Meet-or-Release and Most-Favored-Customer Clauses with Price-Quantity Competition Yield Cournot Outcomes*

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Abstract

It is shown that, in a well-defined market environment where demand is such that market revenue is decreasing in price, if all firms compete simultaneously in prices and quantities, and offer sales contracts which combine the meet-or-release clause with a most-favored-customer clause, then the industry sub-game perfect equilibrium will coincide with the Cournot solution.

Keywords: Competition policy, facilitating practices, meet-or-release clause, most-favoured-customer clause

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1 Introduction

Competition policy has given little attention to implementation issues. This is essentially due to the objective of competition policy which is to impose "rules of the game" to each industry, so that it remains competitive, and then to sanction deviant conduct. The objective is not to substitute in each industry central planning for free decision-making by firms. This way of conceiving competition has triggered the critique that it is privileging competition *per se*, as an end in itself, over the promotion of economic efficiency (Jenny, 1993; d'Aspremont, Encaoua and Ponssard, 1994). This critique is vain, of course, in cases where the first fundamental theorem of welfare economics is applicable, that is, whenever the rules imposed to the industry ensure perfect competition and, by the same token, social efficiency. In many other cases, perfect competition cannot be obtained, and allowing for a few oligopolistic competitors may be in favor of efficiency (*e.g.* due to increasing returns). In those cases, the critique could also be refuted on the basis of a "second best" argument: public interest should be maximized while letting firms freely and non-cooperatively choose their strategies. Unfortunately, competition policy lacks the instruments to implement such a second best policy.

The general principle usually advocated in favor of such a concept of competition is that public authority should not intervene as long as firms have independent behaviour. However such a principle is very hard to implement and courts have to make the distinction between what should be and what can be sanctioned. For example, the Sherman Act, Section 1, prohibiting "contract, combination... or conspiracy in restraint of trade" is usually interpreted as prohibiting agreements among competitors and this interpretation is extended to "tacit agreements" by many courts. However it is also recognized that tacit agreements by their very nature are not easy to prove. This is true even if one adopts the extreme position that any supra-competitive price is a sufficient indication of agreement. Referring to Posner (2001), who endorses such a position, Hay (2005) tells us that "while Posner seems to believe that, in fact, courts will not recognize the concept of tacit agreement at all, he advocates using the label and condemning conduct even in circumstances that others would describe as pure oligopolistic interdependence" (Hay, 2005, fn 31). By pure oligopolistic interdependence is meant independent non-cooperative behaviour, implying that no agreement has taken place among firms and that the supra-competitive price resulted solely from the characteristics of the market (such as economies of scale) including the observed market structure.

The problem is that non-independent behaviour is very difficult to identify, and so courts have to use observable practices to infer such behaviour, somewhat in the same way as medical doctors uses symptoms to identify a disease. But, as symptoms may have different causes, observable practices may have different motives. One essential motive is to facilitate coordination of competitors' interdependent, but non-cooperative, actions: "facilitating practices" are observable actions of a specified type "taken by firms to make coordination easier or more effective without the need for an explicit agreement" (Hay, 2005, p. 13). Taking into account these facilitating practices in an operational way ago investigate the oligopolistic behaviour of firms in an industry. Each practice may not be unlawful by itself, but combined with others and in some contexts it may. Take, for example, the so called *most-favoured-customer* (MFC) clause in a sales contract, guaranteeing to the buyer that no other customer will be offered a lower price. This seems to comply with Articles 81 and 82 of the Rome Treaty as well as with the Clayton Act (as amended by the Robinson-Patman Act) condemning discrimination. It may be seen as good insurance offered to the buyer by the seller. Most courts would support it. It is included, for instance, in the "Fair Price Declaration" requested by the Canadian International Development Agency (a Canadian government agency which administers foreign aid programs in developing countries). However, in some cases it is known to be a way to stabilize (tacit) cooperative pricing (see Salop, 1986, and Cooper, 1986). The argument is that MF makes price decreases more costly to firms. In fact there are many other such clauses that can be viewed as "facilitating practices" in the sense that they facilitate oligopoly coordination. A class of examples is given by the various *meeting-competition clauses* (MCC), guaranteeing in some way or another a lowest price to the buyer with respect to competitors, the exact insurance given to the buyer varying with the exact formulation of the clause. This kind of clause is more difficult to defend using anti-trust law. If we look at the EU competition law, such clause may be seen to violate article 81 of EC Treaty as being a concerted practice to enforce a tacit price agreement (firms are less inclined to offer discounts) and as introducing price discrimination (if MFC is not added), or to violate article 82 by reinforcing a dominant position (if it exists) since cutovers are transmitting information about competitors' prices. But, these violations (when justified) are not easy to establish in courts. Moreover their consequences on competition and welfare are not clearly seen since they vary according to the specificities of the clauses and the industrial context. Before second-best competition policy can be put in place, more theoretical understanding of the taxonomy of all possible cases should be developed.

