Advertised Meeting-the-Competition Clauses: Collusion Instead of Price Discrimination

Oliver Budzinski
Jürgen-Peter Kretschmer

February 2010

© University of Southern Denmark, Esbjerg and the authors, 2010

Editor: Finn Olesen

Department of Environmental and Business Economics
IME WORKING PAPER 99/10

ISSN 1399-3224

All rights reserved. No part of this WORKING PAPER may be used or reproduced in any manner whatsoever without the written permission of IME except in the case of brief quotations embodied in critical articles and reviews.

Oliver Budzinski
Department of Environmental and Business Economics
University of Southern Denmark
Niels Bohrs Vej 9-10
DK-6700 Esbjerg
Tel.: +45 6550 4159
Fax: +45 6550 1091
E-mail: obu@sam.sdu.dk

Jürgen-Peter Kretschmer
Economic Policy Unit
Department of Business Administration and Economics
Philipps-University of Marburg
Germany
E-mail: kretschmer@wiwi.uni-marburg.de

Abstract

Pricing strategies may include the advertising of meeting-the-competition clauses (MCCs). We show in a specific spatial model scenario with differently informed consumers that MCCs primarily serve as a device to facilitate collusion instead of allowing for price discrimination between these consumers.

Keywords: Meeting-the-competition clauses; advertising; price discrimination; competition; collusion

JEL-Classification: M21, M37, L40, L11, D21

1. Introduction

An often observed firm strategy is the combination of price announcements with so-called meeting-the-competition clauses (MCCs), which guarantee every consumer to buy a respective product at the lowest known price (Levy and Gerlowski 1991: 219, Png and Hirshleifer 1987: 366). It is generally accepted that MCCs serve to facilitate collusion (due to the instantaneous sanctioning of price-cut deviations) and allow firms to price-discriminate between differently informed consumer groups.[1]

However, we challenge the emergence of price discrimination in a specific model scenario that somewhat follows the scenario of Levy and Gerlowski (1991). The respective markets are characterized by firms setting one price for its product, respectively, and deciding over the implementation of a MCC. Both together, i.e. the decision over the price and the decision to offer a MCC, constitute a firm's strategy. This strategy is advertised to the consumers, which can be divided into two groups. One group is informed of the prices of every firm in the respective market (informed consumers), while the other group knows only the price of one of the two competitors (uninformed consumers).[2]

In such a scenario, price discrimination between differently informed consumers cannot generally be uphold and the combined offering of MCCs and advertising may primarily serve as a device to facilitate collusion.

1 See, e.g., Salop (1986), Belton (1987), Png and Hirshleifer (1987), Logan and Lutter (1989), Levy and Gerlowski (1991), Moorthy and Winter (2002).

2 Indeed, not knowing any price is possible, but neither the existence of such consumers nor their respective share under all consumers affects the analysis.

2. The Effect of Advertised MCCs on the Rationale to Price-discriminate

According to Levy and Gerlowski (1991: 217-219) firms are assumed to be located at endpoints of a 'linear city', which is the unit line for simplicity. Consumers are uniformly distributed with density one. Given that the delivered price is less than their reservation price *v*, each consumer buys one unit of the product. Consumers incur transportation costs *t* per unit of distance *x*, whereas $0 \le x \le 1$. Each firm sets a non-discriminatory (uniform) price *p*. Thus, the effective delivered price of each firm *i* is $p_i + tx_i$. Firms do not incur fixed costs but constant per unit variable costs of *c*. Now, consumers rely on advertising to determine the location and prices of firms. A firm's advertising messages are randomly dispersed with ϕ_i, $0 \le \phi_i \le 1$, as the fixed probability that any consumer receives a firm *i*'s advertising message, which is independent of location. Advertising costs are denoted by $A(\phi_i)$.

