HAUSDORFF RESEARCH INSTITUTE
FOR MATHEMATICS

UNIVERSITÄT BONN

Conference

"Behavioral Mechanism Design"

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organized by
Benny Moldovanu, Philipp Strack

Abstracts

David Dillenberger (University of Pennsylvania)

Binary Betweenness

Abstract: Consider an economy with equal amounts of N types of goods, to be allocated to agents with strict quasi-convex preferences over lotteries. We show that ex ante, all Pareto-efficient allocations give almost all agents lotteries over at most two outcomes. Our results provide a simple criterion showing that many popular allocation mechanisms are ex ante inefficient. For the case of identical preferences, we establish existence of an efficient solution where all lotteries used are equally attractive. Assuming the reduction axiom, social welfare deteriorates by first randomizing over these binary lotteries. Efficient ex ante equality is achieved if agents satisfy the compound-independence axiom.

Mira Frick (Princeton University)

Contagious Ambiguity (joint with Ryota Iijima and Daisuke Oyama)

Abstract: We study the strategic impact of ambiguity through the channel of higher-order beliefs. Our main results highlight a novel form of contagion: Even small amounts of prior ambiguity about game payoffs can generate substantial higher-order ambiguity and have stark strategic effects, leading classic robustness results under probabilistic uncertainty to break down. Our analysis has two implications. First, equilibrium predictions, even in "almost dominant" actions, are fragile against vanishingly small payoff ambiguity if players can deviate to "safe" actions. Second, if a designer can inject small amounts of payoff ambiguity into a game via ambiguous contracts, this can serve as a powerful tool for unique implementation.

Alexander Gershkov (The Hebrew University of Jerusalem)

Moral Hazard and Disappointment Aversion (joint with Benny Moldovanu and Philipp Strack)

Abstract: We study the classical moral-hazard problem with hidden actions where the agent is disappointment - (and risk-) averse in the sense of Gul (1991) and has a piece-wise linear utility over monetary outcomes. We explicitly solve for the optimal contract, and prove that it consists of three

levels of payment: a standard fixed wage - equivalent to the agent's total perceived compensation including bonus and penalties - for middle outcomes, a (possible random) penalty wage/termination clause for low outcomes, and a bonus paid only for the highest outcome. This structure is commonly observed in practice and is in sharp contrast both to the results obtained under expected utility (e.g., complex schemes that finely depend on the model's primitives) and under other departures from expected utility (e.g., binary bonus schemes under loss aversion a la Köszegi-Rabin.

Daniel Gottlieb (University of Southern California)

Managing News Utility (joint with Matthew Rabin)

Abstract: This paper investigates how individuals manage information in the presence of news utility, a key element of preferences introduced by Kőszegi and Rabin (2006, 2007, 2009). In the simplest version of the model, loss aversion implies that people prefer receiving clumped news, leading them to delay incremental updates until all relevant information arrives. However, when some information cannot be postponed, individuals generally prefer to obtain some additional information immediately. In these situations, it is optimal to gather enough new information to maximize the chance of returning beliefs to the reference point—for example, determining whether a rumor is valid rather than whether it is true. The theory gives new implications for experimentation problems, showing how the content of information affects people's willingness to search.

Paul Heidhues (Heinrich-Heine University Duesseldorf)

Consumer Protection in Economies with Limited Attention (joint with Johannes Johnen and Botond Kőszegi)

Abstract: We investigate the effects of consumer-protection regulations limiting post-purchase harm when there are many markets and consumers have limited attention to examine prices or product features. Such regulation lowers the attention necessary for valuable purchases, which can allow a consumer to purchase in more markets, or serve to induce competition. The first benefit is most important when few markets are regulated, while the second emerges when regulatory scope is sufficiently broad to create "spare" — i.e., in equilibrium unused — attention. Because little spare attention can enforce competition in many markets, consumer welfare can be highly non-linear in regulatory scope. The benefits of regulating a market often accrue in other markets, and there is a sense in which overly tight regulation outperforms overly lax regulation. Broad consumer protection can help the economy reach productive efficiency, and when this is achieved less regulation may suffice.

