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Advertised meeting-the-competition clauses: collusion instead of price discrimination

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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.

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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, and Png and Hirshleifer 1987). 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.

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

According to Levy and Gerlowski (1991, pp. 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:

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

[1] See, e.g., Salop (1986), Belton (1987), Png and Hirshleifer (1987), Logan and Lutter (1989), Levy and Gerlowski (1991), Moorthy and Winter (2006).

[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.

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 $\left(p_2 - p_1 + t\right)/2t$ denoting firm 1's demand under full information (Tirole 2003, pp. 292-293).[3] According to the first-order condition with respect to firm 1's price, $\hat{p}_1 = \left(p_2 + t + c\right)\big/2 + t\left(1-\phi_2\right)\big/\phi_2$, 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:

$$\hat{p} = \left(t + c\right) + 2t\left(1-\phi\right)\big/\phi = c + t\left(2-\phi\right)\big/\phi\,. \tag{2}$$

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

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

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, p. 279):

$$p_M = v - t\,. \tag{4}$$

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 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, $D_1\left(p_1, p_2\right) = x = \left(p_2 - p_1 + t\right)\big/2t$ and $D_2\left(p_1, p_2\right) = 1 - x = \left(p_1 - p_2 + t\right)\big/2t$, 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 (PD). Without the mutual MCC it would be tempting to deviate

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

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

[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).

(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]

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 a 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.

[7] Although, Moorthy and Winter (2006, pp. 450-456) 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.

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