The analysis focuses on only two firms ($i = 1,2$) because the results are qualitatively upheld if more than two firms are considered. Characterizing consumers as differently informed refers to how many messages they receive. Therefore, consumers are 'informed', respectively 'uninformed', if they receive messages from both firms, respectively a message from only one firm. Consumers then purchase from the firm with the lowest delivered price of those firms whose advertising message they have received or they do not purchase elsewhere if no advertising message is received. Thus, profits of firm one are given by:

$$(1) \quad \left[\underbrace{\phi_1(1-\phi_2)}_{\equiv a)} + \underbrace{\phi_1\phi_2(p_2 - p_1 + t)/2t}_{\equiv b)} \right](p_1 - c) - A(\phi_1),$$

with a) being the quantity demanded of the consumers which firm 1 reaches alone, b) being the quantity demanded of those consumers receiving messages

from both firms, and $(p_2 - p_1 + t)/2t$ denoting firm 1's demand under full information (Tirole 2003: 292-293).[3] According to the first-order condition with respect to firm 1's price, $\hat{p}_1 = (p_2 + t + c)/2 + t(1-\phi_2)/\phi_2$, the resulting price in the case of symmetric firms ($\hat{p}_1 = \hat{p}_2 = \hat{p}$, and $\phi_1 = \phi_2 = \phi$) amounts to:

(2) $\hat{p} = (t + c) + 2t(1-\phi)/\phi = c + t(2-\phi)/\phi$.

If concerned only about the profits from informed consumers, $\left[\phi_1\phi_2(p_2 - p_1 + t)/2t\right](p_1 - c) - A(\phi_1)$, the first-order condition yields $\tilde{p}_1 = (p_2 + t + c)/2$ as the competitive price, which amounts to

(3) $\tilde{p} = c + t < \hat{p}$

in symmetric equilibrium (full-information equilibrium).[4]

The monopoly price, p_M, is given by the maximum possible price (according to consumers with the highest distance of 1), i.e. the effective delivered price is smaller than the reservation price *v* to cover the whole market (Tirole 2003: 279):

(4) $p_M = v - t$.

Thus, $\tilde{p}$ and p_M serve as the lower and upper bound, respectively, of possible prices (under the assumption of symmetric firms).

Now, each firm's advertised message contains the chosen uniform price and the decision to offer a MCC, i.e. guaranteeing the informed consumers to purchase from the nearest firm at the lowest delivered price. Because the central question

3 By interchanging the indices, we get the profits of firm 2.

4 The inequality in (3) holds as long as $\phi < 1$.

of this analysis concerns the possibility of firms to price-discriminate between consumer groups by offering a MCC,[5] we examine two different cases: first, both firms offer a MCC, and secondly, only one of the two firms offers to match the other's price. What are the respective prices set in equilibrium?

The central characteristic of this model is that each firm gets half of the demand of the informed consumers if prices of both firms are equal. This is due to the 'indifferent consumer' who then is located at $x = \frac{1}{2}$, which follows out of the demand functions for firm 1 and firm 2, $D_1(p_1, p_2) = x = (p_2 - p_1 + t)/2t$ and $D_2(p_1, p_2) = 1 - x = (p_1 - p_2 + t)/2t$, respectively. The introduction of a MCC by both firms results in price equality for the informed consumers, no matter which price is set.[6] No firm can increase its demand by lowering its price because this activates the other firm's MCC. If both firms behave rationally, the mutual MCC plays the role of an institution that solves the otherwise existing prisoners dilemma. Without the mutual MCC it would be tempting to deviate (downwards) from the prevailing price in order to lure consumers away from the competitor. This represents the competitive mechanisms that drive prices down to marginal costs – in the absence of mutual MCCs! However, the existence of mutual MCC allows both firms to maximize per-unit profits by setting the highest possible price, i.e. the monopoly price p_M. The mutual MCC erodes any incentive to deviate from that equilibrium since no gains can be reaped. Every hypothetical other price $p_i \neq p_M$ of firm *i* would result in lower total profits. As a consequence, in equilibrium, no firm is able to price-discriminate between the two consumer groups and both the uninformed as well as the informed consumers pay the monopoly price p_M.[7]

5 Compared to Png and Hirshleifer (1987), who disregard advertising and spatial competition, offering a MCC now is no (weakly) dominant strategy.