The following is an attempt to better understand the effect of combining MCC with MFC. This already has the advantage of eliminating price discrimination. But, can we say more, and under what conditions? It will be shown that, in some well-defined context, this combination is equivalent to Cournot competition. This result reinforces the robustness of previous results. In a model where firms compete in prices, Holt and Scheffman (1987) showed that the combination of these two clauses, plus the possibility for firms to announce price increases *ex ante* or to offer price discounts *ex post*, leads to equilibrium prices that are at or below Cournot prices. Madden (1998), adopting the two-stage model of Kreps and Scheinkman (1983), but allowing demand to be rationed via a whole class of rationing rules (between the efficient and the proportional rules), also obtains the Cournot outcome by restricting demand (as we do) and assuming that costs are sunk at the first stage. In our game both prices and quantities are chosen simultaneously by all firms at the first stage. At the second stage, firms adapt their decisions according to the contractual clauses.[1]

In the following section, the two clauses are precisely specified. Their consequences are derived in Section 3. We then conclude.

[1]In d'Aspremont, Dos Santos Ferreira and Gérard-Varet (1991a,b), the Cournot solution obtains as the equilibrium of a game in (listed) prices and quantities and where the market price is established through some manipulable "pricing scheme". Such a scheme may be viewed as a formal representation of coordination mechanisms as illustrated here by facilitating practices.

2 A game of price-quantity competition with the *meet-or-release* clause

We consider two firms ($i = 1, 2$) producing the same homogeneous good and facing a continuum of consumers represented by the interval $[0, 1]$. Total demand on the market is given by a decreasing function $D(P), P \in \mathbb{R}_{++}$. Each firm i is supposed to fix in advance the quantity q_i to produce, at a cost given by an increasing function $C_i(q_i), q_i \in \mathbb{R}_+$, and to decide on the unit price p_i it will charge. A firm contacted by some potential buyer will offer a sale contract that includes insurance protection against specific contingencies through two clauses.

(i) A *most-favoured-customer* (MFC) clause preventing price discrimination in case the contacted firm would offer a lower price to another customer, illustrated by the following quotation:

> "We certify that the prices charged are not in excess of the lowest price charged to anyone else, including our most favoured customer, for like quality and quantity of the products/services" (Fair Price Declaration requested from suppliers by the Canadian International Development Agency).

(ii) A *meet-or-release* (MOR) clause, guaranteeing the customer, to which a lower price has been offered by the competitor, that the contacted firm after being informed of this offer will either meet the lower price or release the customer from the contract. This clause is illustrated by the following quotation:

> "If Buyer is offered material of equal quality at a price lower than stated herein before this order is filled and furnishes satisfactory evidence of such lower price offer, Seller will either meet such price with respect to the quantity so offered or allow Buyer to purchase said material so offered, the amount so purchased to be deducted from the quantity specified herein" (Solvay Advanced Polymers L.L.C., Standard Procurement Terms and Conditions).

We assume that, in a first stage, consumers contact firms at random and that the larger a firm i (i.e. the larger q_i) the larger the proportion of consumers contacting firm i. More specifically, we suppose that the proportion of consumers contacting firm i is $q_i/(q_i + q_j)$ and that the contracted quantity is $\min\{q_i, [q_i/(q_i+q_j)]D(p_i)\}$. At a second stage, rationed consumers contact the other firm and prices become publicly known. The firm quoting the higher price, if any, has to decide whether to meet the lower price or to release its customers and, moreover, rationed consumers have to be served as much as possible given the capacity constraints q_i and q_j.

