Behavioral Competition and Regulation

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BOOK OF ABSTRACTS

UNIVERSITEIT VAN AMSTERDAM

Amsterdam Center for Law & Economics

Workshop Program – Contributed Papers Sessions I

Perspectives

Giancarlo Spangolo (SITE Stockholm School of Economics)
Flexibility and Collusion with Imperfect Monitoring

Flexibility - the ability to react swiftly to others' choices - facilitates collusion by reducing gains from defection before opponents react. Under imperfect monitoring, however, flexibility may also hinder collusion by inducing punishment after too few noisy signals. The combination of these forces predicts a non-monotonic relationship between flexibility and collusion. To test this subtle prediction we implement in the laboratory an indefinitely repeated Cournot game with noisy price information and vary how long players have to wait before changing output. We find that (i) the facilitating role of flexibility is lost under imperfect monitoring, and (ii) with learning, collusion unravels with low or high flexibility, but not with intermediate flexibility.

Sander Onderstal (University of Amsterdam)
Collusion and the choice of auction: An experimental study

We experimentally examine the collusive properties of two commonly used auctions: the English auction (EN) and the first-price sealed-bid auction (FPSB). In theory, both tacit and overt collusion are always incentive compatible in EN while both are incentive compatible in FPSB only if the auction is repeated and bidders are patient enough. Our experiment partly confirms the theory: under overt collusion, stable cartels buy at a lower price in EN than in FPSB resulting in a lower average winning bid in EN. However, we also find that the auctions do not differ in subjects' propensity to collude overtly and in the likelihood that subjects defect from a collusive agreement. Moreover, the average winning bid does not differ between the auctions unless subjects can collude overtly.

Vanessa Mak (Universiteit van Tilburg)
Errare humanum est. Financial Literacy in European Consumer Credit Law

Examples of financial mistakes made by consumers lend support to the view that systematic mistakes of consumers exist in the EU credit market and that service providers respond strategically to these by redesigning their products. This paper seeks to determine how existing regulation can be improved to ensure consumer protection. Using insights from behavioural economics, this paper argues that financial literacy – that is, knowledge and understanding of complex financial products – as a cornerstone for European financial consumer law is problematic. Current regulation is based primarily on information provision to consumers, which should enable them to make appropriate decisions about the risks and suitability of financial products. Although behavioural economics does not necessarily require legal intervention to take other forms than the introduction of information duties, the type of intervention is dependent on the design and needs of a particular market. The EU consumer credit market, in our view, demands more than current regulation offers in terms of consumer protection. In particular, behavioural studies reveal that consumers generally do not have a sufficient level of financial literacy in order to enable them to make informed, rational decisions. Moreover, behavioural biases have a distorting influence on consumer decision-making. The law as it stands, therefore, seems ill-equipped to offer protection to consumers and to prevent them from rash and bad decision-making. Reviewing existing regulation and case law, we propose that in EU law the Consumer Credit Directive and the Markets in Financial Instruments Directive (MiFID) require updating in order to offer sufficient protection to vulnerable groups of consumers who on average have low levels of financial literacy.

Frank Maier-Rigaud (OECD)

The Need of a Behavioural Foundation of Regulatory and Competition Analysis

The article describes why behavioural insights are of substantial importance for the design and the enforcement of both, competition law and regulations. It is argued that considerations of bounded rationality are particularly important because the main subject of competition and regulatory analysis typically concerns oligopoly markets with few firms and often even (quasi) monopolistic conduct. The dominant hypothesis about the behaviour of firms in economics, and in the applied competition and regulatory literature in particular, is that of "profit maximization". The main defence of this assumption is "market selection". In a nutshell, firms behave "as if" they were seeking to rationally maximize their expected profits because those that did not are eliminated in a selection process. This argument implies that the empirical content of the assumptions underlying firm behaviour are irrelevant as long as "market selection" ensures that the behaviour of the successful firms can be characterized as (approximately) profit maximizing *ex post*. This methodological approach characterizes the large majority of regulatory and competition analysis conducted in the context of both, policy and individual cases. The reliance on an often unspecified "selection mechanism" guaranteeing an *ex post* conformance of behaviour with profit maximization based on *ex ante* assumptions of proven unrealistic nature is generally problematic. It is particularly problematic for the analysis of oligopoly markets and individual firm behaviour, the prime subject of most regulatory and competition analysis. While conditions exist under which selection even of random behaviour can be described as profit maximizing *ex post*, these conditions are neither generally identified explicitly nor typically present in oligopoly settings even if specifically spelled out. The role of experimental research in identifying realistic behavioural assumptions for corporate, firm level decision making is therefore of high importance for the type of empirical analysis required in a regulatory and competition law context. The article concludes with an antitrust example concerning predatory conduct to demonstrate this point. Economic analysis in a regulatory and competition law domain has to be based on solid empirical foundations in order to be appropriate.