6 Uninformed consumers are not affected by a MCC. Their demand only reacts on changes in the advertising strategies (i.e. the probability of receiving at least one firm's message).

7 Although, Moorthy and Winter (2002: 9-12) model the information of uninformed consumers differently (namely, uninformed consumers do not observe any price but the offering of a MCC), setting the monopoly price is a strictly dominant strategy for both firms also for their scenario.

Even in the case in which only one of the two firms, say firm 1, adopts a MCC and the other does not, no price-discrimination between informed and uninformed consumers can be installed. In this scenario, firm 2 has no incentive to undercut firm 1's price as it cannot attract additional consumers (due to firm 1's MCC). However, firm 2 can rationally expect firm 1 to be a 'soft' competitor. Firm 1 cannot lose by setting its price equal to p_M (due to the activation of its MCC if $p_2 < p_1$). Therefore, it has little incentive to undercut firm 2's price and enter into price competition (every realized price below p_M results in lower total profits). Thus, for every price $p_2 < p_M$, firm 2 can secure higher profits by setting p_M. In other words, once in a collusive equilibrium, neither party experiences more than rather weak incentives to deviate from the monopoly price. Consequently, even an unilateral MCC might with some plausibility suffice to overcome the PD game of price competition and stabilize a collusive and non-discriminating equilibrium.

3. Conclusion

In the analysed specific type of model with firms advertising their prices and MCCs, the latter serve only as a practice to facilitate collusion and not as a device to price-discriminate between informed and uninformed consumers. Moreover, there is a trade off between the MCC's function as a collusion facilitating device (solving the PD game) and its function as a price discriminating device: a perfect collusion facilitating function erodes the scope for price discrimination. Note, however, that MCCs are assumed to work perfectly in these models, i.e. transaction costs, imperfectly rational consumers, etc. are not considered.

4. References

Belton, T. M. (1987): A Model of Duopoly and Meeting or Beating Competition, *International Journal of Industrial Organization* 5 (4), 399-417.

Levy, D. T. and Gerlowski, D. A. (1991): Competition, advertising and meeting competition clauses, *Economics Letters* 37 (3), 217-221.

Logan, J. W. and Lutter, R. W. (1989): Guaranteed Lowest Prices: Do They Facilitate Collusion?, *Economics Letters* 31 (2), 189-192.

Moorthy, S. and Winter, R. A. (2002): *Price-Matching Guarantees*, Discussion Paper Berkeley Electronic Press, http://www.bepress.com/roms/vol1/iss4/1.

Png, I. P. L. and Hirshleifer, D. (1987): Price Discrimination through Offers to Match Price, *Journal of Business* 60 (3), 365-383.

Salop, S. C. (1986): *Practices that (Credibly) Facilitate Oligopoly Coordination*, in: Stiglitz, J. E. and Mathewson, G. F. (eds.): New Developments in the Analysis of Market Structure, Basingstoke: MacMillan, 265-290.

Tirole, J. (2003): The Theory of Industrial Organization, 14th print., Cambridge, Massachusetts: MIT Press.

Department of Environmental and Business Economics
Institut for Miljø- og Erhvervsøkonomi (IME)

