

Industrial Organization – Final Exam

MASTER IREN (2014)

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Documents, laptops, smartphones 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 two case studies, two questions about the course, and three independent exercises.

Case 1: Practices from the company Kalivia in the sector of optics and glasses (4 points)

Established in June 2010 for two and half years, the opticians network Kalivia was a partnership between Malakoff Mederic and Harmony Mutual Union. During the term of the partnership, the network had about 2,300 opticians who committed to a certain price moderation and to some rules for services and products provided to the consumers of the network. In particular, Kalivia conducted a selection of suppliers whose products would be referenced and could be sold to end consumers.

In June 2010, the union of opticians (SynOpE) filed a complaint to the Competition Authority for practices undertaken by the company Kalivia in the sector of optics and glasses; it was later joined by two other companies in 2011.

- a) In its decision, the competition authority (l’Autorité de la concurrence) start its discussion of the case by an analysis of the “relevant markets” that should be considered in the present case. Why?
- b) The competition authority identifies three relevant markets: a market for the provision of health insurance services (market 1); a market for the supply of optical products and glasses (market 2); finally, a market for the distribution of optical products and glasses (market 3). What is the difference between market 2 and market 3? For market 2, the competition authority notes: *“There is some evidence of a national rather than supranational dimension, such as the lack of homogeneity of the market shares of suppliers from one country to another and the low share of imports. In addition, manufacturers located abroad may face certain obstacles if they want to increase their sales on competitive terms in France. Indeed, ophthalmic lenses are considered in France as medical devices and are subject to strict standards; the need for a legal entity in the country to be able to market such products may constitute a barrier to entry for players located abroad; the time between ordering and receiving glasses by the optician must also be minimal, requiring the establishment of a strong and well*

structured distribution network in the territory; finally, opticians located in France continue to contract with operators established in France for reasons related to the requirements of delivery and quality monitoring.” Comment.

- c) For market 2, the competition authority provides “tableau n°3” below. What is approximately the C4 in this market? What does the C4 measure? For what purpose is it used? Do you know of any alternative measure to the C4, and if yes, which one? Could you calculate this alternative measure in the present case? Finally, the “tableau n°4” below gives Kalivia’s market share on market 3. What do you observe?
- d) At the end of the day, the competition authority writes that the use by Kalivia of imprecise and complex selection criteria could lead to discriminatory practices in the choice of suppliers. However, the authority concludes by stating that “these practices have had no anticompetitive objective or effect”. According to you, why does the authority reach this conclusion?

Tableau n° 3 : Parts de marché des fournisseurs de verres ophtalmiques en 2011 (selon le SynOpE)

Fournisseur	Part de marché (en valeur)
Essilor*	39,47 %
BBGR (groupe Essilor)*	16,32 %
Carl Zeiss Vision*	10,66 %
Hoya*	8,99 %
Novacel (groupe Essilor)*	6,16 %
Codir	5,29 %
Rodenstock*	3,30 %
Mega Optic**	2,57 %
Shamir (groupe Essilor)**	2,06 %
Novisia (groupe Essilor)*	1,94 %
Simop	0,79 %
Optiswiss	0,69 %
Essor	0,62 %
Laboratoire Verbal	0,46 %
Seiko*	0,40 %
Mont Royal (groupe Essilor)**	0,13 %
Ophtalmic	0,13 %

Tableau n° 4 : Part de marché de Kalivia en volumes de verres vendus (estimation)

	2010		2011	
	Nombre d'unités	Part de marché	Nombre d'unités	Part de marché
Total Malakoff-Médéric dans Kalivia	74 180	0,3 %	188 722	[0,7 %, 0,8 %]
Total Union Harmonie Mutuelles dans Kalivia	na ⁸⁰		694 761	[2,5 %, 3%]
Total Kalivia	74 180	0,3 %	883 483	[3,2 %, 3,8 %]
Marché français	[23 000 000, 28 300 000]	100 %	[23 000 000, 28 300 000]	100 %

Source : Autorité de la concurrence : tableau réalisé sur la base de : pour les volumes de vente au sein du réseau : déclarations des OCAM associés⁸¹, pour l'estimation de la taille globale du marché : la fourchette retenue correspond, pour le niveau plancher, à l'estimation fournie par Optiswiss⁸² et, pour le niveau plafond, à l'estimation de l'institut GfK⁸³ (dont Optiswiss estime qu'elle gonfle le volume réel du marché⁸⁴).

Case 2: The cartel of detergents (4 points)

On December 8, 2011, the competition authority in France issued a decision in which it sanctions an agreement between the four main manufacturers of detergents in France (Unilever, Procter & Gamble, Henkel and Colgate Palmolive). According to the Authority, the "cartel of detergents" lasted from 1997 to 2004 and covered all ranges of the major brands of detergent sold in France such as Ariel, Skip, The Cat, Dash, Omo, Super Cross, Gama, Parsley and X Tra.

- The competition authority writes that « the sales managers of the French subsidiaries used to meet three to four times a year to agree on prices and promotions they would then offer to supermarkets. Hotels in Paris and restaurants from the western suburbs of Paris (Marne-la-Coquette and Louveciennes) hosted these meetings, during which price charts were exchanged. On some of these charts, the Authority noted that the participants in the cartel were using a code name: "Hugues" for Henkel, "Pierre" for P & G, "Laurence" or "Louis" for Lever (Unilever) and "Christian" for Colgate. These meetings were kept secret and were identified by some participants as "store checks". The CEO of the French subsidiaries of these companies would also intervene in case the negotiations stumbled or if the agreed pact was not respected.» Comment. What does it show?
- “Tableau 1” below, from the competition authority’s decision, gives the market shares of the main players for the period 1996-2006. What can you infer from this table?
- Discussions between the cartel members concerned in particular the price differences between the different brands within each segment (see the table below). Why did the firms collude on "price differences"? The cartel members coordinated also strongly on their marketing strategies (i.e., advertising expenses, promotions, etc.). Why?