Workshop Program – Contributed papers Sessions II

Learning and Searching

Itai Ater (Tel Aviv University)
Do Customers Learn from Experience? Assessing Experience-Based Choices among Three-Part Tariff Plans

Gaining experience can result in worse economic outcomes. We use a rich panel data covering 70,000 checking accounts over 30 months, before and after a commercial bank introduced a new three-part tariff plan, to study customers' plan choices and subsequent switching decisions. We find that most customers do not adopt their cost-minimizing plans, preferring plans with large monthly allowances and high fixed payments. This tendency is stronger for customers with lower socio-demographic background, who have more children and who perform fewer information inquiries about their account. We also find that after plan adoption, customers who exceed their plan allowances and consequently pay overage fees are more likely to switch to plans with larger allowances than customers who do not. Notably, controlling for usage, these customers pay *higher* monthly payments after plan switching. Conversely, plan switchers who have not paid overage fees prior to switching plans reduced their monthly bank payments. We propose that mental accounting can explain these patterns because customers are less sensitive to payments from the 'fixed fee account' than they are to payments from the 'overage fees account'. To quantify this effect we estimate a discrete choice model and find that customers are 3.5 times more sensitive to overage fees than to monthly fixed payments.

Sjaak Hurkens (Institute for Economic Analysis, Balterra)
Mobile Termination, Network Externalities, and Consumer Expectations

We re-examine the literature on mobile termination in the presence of network externalities. Externalities arise when firms discriminate between on- and off-net callsor when subscription demand is elastic. This literature predicts that profit decreases and consumer surplus increases in termination charge. This is puzzling since in reality regulators are pushing termination rates down while being opposed to do so by network operators. This puzzle is resolved when consumers' expectations are assumed passive but required to be fulfilled in equilibrium (as defined by Katz and Shapiro, AER 1985), instead of being responsive to non-equilibrium prices, as assumed until now.

Workshop Program – Contributed papers Sessions II (ctd.)

Philipp Reiss (Maastricht University)
The law of one price in auctions with outside competition

In this paper we theoretically and experimentally investigate price formation in hybrid markets. All buyers are faced with unit demand for a single object that is offered by various sellers. There are two market mechanisms utilized by sellers. First, there is a single auction seller offering a single object for sale. Second, there is a vast posted prices market where substitute objects are exchanged, however, prices are dispersed and buyers have to search for them before any transaction where search is costly. The timing in the hybrid market is sequential where the auction is held before any buyer can participate in the posted prices market. To keep the setting as simple as possible, we employ a second-price auction and assume that buyers' valuations are independently distributed and their private information. We characterize equilibrium behavior in the hybrid market and use it to predict behavior in the experiment. Theoretically we find that – depending on the demand structure – the price in the auction either is carried over from the vast posted prices market to the auction so that the law of one price holds or equals a smaller bargain-price. In other words, depending on demand, the model explains why rare bargain-prices in auctions can coexist with a series of identical higher prices with identical objects exchanged in the market. Experimentally we find that bidders behave myopically so that auction prices are higher than predicted since bidding in the auction does not fully take advantage of the potential benefits derived from potentially participating in the posted prices market.