Consequently, the second stage profits of the firms, π_i and π_j, can be defined as follows. If the two firms set the same price $p_i = p_j = P$, then no meet-or-release decision has to be taken so that, for each i,

$$\pi_i(P, q_i, q_j) = P \min\{q_i, \max\{[q_i/(q_i + q_j)]D(P), D(P) - q_j\}\} - C_i(q_i).$$

Notice however that either $q_i \leq [q_i/(q_i + q_j)]D(P) \leq D(P) - q_j$, or $q_i > [q_i/(q_i + q_j)]D(P) > D(P) - q_j$, so that $\pi_i(P, q_i, q_j)$ may be more simply expressed as

$$\pi_i(P, q_i, q_j) = P q_i \min\{1, D(P)/(q_i + q_j)\} - C_i(q_i).$$

If the two firms set different prices, then the profit functions will vary according to the decision of the firm with a higher price to meet price $P = \min\{p_1, p_2\}$ or to release *all* its customers (by the MFC clause). If it meets, we obtain again the former expression for the profit function of each firm i. If it releases its customers, we get instead, with $p_i < p_j$ and assuming *efficient* (or parallel) rationing:[2]

$$\begin{aligned} \pi_i^-(p_i, q_i) &= p_i \min\{q_i, D(p_i)\} - C_i(q_i), \text{ and} \\ \pi_j^+(p_j, q_i, q_j) &= p_j \min\{q_j, \max\{0, D(p_j) - q_i\}\} - C_j(q_j). \end{aligned}$$

[2]This is the rationing rule adopted by Kreps and Scheinkman (1983). Davidson and Deneckere (1986) have shown that *random* (or proportional) rationing, entailing the contingent demand $[D(p_i) - q_i)/D(p_i)]D(p_j)$ for firm j, or in fact any intermediate rationing scheme between random and efficient rationing would induce upward price deviations from the Cournot level. Their result does however not apply if market revenue is decreasing in price *and* if costs are sunk at a stage prior to the pricing decision (see Madden, 1998). Here, we shall adopt the former assumption (contrary to Davidson and Deneckere), but not the latter.

We thus define a non-cooperative two-stage game with the two firms as players, price-quantity pairs (resp. the decision to meet or to release) as first (resp. second) stage strategies, and the above profit functions as payoffs. Our objective is to look at the set of sub-game perfect Nash equilibria of this game, and in particular to compare it with the set of *Cournot solutions*, namely the quantity pairs (q_1^C, q_2^C) such that, for $i, j = 1, 2$, $i \neq j$,

$$D^{-1}(q_i^C + q_j^C)q_i^C - C_i(q_i^C) \geq D^{-1}(q_i + q_j^C)q_i - C_i(q_i), \text{ for any } q_i.$$

3 Equivalence with Cournot competition

As a first step in this comparison, we show that the set of Cournot outcomes is included in the set of equilibrium outcomes of our game.

Proposition 1 *Under the assumption that the market revenue $PD(P)$ is decreasing in P, a Cournot outcome (P^C, q_1^C, q_2^C), with $P^C = D^{-1}(q_i^C + q_j^C)$, is always enforceable as a sub-game perfect equilibrium $((P^C, q_1^C), (P^C, q_2^C))$ of our game.*

