Industrial Organization – Final Exam

MASTER IREN (2013)

Marc Bourreau

Documents and calculators are prohibited. The points for each exercise are given for information only and are subject to change. An important part of the grading will be devoted to the quality of writing and to the quality of explanations.

You will find below three small case studies and three independent exercises.

***

Case 1: Eurotunnel *(3 points)*

The European Commission is concerned that the access prices charged by Eurotunnel to rail companies are too high (see article in annex).

a) Comment on this passage: “"The Channel Tunnel is not used at full capacity due to excessive pricing", said the Commissioner for Transport, Siim Kallas Estonian. For Brussels, too high access prices limit competition and penalize customers. "Passengers must pay a high price for their tickets," lamented Mr Kallas."” What economic effects are potentially at work here?

b) Comment on the passage: “"These arguments are completely rejected by Eurotunnel, with the strong support of both States. "The costs are identified, justified, and the access charges are set according to the Law, stated the Ministry of Transport. As required by European rules, access charges reflect both operating costs and amortization of investments."” How can you reconcile (with appropriate economic arguments) the position defended by Eurotunnel (and the States) and the position of the European Commission (summarized in the quote from the first question)?

c) According to economic theory, what would be the optimal regulation of prices for access to the Channel Tunnel? Which potential problems can such an optimal regulation raise?

Case 2: Cartel in the sector of the distribution of chemical products *(4 points)*

On 29 May 2013, the French Competition Authority issued a decision imposing sanctions for a total of 79 million euros to punish a collusive agreement between the companies Brenntag Caldic East, Univar and Solvadis that are distributors of chemical products. The companies, totaling more than 80% market share in the distribution of "chemical commodities" in France, had established an agreement to restrict competition by allocating customers and by coordinating on prices.

a) What is approximately the C4 in this market? What does the C4 measure? For what purpose is it used?

b) In its press release, the Authority states that it "has been informed of the existence of the cartel by the company Solvadis who availed of the leniency program." What is a leniency program? For what purpose is this type of procedure used?

c) The Authority notes that "the representatives of the companies Solvadis, Brenntag and Univar and Caldic met secretly and regularly in hotels or restaurants or exchanged information by telephone, sometimes on dedicated lines in order to avoid any trace of these communications." Why did these companies take such precautions?

d) The Authority explained that among the companies involved, "the implementation of the agreement was closely monitored to ensure that no participant deviated from the rules. Audits of customers could be performed as well as reminders of the rules of the operating mode of the agreement." What was the objective of this monitoring?

e) In its decision, the Authority explained that the "chemical commodities" are "basic raw materials, with a fixed composition, most often sold in large volumes, with moderate unit margins, mainly from the mineral chemistry and petrochemicals, that they are used in industry and services sectors and that their production involves heavy investments and high logistics costs for retailers." According to this definition, do you think that certain features of this market are conducive to collusion?

Case 3: Sale of food for dogs and cats in the specialized distribution *(3 points)*

On March 20, 2012, the Competition Authority issued a decision sanctioning three leading companies in the sector of food for cats and dogs (namely, Nestle Purina Petcare France, Royal Canin and Hill's Pet Nutrition SNC) for having restricted competition in the markets for the sale of dry food for dogs and cats in the specialized distribution between 2004 and 2008.

a) Define what is a vertical restraint.

b) The three companies (Nestle Purina Petcare France and Royal Canin) sell their products to independent wholesale distributors, who then sell to specialized retailers like BHV, Leroy Merlin, Truffaut, etc. The price that specialized retailers had to pay for products of animal feed were negotiated directly between the manufacturers (Nestle Purina, etc.) and these retailers, while the retailers bought their products from (and thus paid to) wholesalers who are supplied by the manufacturers. Under this mechanism, wholesalers were not free to set their prices: the price negotiated at the national level by a given retailer (e.g., Leroy Merlin or Truffaut) was the one charged to it by the wholesalers. What type of vertical restraint corresponds to this pricing mechanism? Is it a legal restriction in Europe? What about in the United States?

c) When presenting the sanctions, the Authority said it "appreciated the extent of damages to the economy. The various agreements implemented focused on products "involving an emotional investment on the part of end users, and that consumers' brand loyalty made them vulnerable." In addition, the demand for these products is relatively inelastic to prices, given the consumer loyalty to brands." Explain why the price elasticity of demand can affect the damage to the economy of practices that aim at increasing prices?