Attention

Jiwei Zheng (ESRC CCP)
The Power of Defaults with Inattentive Consumers

Consumer inertia plays a key role in a number of services markets. Typically, consumers do not switch service providers even though the tariffs they are holding are suboptimal. This paper aims to unpack two key psychological determinants – tariff complexity and consumer inattention – in the context of an experiment closely modelled on the UK electricity and gas markets. By employing an experimental methodology, we are in a position not only to identify the causal role of different psychological dimensions, but we are also able to test the effectiveness of policies designed to improve consumer outcomes. Policies we are able to evaluate are a regulatory bar on complex tariffs as proposed by the UK regulator Ofgem and two nudge manipulations where either advice of the existence of a better tariff or an automatic switch of default tariff takes place. Tariff complexity matters. It is a function not only of the complexity of the tariff for the individual good, which would fall under the remit of Ofgem's regulatory bar, but also of whether tied tariffs are provided for two goods rather than one. However, even with simple tariffs we show that, in the presence of a default tariff and of consumer inattention, markets are still affected by large amounts of consumer inertia. Similarly, providing advice on the existence of a better tariff does not improve outcomes. Intuitively, the reason why reducing complexity of the task or providing advice on the task solves the consumer inertia problem only limitedly is because subjects do not pay enough attention to the task in the first place and instead just stick to the default. A nudge policy of automatically switching default tariffs is a pragmatic and effective solution to obtain better consumer outcomes. The policy automatically changes default tariffs to the optimal one in a given time period, and by doing so it exploits inattention-based consumer inertia to achieve better consumer outcomes while leaving consumers free to choose an alternative tariff if so they wish.

Jona Linde (University of Amsterdam)
Nudge Lullaby

Libertarian paternalism (Thaler and Sunstein 2003), using peoples own heuristics and biases to steer them to better choices while preserving choice freedom, has shown to be an effective and popular policy paradigm. It has also sparked many philosophical debates (e.g. Mitchell (2005) and Sugden (2008)) on the role of the government in consumer choice issues. In this paper we address a more practical possible side effect of libertarian paternalism in an experimental study. We have participants perform a number of difficult multi-attribute choice tasks where each option chosen yields a particular payoff. We examine whether participants who are provided with good defaults in the first half of the experiment perform differently compared to a control group, when they perform the task with random defaults in the second half of the experiment. We indeed find that subjects who first were nudged perform worse than the control group. Interestingly this effect holds even if we control for a proxy for effort. We find a significant treatment effect for men but not for women. Attitudes toward defaults thus seem not to be independent of previous experience. Our result has possible implications for government and nongovernment consumer choice policies.

Alexia Gaudeul (Friedrich Schiller Universität, Jena)
Do Consumers Prefer Offers that are easy to Compare?

Consumers make mistakes when facing complex purchasing decision problems but if at least some consumers choose only among offers that are easy to compare with others then firms will adopt common ways to present their offers and thus make choice easier (Gaudeul and Sugden, 2011). We design an original experiment to identify consumers' choice heuristics in the lab. Subjects are presented with menus of offers and do appear to favour offers that are easy to compare with others in the menu. While not all subjects do so, this is enough to deter firms from introducing spurious complexity in the way they present products

Pricing

Ronald Peeters (Maastricht University)
Evolution of behavior when duopolists choose prices and quantities

We study duopolistic competition in a differentiated market with firms setting prices and quantities, without explicitly imposing market clearing. Unlike the commonly adopted assumption of profit maximizing firms, we assume firm behavior to be shaped by a Darwinian dynamic: the less fitter firm imitates the fitter firm and occasionally firms may experiment with a random price and/or quantity. Our two main findings are that: (i) a market clearing outcome always belongs to the set of feasible long run outcomes, but may co-exist with non-market clearing outcomes with as well excess supply as excess demand being possible; and (ii) there exist parameter configurations for which the only feasible outcomes imply prices above monopoly level.

Daniel Cracau (University of Magdeburg)
How Judo Economics can help small firms to survive Bertrand Competition

The theory of "judo Economics" describes an optimal strategy for small enterprises to enter a market. By limiting its capacity, the entrant forces a dominant enterprise to accommodate entry. In our paper we find experimental evidence supporting this theory. Collusive behavior, which can be observed in the basic model, is destroyed when price competition among multiple dominant firms is introduced. In contrast, a cost advantage strengthens the small enterprise in a competitive environment while it hurts collusive interaction with one single dominant enterprise. Using these results, we are able to derive strategies for entrants as well as incumbents in different market environments.