IME WORKING PAPERS

ISSN: 1399-3224

Issued working papers from IME
Udgivne arbejdspapirer fra IME

No.		
1/99	Frank Jensen Niels Vestergaard Hans Frost	*Asymmetrisk information og regulering af forurening*
2/99	Finn Olesen	*Monetær integration i EU*
3/99	Frank Jensen Niels Vestergaard	*Regulation of Renewable Resources in Federal Systems: The Case of Fishery in the EU*
4/99	Villy Søgaard	*The Development of Organic Farming in Europe*
5/99	Teit Lüthje Finn Olesen	*EU som handelsskabende faktor?*
6/99	Carsten Lynge Jensen	*A Critical Review of the Common Fisheries Policy*
7/00	Carsten Lynge Jensen	*Output Substitution in a Regulated Fishery*
8/00	Finn Olesen	*Jørgen Henrik Gelting – En betydende dansk keynesianer*
9/00	Frank Jensen Niels Vestergaard	*Moral Hazard Problems in Fisheries Regulation: The Case of Illegal Landings*
10/00	Finn Olesen	*Moral, etik og økonomi*

11/00	Birgit Nahrstedt	*Legal Aspect of Border Commuting in the Danish-German Border Region*
12/00	Finn Olesen	*Om Økonomi, matematik og videnskabelighed - et bud på provokation*
13/00	Finn Olesen Jørgen Drud Hansen	*European Integration: Some stylised facts*
14/01	Lone Grønbæk	*Fishery Economics and Game Theory*
15/01	Finn Olesen	*Jørgen Pedersen on fiscal policy - A note*
16/01	Frank Jensen	*A Critical Review of the Fisheries Policy: Total Allowable Catches and Rations for Cod in the North Sea*
17/01	Urs Steiner Brandt	*Are uniform solutions focal? The case of international environmental agreements*
18/01	Urs Steiner Brandt	*Group Uniform Solutions*
19/01	Frank Jensen	*Prices versus Quantities for Common Pool Resources*
20/01	Urs Steiner Brandt	*Uniform Reductions are not that Bad*
21/01	Finn Olesen Frank Jensen	*A note on Marx*
22/01	Urs Steiner Brandt Gert Tinggaard Svendsen	*Hot air in Kyoto, cold air in The Hague*
23/01	Finn Olesen	*Den marginalistiske revolution: En dansk spire der ikke slog rod?*
24/01	Tommy Poulsen	*Skattekonkurrence og EU's skattestruktur*
25/01	Knud Sinding	*Environmental Management Systems as Sources of Competitive Advantage*
26/01	Finn Olesen	*On Machinery. Tog Ricardo fejl?*
27/01	Finn Olesen	*Ernst Brandes: Samfundsspørgsmaal - en kritik af Malthus og Ricardo*
28/01	Henrik Herlau Helge Tetzschner	*Securing Knowledge Assets in the Early Phase of Innovation*

29/02	Finn Olesen	*Økonomisk teorihistorie* *Overflødig information eller brugbar ballast?*
30/02	Finn Olesen	*Om god økonomisk metode* *– beskrivelse af et lukket eller et åbent socialt system?*
31/02	Lone Grønbæk Kronbak	*The Dynamics of an Open Access: The case of the Baltic Sea Cod Fishery – A Strategic Approach -*
32/02	Niels Vestergaard Dale Squires Frank Jensen Jesper Levring Andersen	*Technical Efficiency of the Danish Trawl fleet: Are the Industrial Vessels Better Than Others?*
33/02	Birgit Nahrstedt Henning P. Jørgensen Ayoe Hoff	*Estimation of Production Functions on Fishery: A Danish Survey*
34/02	Hans Jørgen Skriver	*Organisationskulturens betydning for vidensdelingen mellem daginstitutionsledere i Varde Kommune*
35/02	Urs Steiner Brandt Gert Tinggaard Svendsen	*Rent-seeking and grandfathering: The case of GHG trade in the EU*
36/02	Philip Peck Knud Sinding	*Environmental and Social Disclosure and Data-Richness in the Mining Industry*
37/03	Urs Steiner Brandt Gert Tinggaard Svendsen	*Fighting windmills? EU industrial interests and global climate negotiations*
38/03	Finn Olesen	*Ivar Jantzen – ingeniøren, som beskæftigede sig med økonomi*
39/03	Finn Olesen	*Jens Warming: den miskendte økonom*
40/03	Urs Steiner Brandt	*Unilateral actions, the case of international environmental problems*
41/03	Finn Olesen	*Isi Grünbaum: den politiske økonom*
42/03	Urs Steiner Brandt Gert Tinggaard Svendsen	*Hot Air as an Implicit Side Payment Arrangement: Could a Hot Air Provision have Saved the Kyoto-Agreement?*