***

Exercise 1: Entry costs and market structure *(3 points)*

We consider a market with the demand function Q = 100 (4 - p). Each firm operating in this market has the same cost function C (q) = 10 +2 q, where q is the quantity produced by the firm. It is assumed that firms compete à la Cournot.

a) It is assumed that N firms are on the market. Compute the quantity and price in the market equilibrium, and the equilibrium profit for a given firm.

b) Using the previous result, compute the number of firms in the free-entry market equilibrium.

c) If firms were competing à la Bertrand, what would be the equilibrium price? What would then be the number of firms in the free-entry market equilibrium?

Exercise 2: the 2/3 rule *(4 points)*

We consider a market with demand q = a - bp, where q is the quantity, p the price, and a and b are positive parameters. There is only one firm operating in this market, with a constant marginal cost c.

a) How does this type of market called? What kind of market characteristics can lead to such market structure?

b) Compute the equilibrium price and quantity.

c) Draw a figure that represents the demand function. On this figure, put the equilibrium price and quantity and the marginal cost. Finally, represent the areas that correspond to the firm's profit, consumer surplus and to the deadweight loss.

d) Compute the firm's profit in equilibrium as well as the consumer surplus. From this, deduce the total surplus (welfare). Show that consumers obtain 1/3 of the total surplus and the firm 2/3.

Exercise 3: Collusion, probability of detection and optimal fine *(3 points)*

Consider two firms that sell identical goods (perfect substitutes) and are Bertrand competitors (and play a repeated game with infinite horizon and discrete time). We denote the monopoly profit by π^m and the discount factor by δ.

a) Determine the limit discount factor beyond which firms can sustain a cartel.

b) Assume that at each date t, the cartel is discovered by the Competition Authority with a probability α (between 0 and 1). When the cartel is discovered, it is assumed that firms play the equilibrium of the Bertrand competition game but they do not pay a fine. Compute the limit discount factor as a function of α.

c) Assume that the Competition Authority imposes a fine f to the two firms when she discovers the agreement. Determine the minimum fine that discourages the collusive agreement.

***

Annex: "Eurotunnel : Paris et Londres ne veulent pas faire baisser les tarifs", *Le Monde*, Sept. 2013. (my own (quick) translation)

No reason to force Eurotunnel to lower the access charge it collects for passing trains in the Channel Tunnel. The tariffs in question are neither opaque nor too high, contrary to what the Commission claims. This is the view that France and Britain will defend at the European Commission. In June, the Commission sent to France and the United Kingdom a position, ordering them to lower the access price charged by Eurotunnel to rail companies. Brussels says the access prices do not reflect the costs incurred. "The Channel Tunnel is not used at full capacity due to the excessive pricing", said the Commissioner for Transport, Siim Kallas Estonian.

For Brussels, too high access prices limit competition and penalize customers. "Passengers pay a high price for their tickets," lamented Mr Kallas. And despite the liberalization of the market in January 2010, a single operator, Eurostar, circulates passenger trains in the tunnel, the Commission observes. The situation is similar for the transport of goods. Several rail freight companies certainly use the tunnel. But only six freight trains use it on average each day. Because access prices are too high, "a larger volume of goods are transported by road," lamented Mr Kallas.

To stimulate competition, the Commission requests a lower access price and that the agreement that allocates capacity to some specific companies, such as SNCF, for sixty-five years be questioned. These arguments are rejected by Eurotunnel, with the strong support of both States. "The costs are identified, justified, and the access prices are set according to the Law, stated the Ministry of Transport. As requested by European rules, access prices reflect both operating costs and amortization of investments." For Jacques Gounon, the Eurotunnel CEO, the argument of the European Commission is very weak. "We asked Freshfields and PwC to study our accounts, he said Friday, Sept. 27 at a press conference. Their analysis shows that the level of access prices is actually not high enough to cover our construction costs. If we wanted to ensure that investors that have financed the tunnel obtain the profitability that was initially planned, it would be necessary not to decrease, but to increase access prices for passengers by 316%!" [...]