Charles Mason (University of Wyoming)
Imminent Entry and the Transition to Multimarket Rivalry

In industries where there is the potential for entry, there is a period of time during which the firms already producing in an industry recognize the potential that another firm may enter the market. Thus the threat of entry has the potential to change the strategies of incumbent firms. Two questions arise naturally: First, during the period prior to entry, does the potential for entry render incumbent firms more or less cooperative compared to the identical market structure without the threat of entry? Second, whether or not entry actually occurs, does the influence associated with the potential entry persist even after the moment where entry might occur has passed (whether entry occurs or not)? In this paper we study transitions before and after the point of entry. This paper models behavior as if firms use trigger strategies to enforce cooperative-looking actions. The repeated game has a known transition point at which the number of firms randomly increases from N to N+1. There may be no entry, but until the transition point there is a threat of entry. This model predicts behavior will be less cooperative in the period prior to the known transition point as compared with a regime without a threat of entry and N firms, but more cooperative than a regime with no threat of entry and N+1 firms. On the other hand, the model is largely silent as regards the impact of the possibility of entry upon behavior after the known transition point. In order to learn more about behavior we construct experimental quantity-choosing duopoly and triopoly markets. As a baseline, subjects interact for an indefinite number of periods without any threat of entry. We compare this behavior to duopoly markets that have a threat of entry at a known point in time. We study behavior before and after the known transition point. Our findings confirm the prediction of our model: prior to the transition point, subject choices are on average most cooperative in the baseline duopoly sessions, and least cooperative in the baseline triopoly sessions; behavior in the treatment where entry might occur falls between these baselines. All differences are both statistically and economically significant. Interestingly, behavior following the transition point appears to be anchored to earlier behavior. So, for example, behavior in the treatment where entry was possible but did not occur remains less cooperative than behavior in the baseline duopoly treatment. Moreover, behavior in the treatment where entry was possible and did occur is less cooperative than behavior in the baseline triopoly treatment. Evidently, then, the threat of entry renders markets less cooperative whether entry occurs or not, as compared to markets that are of the same size ex post. This observation leads to an obvious policy implication: one way to impact oligopoly behavior is to facilitate entry, *whether or not entry actually occurs*. The potential for imminent entry exerts an effect that lasts well after the moment of potential entry has passed.

Workshop Program – Contributed papers Sessions III

Collusion

Pierluigi Sabbatini (Italian Competition Authority)
Cartels under consumer asymmetric price fairness

We are involved in a project exploring prices connections even when consumer's preferences are independent. In particular, we model a market with similar but not substitute products. We have already shown, in the first part of our project, that price fairness/unfairness is a novel source of demand cross elasticity in case of price increases (See our attached recently published article). We are now working on the second part of the project which deals with the analysis of price connections (among similar but not substitute products) in case of price decreases. We suspect that in this case this type of connections are very weak, if any, because fairness considerations should not play any significant role when price changes benefit consumers. If this guess is correct we expect that consumers asymmetrically react to price increase (more reaction) and to price decrease (less reaction) of similar products, a fact which may have not negligible consequences on behaviour of firms. It follows that firms have an incentive to cooperate with producers of similar (although not substitutable) products (or services) in order to increase prices and profits. But, differently from standard cartels, they should not pay much attention to cheating, as it does not affect their own profits. We think that this analysis may reveal itself useful in assessing the performance of soft cartels like, for example, those implemented by large business associations. The implication for antitrust policy are noticeable, not only for cartel prevention but also for antitrust markets: in delineating a market perimeter, products that are similar but not interchangeable should be included in the relevant antitrust market.

Georg Clemens (Heinrich-Heine-Universität Düsseldorf)
Rebels without a Clue? Experimental Evidence on Coordination in Cartels and Outside Firms

This paper provides experimental evidence on the formation of binding cartels with endogenous coordination and cooperation. We introduce a three-stage mechanism where potential cartel members can monitor the total number of outside firms, before agreeing to a binding cartel. Our first treatment provides a test of our mechanism and yields a cartelization rate of 25.71%. In the second treatment we analyze partial cartelization and the role of outside firms in this framework. Here, the payoff structure is modified making partial cartelization more attractive. We find an outof-the-equilibrium rejection of partial cartels in 55.56% of the cases documenting the importance of payoff asymmetries. In two further treatments we analyze the impacts of prior communication on firms' cooperative behavior. The results show that chat increases firms' cooperative behavior in the environment of our multi-stage setup. Combining the institution with chat leads to cartelization rates of up to 97%.

Alexander Morell (Max Planck Institute for Research on Collective Goods)
Can Organizational Complexity Constrain Collusion

We experimentally test the effect of organizational complexity on tacit collusion in a Bertrand duopoly market. Each competitor is modeled as a team of three players. Keeping the Nash Equilibrium constant, we vary (1) the heterogeneity of competitors' internal incentive structure and (2) their knowledge about one another. Our results suggest that heterogeneity notably reduces the ability of market participants to tacitly collude. This effect is reflected in the legal intuition of the current EU horizontal merger guidelines as well as the US guidelines of 1992 but is neglected by the current 2010 version of the US horizontal merger guidelines. Moreover, it contradicts the predictions of game theory and reinforcement learning.

