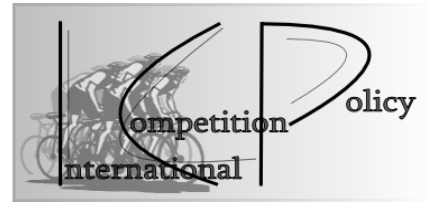


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In the summer term 2019, the chair VWL 8 - International Competition Policy - offers a seminar course for Master's students enrolled in Economics, IWG, and Philosophy & Economics entitled:

### **COMPETITION POLICY AND ELECTRONIC COMMERCE**

The amount of goods and services bought and sold in the European Union over the Internet has increased tremendously over the last decade and is likely to increase further in the future. New services based on the data generated by Internet usage have also appeared. The rise of the so-called e-commerce has led to significant changes in various sectors, in particular in the retailing industry. How these changes affect the allocative efficiency, consumer well-being, and which challenges they impose for competition policy and consumer protection will be discussed in this seminar.

The seminar focuses on (recent) theoretical contributions to the literature on Industrial Organization and Competition Policy. Each participant works on one recent research article, which she/he will present at the seminar and which is used as the basis for the term paper. Participants get an insight into current research and learn how to read and critically evaluate technically and conceptually demanding research papers, and to summarize and present the main results.

Students taking part in the seminar should have a profound knowledge of microeconomic theory. At most 15 students will be accepted for the seminar. Priority in the allocation of places will be given to students of higher semesters.

#### **Language of Seminar**

- Presentation and Discussion: English
- Term Paper: English

#### **Assessment**

- Term paper (13-15 pages), presentation (35-40 min.), and participation in class.

- Credits in
  - Economics/IWG: “Mikroökonomik für Fortgeschrittene II”, “Probleme der Wettbewerbs- und Wirtschaftspolitik“
  - P&E: “Elective Seminar”

## Dates and deadlines

- **Introduction and organization session:** Wednesday April 24<sup>th</sup>, 10am, S 55 (RW II)
- **Deadline for Registration:** Monday April 29<sup>th</sup>
- **Assignment of Topics: Monday** May 6<sup>th</sup>
- **Seminar:** Thursday June 13<sup>th</sup> (9am – 6pm), S 42 - RW II and Saturday June 15<sup>th</sup> (room will be announced in due time)
- **Submission of term papers:** Monday July 1<sup>st</sup> (in print and as a pdf-document via e-mail.)

## Enrolment/Registration

To enroll, please send an e-mail with the following information to [fabian.herweg@uni-bayreuth.de](mailto:fabian.herweg@uni-bayreuth.de) (subject line: Seminar – CPEC):

Last name, First name, Mat-Nr., Degree, Semester, E-mail address, Your three preferred topics (papers)

## Themen

### 1. Algorithmic Pricing and Collusion

Miklós-Thal, J. and C. Tucker (2019): “Collusion by Algorithm: Does Better Demand Prediction Facilitate Coordination Between Sellers?”, *Management Science*, forthcoming.

We build a game-theoretic model to examine how better demand forecasting resulting from algorithms, machine learning, and artificial intelligence affects the sustainability of collusion in an industry. We find that, although better forecasting allows colluding firms to better tailor prices to demand conditions, it also increases each firm’s temptation to deviate to a lower price in time periods of high predicted demand. Overall, our research suggests that, despite concerns expressed by policy makers, better forecasting and algorithms can lead to lower prices and higher consumer surplus.

### 2. Crowdfunding

Strausz, R. (2017): “A Theory of Crowdfunding: A Mechanism Design Approach with Demand Uncertainty and Moral Hazard”, *American Economic Review*, Vol. 107, 1430-76.

Crowdfunding provides innovation in enabling entrepreneurs to contract with consumers before investment. Under aggregate demand uncertainty, this improves screening for valuable projects. Entrepreneurial moral hazard and private cost information threatens this benefit. Crowdfunding's after-markets enable consumers to actively implement deferred payments and thereby manage moral hazard.