Philippe Jehiel (PSE and UCL)

Evolutionary Stable Analogy-based Expectation Equilibrium with an Application to Investment Problems (joint with Laure Goursat and Giacomo Weber)

Abstract: We develop an evolutionary approach to endogenize the choice of analogy partitions in the analogy-based expectation equilibrium (Jehiel, 2005) considering both the case of multi-player games and the case of games against nature (decision problems). In an evolutionarily stable analogy-based expectation equilibrium (ESABEE), we require that analogy partitions and strategies satisfy two conditions: (i) given an analogy partition, the associated strategy is a best-response to the corresponding analogy-based expectations (obtained by aggregating distributions over the various games/states forming the analogy classes); and (ii) analogy partitions that arise with positive probability induce the highest overall fitness among all possible partitions taking into account the extra exogenously given

fitness cost associated with the number of classes constituting the analogy partition. We apply the approach to investment decision problems in which the decision maker observes his cost type and need to form expectations about the benefit which can take multiple values. Playing on the number of categories that can be used, we characterize when the first-best can be obtained as an ESABEE, and we contrast the analysis with that obtained with rational expectations and an optimal information partition about the benefit realization (as in Dow, 1991) or an optimal information partition about the state (allowing for the case in which the decision maker would not be informed of his cost type) as in the information design literature.

Ernesto Rivera Mora (University of Colorado, Boulder)

Information Without Rents: Mechanism Design Without Expected Utility (joint with Philipp Strack)

Abstract: We study mechanism design for a sophisticated agent with non-expected utility (EU) preferences. We show that the revelation principle holds if and only if all types are EU maximizers: if at least one type is a non-EU maximizer, randomizing over dynamic mechanisms generates a strictly larger set of implementable allocations than using static mechanisms. Moreover, dynamic stochastic mechanisms can fully extract the private information of any type who doesn't have uniformly quasi-concave preferences without providing that type any rent. Full-surplus extraction is possible in a broad variety of non-EU environments, but impossible for types with concave preferences.

Collin Raymond (Cornell University)

Monotone Statics without Independence (joint with Yangwei Song)

Abstract: We extend well-known comparative results under expected utility to models of non-expected utility by providing novel conditions on local utility functions. We illustrate how our results parallel, and are distinct from, existing results for monotone comparative statics under expected utility, as well as risk preferences for non-expected utility. Our conditions generalize existing results for specific preferences (including expected utility) and allow us to verify monotone comparative statics for novel environments and preferences. We apply our results to portfolio choice problems where preferences or wealth might change, as well as precautionary savings.

Ilya Segal (Stanford University)

The Proper (Scoring Rule) Approach to Incentivizing Information Acquisition (joint with Alexander Bloedel)

Abstract: We introduce a unified approach to analyzing decision problems and mechanism design problems with flexible information acquisition, based on a duality between posterior-separable information costs and proper scoring rules. The approach yields qualitative properties of optimal mechanisms in a general class of single-agent design problems, as well as in specific design applications such as principal-expert, multidimensional screening, and delegation problems. In a multi-agent setting, we show that a prediction market with a market scoring rule is the unique first-best optimal mechanism for incentivizing both the acquisition and aggregation of costly information while satisfying agents' quitting rights.

Uzi Segal (Boston College)

Aggregating Wrong Preferences (joint with Zhuzhu Zhou)

Abstract: In a social choice setting, individuals may be unwilling to aggregate their preferences with what they regard as wrong preferences held by others because they lead to outcomes that harm themselves, harm others, are socially inefficient, or are morally unacceptable. People may still be willing to compromise with those who believe that although such preferences are wrong, society should nonetheless accept them. We offer two methods of two-level aggregation for such situations. In the first method, each member of society first aggregates the "corrected" individual preferences, and society then aggregates these aggregated views. In the second method, for each person, society first aggregates everyone's views about that person's preferences, and then aggregates the resulting individual "corrected" preferences. If these two methods yield the same social ranking, then the aggregation rule must be the sum of functions of the corrected utilities.

Jonas von Wangenheim (University of Bonn)

Dynamic contracting with reference-dependent preferences

Abstract: TBA

Mengxi Zhang (University of Bonn)

Mechanism Design Beyond Expected Utility: Dynamic (In) Consistency and Full Surplus Extraction (joint with David Ahn and Mu Zhang)

Abstract: We study mechanism design for selling an indivisible object to a buyer with non-expected-utility preferences under objective risk. The buyer's risk preference satisfies constant risk aversion, while his information preference is largely unrestricted. We develop a novel revelation principle for sophisticated non-expected-utility agents and use it to establish Myersonian-style connections between the buyer's information rent and the allocation rule. We then show that, when the seller can freely use any dynamic mechanism, she can approximately implement any allocation probabilities, including non-monotone ones, and any desired split of the associated surplus, including full surplus extraction. These results are robust to broader classes of non-expected-utility preferences and to private information about risk and information preferences. They are less robust to mechanism-side restrictions, especially limits on the number of stages or on the structure of allocation lotteries. Our findings highlight the importance of understanding design constraints in non-expected-utility mechanism design.