Peter Dijkstra (Rijkuniversiteit Groningen)
Leniency Programs and the Design of Antitrust

We present experimental evidence on the effectiveness of corporate leniency programs. Our experiment allows subjects to have unrestricted communication. Also, they can apply for leniency after an antitrust investigation has been announced. We find that leniency programs lead to lower prices overall, fewer cartels, but higher cartel prices. Having a few profound rather than many superficial investigations leads to fewer cartels, but does not significantly affect market prices. Cartels that are prosecuted and fined are highly likely to continue to set high prices after their prosecution, even without further communication.

Fines and Deterrence

Matthias Lang (Max Planck Institute for Research on Collective Goods)
Legal Uncertainty an Effective Deterrent in Competition Law?

This article considers legal uncertainty in competition law. Contrary to perceived wisdom, I show that the uncertainty itself might have positive welfare effects, if it is sufficiently small. Legal uncertainty acts as a screening device, if the threshold of legality is uncertain. Then, near the threshold, firms decide contingent on their type whether to pursue controversial business practices. This allows mitigating the policy restrictions, as the competition authority cannot perfectly observe the types of the firms. Such an effect might influence the trade-off between per-se rules and rules of reason in competition law. In an extension, I discuss the effects of introducing ambiguity about the fine and prove that this mitigates enforcement problems, if auditing costs are sufficiently high.

Charlotte Duke (London Economics)
The impact of competition interventions on compliance and deterrence

This study implements a controlled behavioural experiment to test the impact of competition deterrence interventions on cartel behaviour. The online incentivised experiment is conducted with 93 competition compliance officers in small and large business in the United Kingdom. The experiment tests whether and in what circumstances compliance officers would be willing to engage in a cartel, and therefore earn higher pay-offs in the market. In particular, the experiment observed compliance officers' behaviour when they were (i) faced with different fine levels (including doubling the fine); (ii) different probabilities of detection/incurring a fine; and, (iii) their decision resulted in third-party consumer harm. The results of the experiment find that the majority of participants choose not to engage in cartel activity. The next most likely behavioural choice was to choose to engage in cartel activity depending on the magnitude of the fine relative to the pay-off from anti-competitive behaviour. A small proportion of participants always elected to choose the risky option and to engage in a cartel. This suggests that there may be some businesses that would always be willing to participate in a cartel regardless of what sanctions are put in place. These participants were more likely to be knowledgeable about Competition Law, suggesting that knowledge may not always be a driver of compliance. Instead, a high level of knowledge may be a sign of potential non-compliance. Overall, the experiment shows that participants are most likely not to engage in cartel behaviour, and that social consumer harm is taken into consideration. However, there exist a small proportion of individuals who are risk loving, and the biggest challenge for competition authorities is to deter this group of people.

Giancarlo Spangolo (SITE Stockholm School of Economics)
The Distortive Effects of Antitrust Fines Based on Revenue

In contrast to what the voluminous literature on optimal fines, starting with Becker' seminal paper (1968) suggests, the fining policy of Competition Authorities in most jurisdictions continuous to set fines as a fraction of the revenues earned by those caught to be involved in anticompetitive conduct, imposing a cap to maximum fines. A justification is that Competition Authorities are interested in deterring antitrust violations - e.g. cartels – but also ensuring that fines cannot jeopardize the survival of firms. Moreover, since there is always a possibility of decision errors, the assumption that fines are costless is rejected. Excessive fines potentially discourage benign actions by firms and, thus, reduce social welfare. In this paper we analyze a number of "distortions" that arise as a result of current fining policies concentrating on the case of cartels. A first well known effect is that specialized firms active in the core relevant market only expect a lower fine/profit ratio than diversified firms active in several other markets than the relevant one. We focus on two additional effects that have not been noted before:
- If expected fines are not sufficient to deter the cartel, the rule based on revenue would induce profit maximizing firms to try to reduce the penalty by raising prices above the monopoly level, thus exacerbating the anticompetitive harm caused by the cartel.

- Firms with a low profit/revenue ratio expect – ceteris paribus – larger fines relative to collusive profits than firms that have a much larger profits/revenues ratio.