Popular crowdfunding platforms offer schemes that allow consumers to do so through conditional pledging behavior. Efficiency is sustainable only if expected returns exceed an agency cost associated with the entrepreneurial incentive problems. By reducing demand uncertainty, crowdfunding promotes welfare and complements traditional entrepreneurial financing, which focuses on controlling moral hazard.

### **3. Dual Pricing**

Miklós-Thal, J. and G. Shaffer (2018): “Input Price Discrimination by Resale Market”, working paper.

This paper analyzes supply tariffs that discriminate between resale in different markets. In a setting with competing retailers that operate in multiple (independent or interdependent) markets, we show that, all else equal, the supplier wants to discriminate against resale in the market with the higher aggregate cross-seller diversion ratio. We find that discrimination can improve allocative efficiency and present sufficient conditions, involving the pass-through rates and the inverse market demand curvatures in the different markets, under which discrimination has positive effects on output and welfare. Our insights are relevant for the policy treatment of vertical restraints on online sales.

### **4. Personalized Pricing**

Choe, C., King, S., and Matsushima, N. (2017): “Pricing with cookies: behavior-based price discrimination and spatial competition”, *Management Science*, 64(12), 5669-5687.

We present a model of dynamic competition between two firms where firms gather customer information through first-period purchase. This creates asymmetric information in the second period whereby a firm knows more about its own past customers than its competitor does. We examine how the ability to offer personalized prices based on customer information affects prices and profit over the two periods. When product differentiation is exogenously fixed, asymmetric information leads to two asymmetric equilibria where one firm chooses more aggressive pricing to secure a larger first-period market share. When product differentiation is also chosen endogenously, there continue to exist two asymmetric equilibria where one firm chooses more aggressive positioning. The more aggressive firm, whether through pricing or positioning, can force the game to be played to its advantage. But both firms end up worse off compared to when they use simpler pricing strategies or commit to substantial product differentiation.

### **5. Personalized Pricing and Quality**

Ghose, A., and Huang, K. W. (2009): “Personalized pricing and quality customization”, *Journal of Economics & Management Strategy*, 18(4), 1095-1135.

We embed the principal-agent model in a model of spatial differentiation with correlated consumer preferences to investigate the competitive implications of personalized pricing and quality allocation (PPQ), whereby duopoly firms charge different prices and offer different qualities to different consumers, based on their willingness to pay. Our model sheds light on the equilibrium product-line pricing and quality schedules offered by firms, given that none, one, or both firms implement PPQ. The adoption of PPQ has three effects in our model: it enables firms to extract higher rents from loyal customers, intensifies price competition for nonloyal customers, and eliminates cannibalization from customer self-selection. Contrary to prior literature on one-to-one marketing and price discrimination, we show that even symmetric firms can avoid the well-known Prisoner's Dilemma problem when they engage in personalized pricing and quality customization. When both firms have PPQ, consumer surplus is nonmonotonic in valuations such that some low-valuation consumers get higher surplus than high-valuation consumers. The adoption of PPQ can reduce information asymmetry, and therefore sellers offer

higher-quality products after the adoption of PPQ. Overall, we find that while the simultaneous adoption of PPQ generally improves total social welfare and firm profits, it decreases total consumer surplus.

## **6. Search and Advertising**

De Corniere, A. (2016): “Search advertising”, *American Economic Journal: Microeconomics*, 8(3), 156-88.

Search engines enable advertisers to target consumers based on the query they have entered. In a framework in which consumers search sequentially after having entered a query, I show that such targeting reduces search costs, improves matches and intensifies price competition. However, a profit-maximizing monopolistic search engine imposes a distortion by charging too high an advertising fee, which may negate the benefits of targeting. The search engine also has incentives to provide a suboptimal quality of sponsored links. Competition among search engines can increase or decrease welfare, depending on the extent of multi-homing by advertisers.

## **7. Pricing by Platforms**

Caillaud, B., & Jullien, B. (2003): “Chicken & egg: Competition among intermediation service providers”, *RAND journal of Economics*, 309-328.