Proof: Take a Cournot outcome (P^C, q_1^C, q_2^C), and suppose that there is, for some firm i, a profitable deviation (p_i, q_i) from profile $((P^C, q_1^C), (P^C, q_2^C))$, with $p_i \leq P^C$ and such that firm j is induced *to meet* the price p_i:

$$P^C q_i^C - C_i(q_i^C) < p_i q_i \min\{1, D(p_i)/(q_i + q_j^C)\} - C_i(q_i).$$

By definition of Cournot equilibrium, $D^{-1}(q_i + q_j^C)q_i - C_i(q_i) \leq P^C q_i^C - C_i(q_i^C)$, so that

$$D^{-1}(q_i + q_j^C) < p_i \min\{1, D(p_i)/(q_i + q_j^C)\}.$$

If $q_i + q_j^C \leq D(p_i)$, then $D^{-1}(q_i + q_j^C) < p_i$, that is, $q_i > D(p_i) - q_j^C$, and we get a contradiction. Hence, $D(p_i) < q_i + q_j^C$, implying $D^{-1}(q_i + q_j^C)(q_i + q_j^C) < p_i D(p_i)$ by the deviation hypothesis. But, as $PD(P)$ is decreasing in P, $p_i < D^{-1}(q_i + q_j^C)$, that is, $q_i < D(p_i) - q_j^C$, and we get again a contradiction.

Now, suppose that there is a profitable deviation (p_i, q_i), with $p_i < P^C$, but such that firm j is induced *not to meet* the price p_i:

$$P^C q_i^C - C_i(q_i^C) < p_i \min\{q_i, D(p_i)\} - C_i(q_i).$$

Using the definition of Cournot equilibrium as before, we get:

$$D^{-1}(q_i + q_j^C)q_i < p_i \min\{q_i, D(p_i)\}.$$

If $q_i \geq D(p_i)$, firm j revenue is nil, whereas it would be $p_i q_j^C D(p_i)/(q_i + q_j^C) > 0$ should price p_i be matched. Hence, $q_i < D(p_i)$ and the deviation hypothesis reads $D^{-1}(q_i + q_j^C) < p_i$, that is, $q_i + q_j^C > D(p_i)$. By the no-meeting condition (requiring in particular $q_i < D(P^C)$), we then have

$$p_i D(p_i)[q_j^C/(q_i + q_j^C)] \leq P^C D(P^C)[1 - q_i/D(P^C)].$$

Since $p_i D(p_i) \geq P^C D(P^C)$ (by the assumption that the market revenue is decreasing in P), we get $q_j^C/(q_i + q_j^C) \leq 1 - q_i/D(P^C)$, so that $q_i + q_j^C \leq D(P^C) \leq D(p_i)$, a contradiction.

Finally, suppose that there is a profitable deviation (p_i, q_i), with $p_i > P^C$. Of course, firm i is supposed to prefer not to match P^C at the second stage, otherwise it might as well set this price at the first stage, so that

$$P^C q_i^C - C_i(q_i^C) < p_i \min\{q_i, D(p_i) - q_j^C\} - C_i(q_i).$$

Since the profit of firm i is increasing in p_i for $q_i < D(p_i) - q_j^C$, and decreasing in q_i for $q_i > D(p_i) - q_j^C$, we may take WLOG $q_i = D(p_i) - q_j^C$, that is, $p_i = D^{-1}(q_i + q_j^C)$, leading to a contradiction with respect to the definition of Cournot equilibrium. This completes the proof.

$\blacksquare$

The second step consists in showing that any sub-game perfect equilibrium of our game yields a Cournot outcome.

Proposition 2 *Under the assumption that the market revenue $PD(P)$ is decreasing in P, any sub-game perfect equilibrium $((p_1^*, q_1^*), (p_2^*, q_2^*))$ of our game is such that (q_1^*, q_2^*) is a Cournot* *solution and that* $\min\{p_1^*, p_2^*\} = D^{-1}(q_1^* + q_2^*)$*, with firm* j *deciding to match* p_i^* *at the second stage if* $p_i^* < p_j^*$.

