the individual level.

Lyuba Ilieva (University of Cologne)

**Non-expected utility and bidding behavior in first-price auctions with(out) ambiguity**

To investigate the effect of ambiguity on bidding behavior in first-price sealed-bid auctions we run a laboratory experiment in which subjects compete against three computerized rivals. The computer bids are drawn from a uniform distribution with zero lower and an (un)known upper limit. Standard theory predicts that in symmetric first-price auctions the optimal bid in an increasing equilibrium is conditional on the bidder having the highest valuation among all competitors. Hence, competing bids associated with valuations above one’s own should not have an impact on the optimal bid. In a similar manner, in the individual choice setting of our experiment, knowledge about the upper limit of the rival bids should not affect behavior as long as subjects are expected utility maximizers. However, the bids we observe in the ambiguous environment are significantly lower than those in the non-ambiguous environment. We show that in our particular setting neither attitudes towards ambiguity (tastes), nor pessimistic reasoning in ambiguous environment alone should affect bidding behavior. Furthermore, we demonstrate that a combination of pessimistic beliefs and non-linear probability weighting is capable of explaining the observed differences. We contribute to the increasing tendency to distinguish between beliefs and tastes when studying behavior in ambiguous environments. In addition, our experimental results highlight the importance taking non-expected utility into account when studying behavior in experimental auctions.