We propose simple models of cartel pricing and antitrust enforcement to characterize these distortions and their comparative static properties, try to quantify them and discuss the obvious need to adjust fining policy.

Anita Kopanyi-Peuker (University of Amsterdam)

Endogenizing punishments in social dilemmas - Fostering cooperation through the enhancement of own vulnerability

It has convincingly been shown that punishments provide an effective way to encourage cooperation in social dilemmas. In practice, the possibility to punish may not automatically exist, or the extent to which free riders can be punished may be limited by property rights. In this paper, we endogenize punishments in social dilemmas. In particular, we consider the possibility that cooperation in a prisoners' dilemma is fostered by people's voluntarily enhancement of their own vulnerability. By enhancing the own vulnerability, a player increases the effectiveness of a possible punishment by the other player. Thus, players have a means to signal their intention to (conditionally) cooperate. Provided that the other player punishes opportunistic behavior with sufficiently high probability, players have the means to make a binding commitment of conditionally cooperative play. We investigate this possibility in a harsh environment where initial attempts at cooperation quickly unravel if no punishments are allowed. We consider two versions of the mechanism. In the gradual mechanism, players may start small and may condition their incremental enhancements of their own vulnerability on the extent to which the other player enhances the own vulnerability. In the sealed mechanism, they simultaneously submit one (final) vulnerability level. Theoretically, we show that both mechanisms allow for multiple equilibria; both mutual defection and mutual cooperation can be supported in equilibrium when one of the two mechanisms is employed. In an experiment, we show that after some time subjects start to voluntarily enhance their own vulnerability. This process provides a substantial boost to the extent in which mutual cooperation is observed. Although the gradual mechanism outperforms the sealed mechanism in some aspects (for instance, the outcome where one player cooperates and the other defects is observed less often), even the sealed mechanism raises the contribution level substantially compared to the baseline where no punishments are possible.

Policy

Tom Tindall (Oxera)

The Use of behavioural economics in GB electricity markets

Behavioural biases can play an important role in affecting consumer engagement, especially in markets where tariff structures can be complex, such as energy. This has led some authors to suggest that these biases can adversely affect competition to such an extent that retail energy markets should not be liberalised. The GB energy regulator (Ofgem) is concerned about the level of consumer engagement in the GB retail energy market. As a result it has recently suggested considerable intervention in the market, with proposals to restrict the number of 'evergreen' products offered by suppliers, as well as restrictions on the terms and conditions attached to those tariffs. This paper provides a critique of the regulator's proposals. It examines the evidence base used to assess the presence and effect of behavioural biases, and goes on to examine the potential adverse effects of the proposals on consumer engagement, and supplier behaviour. The paper highlights the tension between consumer protection policy and competition goals, and suggests that caution is warranted in implementing policies that restrict choice.

Maria de Lurdes Martins (University of Minho)

Confusion in cell phone plans choice: how can regulation improve welfare?

There is a common trend in mobile communications worldwide such that firms are offering increasingly more cell phone plans to their customers who in turn are experiencing increased difficulty in their choice. Differentiating prices according to the quantity that is being consumed is particularly attractive in the telecommunication industry where the scope for differentiating the service being offered is very limited. Firms' pricing and tariff design can exploit the consumer's average usage as well as other consumer specific preferences and attributes such as their ability (or inability) to predict usage. Moreover, recent research has found that consumers seem to exhibit tariff-specific preferences such that a great number of consumers do not choose the ex post (or ex ante) bill-minimizing tariff (Nunes 2000, Lambrecht and Skiera 2006, Gerpott 2009, Kramer and Wiewiorra 2010). For example, studies have shown that a significant share of consumers prefer use-independent to use-dependent price plans even when this increases their costs (Nunes, 2000, Lambrecht and Skiera 2006, Gerpott 2009, Kramer and Wiewiorra 2010). One cognitive explanation for such a choice is that consumers may experience some difficulties in assessing their final expenses given the complexity of the task. Given there is evidence of mobile telecommunications consumers choosing a cell phone plan that is not optimal given their usage, there may be scope for the intervention of a public entity or regulator in order to reduce consumers' welfare losses. In this study, we consider the role of both environmental factors, that could possibly be changed by a regulator, as well as the role of individual factors such as numeracy and/or task specific knowledge, that policy could address in the long-run, on the quality of the cell phone plan choice decision made by an individual. We assess the impact of three public policy interventions that could potentially improve consumer welfare, reducing choice complexity by limiting the number of cell phone plan choices; reducing usage uncertainty, and increasing information provision to consumers. Our study takes the form of an incentive compatible experiment in which university students make choices between cell phone plans given a hypothetical scenario. Students are randomized to a choice set which reflects (i) certainty/uncertainty about usage, (ii) the number of plans in the choice set (limited, extensive), and (iii) whether the information provided includes information that reduces the cognitive burden of making calculations (yes, no). Furthermore, we also measure numeracy, demographic, and other characteristics related to cell phone plan choice. Also, our cell phone plans may be ranked according to their usage-dependency, ranging from a flat rate tariff (fixed amount to be paid at the end of the billing period) to the completely usage-dependent plan with a pay-per-minute pricing scheme. Upon completion of the study, one of every thirty respondents is selected at random to receive remuneration related to his/her choice of cell phone plan for one of the two choices he/she made. The data from subjects' choices was analyzed to determine whether and to what degree people violate expected utility theory and what this might imply for public policy. Empirical results are based on a logit regression model that estimates the impact of the selected environmental and individual factors on subjects' tariff choices.
We find that some individual characteristics, especially numeracy, have an important role in predicting choice of an optimal plan. Furthermore, our experimental manipulations provide incite into some of the environmental factors that could be adjusted by a regulator to improve consumer welfare. Specifically, reducing the number of plans in the choice set and reducing uncertainty about usage significantly improves consumer decision quality. By contrast, our results suggest that giving more detailed information about costs does not have an important effect on helping consumers make better choices.