Proof: Take a sub-game perfect equilibrium $((p_1^*, q_1^*), (p_2^*, q_2^*))$, and suppose $P^* < D^{-1}(q_1^* + q_2^*)$, that is, $q_1^* + q_2^* < D(P^*)$. If $P^* = p_i^* < p_j^*$, the profit of firm i is $p_i q_i^* - C_i(q_i^*)$ for $p_i \in [P^*, \min\{p_j^*, D^{-1}(q_i^* + q_j^*)\}]$ and might consequently be increased by setting a price higher than P^*. If $P^* = p_i^* = p_j^*$, anyone of the two firms, say firm j, might also increase its profit, $p_j q_j^* - C_j(q_j^*)$ for $p_j \in [P^*, D^{-1}(q_i^* + q_j^*)]$, by setting a price higher than P^* and deciding not to meet this price at the second stage. Suppose $D^{-1}(q_1^* + q_2^*) < P^* = p_i^* \leq p_j^*$, implying $q_1^* + q_2^* > D(P^*)$. If $p_i^* = p_j^*$, or else if firm j meets the price P^* at equilibrium, the profit of firm i is $P^* D(P^*)[q_i^*/(q_i^* + q_j^*)] - C_i(q_i^*)$, a value that might be increased through a decrease in price p_i (since the market revenue is decreasing in P). Also, if $p_i^* < p_j^*$, by not meeting the price P^* (at equilibrium), firm j gets a profit $p_j^* \max\{0, D(p_j^*) - q_i^*\} - C_j(q_j^*)$, a value that might be increased through a decrease in quantity q_j. In all these cases, the assumption that $((p_1^*, q_1^*), (p_2^*, q_2^*))$ is an equilibrium is contradicted, so that we may conclude that $P^* = \min\{p_1^*, p_2^*\} = D^{-1}(q_1^* + q_2^*)$.

Now suppose that (q_1^*, q_2^*) is not a Cournot solution. In other words, suppose that there is a profitable quantity deviation q_i, for some firm i:

$$P^* q_i^* - C_i(q_i^*) = D^{-1}(q_i^* + q_j^*) q_i^* - C_i(q_i^*) < D^{-1}(q_i + q_j^*) q_i - C_i(q_i).$$

Firm i can then fix the quantity q_i and set the corresponding price $p_i = D^{-1}(q_i + q_j^*)$ to get the profit $p_i q_i - C_i(q_i)$. This is true whether $D^{-1}(q_i + q_j^*) > p_j^*$ (firm i then releasing its customers at the second stage) or $D^{-1}(q_i + q_j^*) \leq p_j^*$ (independently of firm j decision at the second stage). Thus, we directly obtain a contradiction to the assumption that $((p_1^*, q_1^*), (p_2^*, q_2^*))$ is an equilibrium if $p_i^* = P^* \leq p_j^*$. If $p_i^* > P^* = p_j^*$, that is, $q_i^* + q_j^* > D(p_i^*)$, firm i profit before the deviation, if it decides to release its customers, is (since the market revenue is decreasing in P):

$$p_i^* D(p_i^*)[\max\{0, 1 - q_j^*/D(p_i^*)\}] - C_i(q_i^*) < P^* q_i^* - C_i(q_i^*),$$

and we get again a contradiction. If, on the contrary, firm i decides to meet the price P^*, its profit before the deviation is $P^* q_i^* - C_i(q_i^*)$, so that we obtain the same result.

It remains to show that firm j prefers to meet price $p^i = P^* = D^{-1}(q_1^* + q_2^*)$ (where (q_1^*, q_2^*) is a Cournot solution) whenever $p_j^* > P^*$. Indeed, by switching its second stage decision from "release" to "meet", firm j would increase its profit by

$$\begin{aligned} & P^*[D(P^*) - q_i^*] - p_j^* D(p_j^*)[\max\{0, 1 - q_i^*/D(p_j^*)\}] \\ = \quad & \min\{P^* q_j^*, P^* D(P^*) - p_j^* D(p_j^*) + (p_j^* - P^*) q_i^*\}, \end{aligned}$$

a positive value under the assumption on the market revenue. The proof is now complete. ■

4 Conclusion

By referring to a duopoly example, we have shown that, in a well-defined market environment where demand is such that market revenue is a decreasing function of market price, if firms compete simultaneously in prices and quantities while offering sales contracts which combine the meet-or-release clause with a most-favoured-customer clause, then the industry sub-game perfect equilibrium will coincide with the Cournot solution. Hence, in such a context, from the point of view of the anti-trust authority, allowing firms to resort to such "facilitating practices", amounts to allow coordinated behaviour of the Cournot type and entails the same consequences for the consumers and for general welfare.

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