We analyze a model of imperfect price competition between intermediation service providers. We insist on features that are relevant for informational intermediation via the Internet: the presence of indirect network externalities, the possibility of using the nonexclusive services of several intermediaries, and the widespread practice of price discrimination based on users' identity and on usage. Efficient market structures emerge in equilibrium, as well as some specific form of inefficient structures. Intermediaries have incentives to propose non-exclusive services, as this moderates competition and allows them to exert market power. We analyze in detail the pricing and business strategies followed by intermediation service providers.

## **8. Price Parity Clauses**

Johansen, B. O., and T. Vergé, (2016): „Platform price parity clauses with direct sales”, IDEI working.

In the context of vertical contractual relationships, where competing sellers distribute their products directly as well as through competing intermediation platforms, we analyze the welfare effects of price parity clauses. These contractual clauses prevent a seller from offering its product at a lower price on other platforms or through its own direct sales channel. Recently, they have been the subject of several antitrust investigations. Contrary to the theories of harm developed by competition agencies and in some of the recent literature, we show that when we account for the sellers' participation constraints, price parity clauses do not always lead to higher commissions and final prices. Instead, we find that they may simultaneously benefit all the actors (platforms, sellers and consumers), even in the absence of traditional efficiency arguments.

## **9. Privacy and Platforms**

De Corniere, A., and R. De Nijs (2016): “Online advertising and privacy”, *RAND Journal of Economics*, 47(1), 48-72.

An online platform auctions an advertising slot. Several advertisers compete in the auction, and consumers differ in their preferences. Prior to the auction, the platform decides whether to allow

advertisers to access information about consumers (disclosure) or not (privacy). Disclosure improves the match between advertisers and consumers but increases product prices, even without price-discrimination. We provide conditions under which disclosure or privacy is privately and/or socially optimal. When advertisers compete on the downstream market, disclosure can lead to an increase or a decrease in product prices depending on the nature of the information.

## **10. Restrictions on Online Sales**

Helfrich, M. and F. Herweg (2019): “Context-Dependent Preferences and Retailing: Vertical Restraints on Internet Sales”, working paper.

We provide an explanation for a frequently observed vertical restraint in e-commerce, namely that brand manufacturers partially or completely prohibit that retailers distribute their high-quality products over the internet. We assume that a consumer has context-dependent preferences in the sense that he overvalues a product attribute -- quality or price -- that stands out in the choice set. Our analysis reveals the following: If online competition determines the margin a retailer can charge at his brick-and-mortar store, he has no incentive to draw consumers' attention to a product's high quality. If however, the high-quality branded good is not available online, a retailer can charge a significant markup on it and this markup is higher if consumers focus on quality rather than price. Thus, a ban on online sales aligns a retailer's incentive with the brand manufacturer's interest to highlight its relative advantage, quality, and allows the manufacturer to charge a higher wholesale price. Consumer welfare and total welfare, however, are higher if distribution systems that prohibit internet sales are forbidden.

## **11. Algorithmic Pricing and Collusion (2)**

Klein, T. (2018): “Assessing Autonomous Algorithmic Collusion: Q-Learning Under Short-Run Price Commitments”, working paper.

A novel debate within competition policy and regulation circles is whether autonomous machine learning algorithms may learn to collude on prices. We show that when firms face short-run price commitments, independent Q-learning (a simple but well-established self-learning algorithm) learns to profitably coordinate on either a fixed price or on asymmetric price cycles -- although convergence to rational and Pareto-optimal collusive behavior is not guaranteed. The general framework used can guide future research into the capacity of more advanced algorithms to collude, also in environments that are less stylized or more case-specific.

## **12. Price Parity Clauses (2)**

Calzada, J., E. Manna, and A. Mantovani (2019): “Platform Price Parity Clauses and Segmentation”, working paper.

We investigate how the adoption of price parity clauses (PPCs) by established platforms affects the listing decisions of suppliers. PPCs have been widely adopted by online travel agencies (OTAs) to force client hotels not to charge lower prices in alternative sales channels. We find that OTAs adopt PPCs when they are perceived as highly substitutable, and in order to prevent showrooming. PPCs allow OTAs to charge hotels higher commission fees. However, hotels can respond by delisting themselves from some OTAs. Hence, our analysis reveals that the removal of PPCs enables more hotels to resort to OTAs. This is beneficial for consumers, as prices decrease in absence of PPCs.