Tableau : les écarts de prix convenus entre les marques de lessive

		Unilever	Henkel	Procter & Gamble	Colgate Palmolive	Accord sur les prix mis en place
lessives standards	Haut de gamme	Skip	Le Chat	Ariel Mr Propre* Vizir		Ariel + 3% plus cher vs Skip et le Chat (alignés)
	Milieu de gamme	Omo	Super Croix	Dash	[Axion jusqu'en 2003]**	Dash +10% plus cher vs Omo, Super Croix et Axion (alignés)
	Bas de gamme	Persil	X Tra	Gama Bonux	[Gama jusqu'en 2003]**	Alignement de toutes les marques

*La marque Mr Propre lessive a été lancée fin 2004 et arrêtée courant 2006.

** Colgate Palmolive a cédé ses actifs lessives en France à Procter & Gamble fin 2003.

d) In the end, the sanctions were the following:

- Unilever: 0
- Henkel: 92.3 million euros
- Procter & Gamble: 240.24 million euros
- Colgate Palmolive: 35.4 million euros

In your opinion, why is the fine for Unilever equal to 0? Explain.

Questions about the course (2 points)

QC1: What is the “Bertrand paradox”? How can one “escape” this paradox?

QC2: What does “informative advertising” mean? What does “persuasive advertising” mean?

Exercise 1: Coca-Cola and the outside temperature (3 points)

Coca-Cola has decided to launch new can distributors that allow to adjust the sales price depending on the outside temperature. By conducting market research, Coca-Cola has determined that on hot days, when it’s over 25° C, the demand for cans of Coca-Cola is $Q = 300 - 2P$ and on cold days (when it is less than 25° C), it is $Q = 200 - 2P$. The marginal production cost is 20 cents per can.

- a) What price should Coca-Cola charge on hot days? On cold days?
- b) It is assumed that half of the days are “hot” and the other half are “cold”. If Coca-Cola uses traditional machines, which do not allow to change the price according to the outside temperature, what price should Coca-Cola charge for cans?
- c) Compare the profit of Coca-Cola with can machines that allow to adjust the price according to the outside temperature and with traditional machines. What do you observe? Explain.

Exercise 2: Volvo and car sales (4 points)

We assume that a car dealer has a local monopoly for the sale of Volvo cars. The dealer pays a price w for each Volvo car that it sells, at price p , to final consumers. The demand function that the dealer faces is given by $Q = 30 - p$, where p is price in euros. The marginal cost of distribution for the dealer is assumed to be 0.

- a) What price should the car dealer set to maximize its profit? Given this price, how many Volvo cars the dealer will sell? What will be its profit?
- b) We now consider the strategy of Volvo. If Volvo charges w to the dealer for each car, what is the demand faced by Volvo? Assume further that it costs €5000 to Volvo to produce a car. What is the price w that maximizes the profit of Volvo? What is the profit of Volvo for this price? Given the optimal wholesale price w for Volvo, what is the price p chosen by the dealer? What is the profit of the dealer?
- c) Assume now that Volvo manages the distribution channel and therefore sells its cars directly to final consumers. What selling price p maximizes the profit of Volvo in this case? Compare Volvo’s profit in this case with the profits of the car dealer and of Volvo in question b). Explain why they differ.

Exercise 3: Hotelling competition and quality of service (3 points)

In this problem, we study a model of horizontal differentiation “à la Hotelling,” with two firms with asymmetric marginal costs. We consider a segment $[0,1]$ of differentiation, and we assume that one firm (firm 1) is positioned at the left end side of the segment (at 0) while the other firm (firm 2) is positioned at the right end side of the segment (at 1). The positions of the two firms are fixed.

A mass 1 of consumers is distributed uniformly on the segment $[0,1]$. Consumers bear a linear transportation cost when they do not purchase their preferred variety: if a consumer buys a variety at a distance d from its ideal variety, its transportation cost is $t d$.

Firms 1 and 2 offer goods with potentially different qualities; we denote by v_1 the quality of the good offered by firm 1 and by v_2 the quality of the good offered by firm 2. We assume

that v_1 and v_2 do not differ too much, so that each firm has a positive market share in equilibrium. Quality enters the consumer utility function as follows. For example, a consumer located at distance x from firm 1 and at distance $1-x$ from firm 2 obtains utility $v_1 - tx - p_1$ if s/he purchases the good from firm 1 at price p_1 and utility $v_2 - t(1-x) - p_2$ if s/he purchases the good from firm 2 at price p_2 .

We assume finally that the two firms have a marginal production cost of 0.

- a) To begin with, we study a one-stage game of price competition (with simultaneous price choices). Compute the reaction functions $p_1=R_1(p_2)$ and $p_2=R_2(p_1)$. From these reaction functions, infer the Nash equilibrium and give the expressions of equilibrium prices, $p_i(v_i, v_j)$. Finally, give the expression of equilibrium profits, $\Pi_i(v_i, v_j)$.
- b) We now modify the game as follows. Assume that in a first stage, firms simultaneously choose their levels of quality, and that the choice of a level of quality v leads to an investment cost of $\varphi(v)$ with $\varphi'(v) > 0$ and $\varphi''(v) < 0$. Show that as in the Hotelling game with endogenous location choices, this investment game gives rise to a direct effect and a strategic effect. Explain what these two effects represent.