43/03	Frank Jensen Max Nielsen Eva Roth	*Application of the Inverse Almost Ideal Demand System to Welfare Analysis*
44/03	Finn Olesen	*Rudolf Christiani – en interessant rigsdagsmand?*
45/03	Finn Olesen	*Kjeld Philip – en økonom som også blev politiker*
46/03	Urs Steiner Brandt Gert Tinggaard Svendsen	*Bureaucratic Rent-Seeking in the European Union*
47/03	Bodil Stilling Blichfeldt	*Unmanageable Tourism Destination Brands?*
48/03	Eva Roth Susanne Jensen	*Impact of recreational fishery on the formal Danish economy*
49/03	Helge Tetzschner Henrik Herlau	*Innovation and social entrepreneurship in tourism - A potential for local business development?*
50/03	Lone Grønbæk Kronbak Marko Lindroos	*An Enforcement-Coalition Model: Fishermen and Authorities forming Coalitions*
51/03	Urs Steiner Brandt Gert Tinggaard Svendsen	*The Political Economy of Climate Change Policy in the EU: Auction and Grandfathering*
52/03	Tipparat Pongthanapanich	*Review of Mathematical Programming for Coastal Land Use Optimization*
53/04	Max Nielsen Frank Jensen Eva Roth	*A Cost-Benefit Analysis of a Public Labelling Scheme of Fish Quality*
54/04	Frank Jensen Niels Vestergaard	*Fisheries Management with Multiple Market Failures*
55/04	Lone Grønbæk Kronbak	*A Coalition Game of the Baltic Sea Cod Fishery*

56/04	Bodil Stilling Blichfeldt	*Approaches of Fast Moving Consumer Good Brand Manufacturers Product Development "Safe players" versus "Productors": Implications for Retailers' Management of Manufacturer Relations*
57/04	Svend Ole Madsen Ole Stegmann Mikkelsen	*Interactions between HQ and divisions in a MNC* *- Some consequences of IT implementation on organizing supply activities*
58/04	Urs Steiner Brandt Frank Jensen Lars Gårn Hansen Niels Vestergaard	*Ratcheting in Renewable Resources Contracting*
59/04	Pernille Eskerod Anna Lund Jepsen	*Voluntary Enrolment – A Viable Way of Staffing Projects?*
60/04	Finn Olesen	*Den prækeynesianske Malthus*
61/05	Ragnar Arnason Leif K. Sandal Stein Ivar Steinshamn Niels Vestergaard	*Actual versus Optimal Fisheries Policies: An Evaluation of the Cod Fishing Policies of Denmark, Iceland and Norway*
62/05	Bodil Stilling Blichfeldt Jesper Rank Andersen	*On Research in Action and Action in Research*
63/05	Urs Steiner Brandt	*Lobbyism and Climate Change in Fisheries: A Political Support Function Approach*
64/05	Tipparat Pongthanapanich	*An Optimal Corrective Tax for Thai Shrimp Farming*
65/05	Henning P. Jørgensen Kurt Hjort-Gregersen	*Socio-economic impact in a region in the southern part of Jutland by the establishment of a plant for processing of bio ethanol*
66/05	Tipparat Pongthanapanich	*Options and Tradeoffs in Krabi's Coastal Land Use*