Aljaz Ule (University of Amsterdam)
Infrastructural investment under political uncertainty

Reference Points and Loss Aversion

Najmeh Rezaei-Khavas (Utrecht University)
Menu pricing with reference-dependent preferences

This paper offers a model of menu pricing by a monopolist who does not observe the consumers' valuations, when consumers have reference-dependent preferences. Assuming that the monopolist can make consumers expect to buy the desired variety of the good, and that these expectations determine the consumers' reference points, we obtain two main results. *First*, with reference-dependent preferences, menu pricing is *possible* even if the single-crossing property is violated (high-valuation consumers do not have a larger marginal utility of quality than low-valuation consumers). *Second*, that when consumers facing consumers with reference-dependent preferences, menu pricing may become *more desirable* to the monopolist compared to the screening of high-valuation consumers.

Katharina Hilken (Vrije Universiteit Brussel (VUB))
Strategic Framing in Contracts

We provide a model of the principal-agent relationship with hidden action where the agent thinks in terms of gains and losses with respect to a reference point. A loss averse agent's reference point is the fixed payment that he receives, the gains and losses are respectively any bonuses or penalties. When choosing the net payment for each outcome produced by the agent, the principal takes into account that the base wage chosen determines the agent's reference point, and therefore his behaviour. We consider two variants of the model. In a first variant, the agent's reservation utility is not reference-dependent. We show that the principal always employs bonuses in this case. In a second variant, the reservation utility is reference-dependent. In this case, the principal may also use penalties.

Marco Haan (Rijkuniversiteit Groningen)
Search when Consumers Are Loss Averse

We consider a model in which consumers are loss averse and search sequentially on a market with differentiated products. We find that loss aversion may lead to lower prices. Increases in search cost have a positive impact on equilibrium prices while the number of firms affects these negatively. Loss aversion effectively gives a higher weight to the disutility of prices and with unexpected high prices it may become more attractive for consumers to continue searching from the current firm, thereby increasing competition.

Topi Miettinen (Hanken School of Economics, Helsinki)

Gambling for the Upper Hand - settlement negotiations in the lab

We exploit a controlled non-framed laboratory experiment to study settlement negotiations and the plaintiff's decision to raise a lawsuit in case of an impasse. We find that greater variance in court outcomes increases the litigation rate and the settlement rate when legal costs are high and litigation is suboptimal. When the plaintiff's probability of winning is low, riskiness of court rulings does not impact the litigation rate but increases the conflict rate. This latter finding goes against the received wisdom and earlier experimental evidence (Ashenfelter et al. 1992) that greater risk in arbitration outcomes increases the settlement rate. We find that logit quantal response equilibrium and loss aversion, with respect to ex-ante expected payoffs, help to organize the negotiation patterns. With regards to litigation, disadvantageous social comparison with the defendant induces the plaintiffs to excessive risk-taking in an attempt to narrow the gap.