67/06	Tipparat Pongthanapanich	*Optimal Coastal Land Use and Management in Krabi, Thailand: Compromise Programming Approach*
68/06	Anna Lund Jepsen Svend Ole Madsen	*Developing competences designed to create customer value*
69/06	Finn Olesen	*Værdifri samfundsvidenskab? - nogle refleksioner om økonomi*
70/06	Tipparat Pongthanapanich	*Toward Environmental Responsibility of Thai Shrimp Farming through a Voluntary Management Scheme*
71/06	Finn Olesen	*Rational Economic Man og Bounded Rationality – Nogle betragtninger over rationalitetsbegrebet i økonomisk teori*
72/06	Urs Steiner Brandt	*The Effect of Climate Change on the Probability of Conservation: Fisheries Regulation as a Policy Contest*
73/06	Urs Steiner Brandt Lone Grønbæk Kronbak	*Robustness of Sharing Rules under Climate Change. The Case of International Fisheries Agreements*
74/06	Finn Olesen	*Lange and his 1938-contribution – An early Keynesian*
75/07	Finn Olesen	*Kritisk realisme og post keynesianisme.*
76/07	Finn Olesen	*Aggregate Supply and Demand Analysis – A note on a 1963 Post Keynesian Macroeconomic textbook*
77/07	Finn Olesen	*Betydningen af Keynes' metodologi for aktuel makroøkonomisk forskning – En Ph.D. forelæsning*
78/08	Urs Steiner Brandt	*Håndtering af usikkerhed og betydningen af innovationer i klimaproblematikken: Med udgangspunkt i Stern rapporten*
79/08	Lone Grønbæk Kronbak Marko Lindroos	*On Species Preservation and Non-Cooperative Exploiters*

80/08	Urs Steiner Brandt	*What can facilitate cooperation: Fairness, ineaulity aversion, punishment, norms or trust?*
81/08	Finn Olesen	*Heterodoks skepsis – om matematisk formalisme i økonomi*
82/09	Oliver Budzinski Isabel Ruhmer	*Merger Simulation in Competition Policy: A Survey*
83/09	Oliver Budzinski	*An International Multilevel Competition Policy System*
84/09	Oliver Budzinski Jürgen-Peter Kretschmer	*Implications of Unprofitable Horizontal Mergers: A Positive External Effect Does Not Suffice To Clear A Merger!*
85/09	Oliver Budzinski Janina Satzer	*Sports Business and the Theory of Multisided Markets*
86/09	Lars Ravn-Jonsen	*Ecosystem Management – A Management View*
87/09	Lars Ravn-Jonsen	*A Size-Based Ecosystem Model*
88/09	Lars Ravn-Jonsen	*Intertemporal Choice of Marine Ecosystem Exploitation*
89/09	Lars Ravn-Jonsen	*The Stock Concept Applicability for the Economic Evaluation of Marine Ecosystem Exploitation*
90/09	Oliver Budzinski Jürgen-Peter Kretschmer	*Horizontal Mergers, Involuntary Unemployment, and Welfare*
91/09	Finn Olesen	*A Treatise on Money – et teorihistorisk case studie*
92/09	Jurijs Grizans	*Urban Issues and Solutions in the Context of Sustainable Development. A review of the literature*
93/09	Oliver Budzinski	*Modern Industrial Economics and Competition Policy: Open Problems and Possible limits*

94/09	Thanh Viet Nguyen	*Ecosystem-Based Fishery Management: A Critical Review of Concepts and Ecological Economic Models*
95/09	Finn Olesen	*History matters – om især den tyske historiske skole*
96/09	Nadine Lindstädt	*Multisided Media Markets: Applying the Theory of Multisided Markets to Media Markets*
97/09	Oliver Budzinski	*Europäische Medienmärkte: Wettbewerb, Meinungsvielfalt und kulturelle Vielfalt*
98/10	Niels Vestergaard Kristiana A. Stoyanova Claas Wagner	*Cost-Benefit Analysis of the Greenland Offshore Shrimp Fishery*
99/10	Oliver Budzinski Jurgen-Peter Kretschmer	Advertised Meeting-the-Competition Clauses: Collusion Instead of Price Discrimination