CANAL SATELLITE

Monopoly Practices and Competitive Behaviour in the French Satellite Pay-TV Market

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CEPR Discussion Paper #4174

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TPS

Motivations

- As a result of technological progress in digital broadcasting industry there is a substantial decrease in prices and/or increase in quality of pay-TV services.
- To what extent such changes can be attributed to competition?
- To answer this question we compare the French competitive (pay-TV) market with the British monopolistic (pay-TV) industry.
- Before the comparison we analyse the nature of interactions between (rival) firms in the French pay-TV market.

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Why France?

- The French SPTV market was characterized by a monopoly till 1997 but since then there are three firms competing together.
- Availability of monthly data that "allows" structural econometric estimations.
- The French competitive situation can be compared with the British or Italian monopolistic cases.

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Related literature

- Theory
  - Armstrong (1999)
  - Harbord and Ottaviani (2002)
  - Nilssen and Sorgard (2000)
  - Anderson and Coate (2002)
  - Spence and Owen (1977)
- Empirical
  - Waterman and Weiss (1996)
  - Chipty (2001)
  - Golsbee and Petrin (2004)

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Relevant market

- Satellite Pay-TV market vs. Cable TV, Terrestrial (or Air-to-Air TV) and ADSL.
- EU Antitrust authorities have identified the Pay TV market as a separate one from the free access TV market.
- Barabes and Encaoua (2002): same conclusion for France.
- Subscription rates in 2002 in France: 35% for Cable Pay TV vs. 65% for Satellite Pay TV.

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Data

- Monthly data collected from TeleSatellite magazine.
- Variables:
  - Micro: net subscription prices, number of subscribers, advertising effort, number of channels, and
  - Macroeconomic variables affecting demand: industrial production index, the number of unemployed, and seasonal dummies.
- Limits and advantages of the data.

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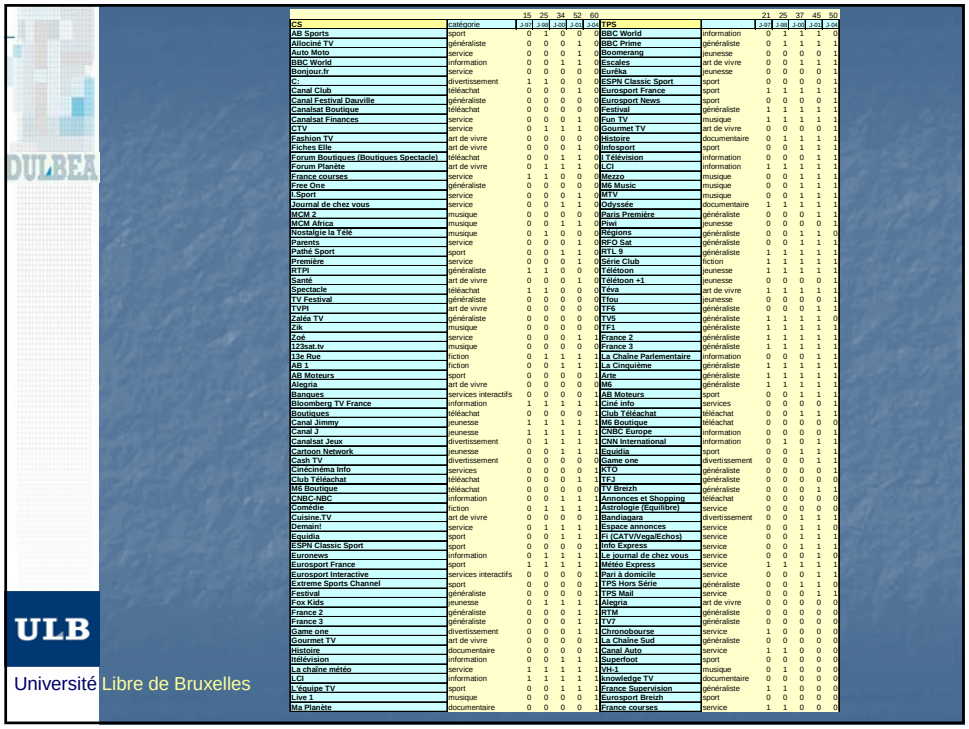

		15	25	34	52	60			21	25	37	45	50
CS	catégorie	3.97	3.98	3.99	3.01	3.99	TPS		3.97	3.98	3.99	3.01	3.99
AB Sports	sport	0	1	0	0	0	BBC World	information	0	1	1	1	0
Allociné TV	généraliste	0	0	0	1	0	BBC Prime	généraliste	0	1	1	1	1
Auto Moto	service	0	0	0	1	0	Boomerang	jeunesse	0	0	0	0	1
BBC World	information	0	0	1	1	0	Escales	art de vivre	0	0	1	1	1
Bonjour.fr	service	0	0	0	0	0	Eurêka	jeunesse	0	0	0	0	1
C-	divertissement	1	1	0	0	0	ESPN Classic Sport	sport	0	0	0	0	1
Canal Club	téléachat	0	0	0	1	0	Eurosport France	sport	1	1	1	1	1
Canal Festival Dauville	généraliste	0	0	0	0	0	Eurosport News	sport	0	0	0	0	1
Canalsat Boutique	téléachat	0	0	0	0	0	Festival	généraliste	1	1	1	1	1
Canalsat Finances	service	0	0	0	1	0	Fun TV	musique	1	1	1	1	1
CTV	service	0	1	1	1	0	Gourmet TV	art de vivre	0	0	0	0	1
Fashion TV	art de vivre	0	0	0	0	0	Histoire	documentaire	0	1	1	1	1
Fiches Elle	art de vivre	0	0	0	1	0	Infosport	sport	0	0	1	1	1
Forum Boutiques (Boutiques Spectacle)	téléachat	0	0	1	1	0	I Télévision	information	0	0	0	1	1
Forum Planète	art de vivre	0	1	1	1	0	LCI	information	1	1	1	1	1
France courses	service	1	1	0	0	0	Mezzo	musique	0	0	1	1	1
Free One	généraliste	0	0	0	0	0	M6 Music	musique	0	0	1	1	1
I.Sport	service	0	0	0	1	0	MTV	musique	0	0	1	1	1
Journal de chez vous	service	0	0	1	1	0	Odyssée	documentaire	1	1	1	1	1
MCM 2	musique	0	0	0	0	0	Paris Première	généraliste	0	0	0	1	1
MCM Africa	musique	0	0	1	1	0	Piwi	jeunesse	0	0	0	0	1
Nostalgie la Télé	musique	0	1	0	0	0	Régions	généraliste	0	0	1	1	0
Parents	service	0	0	0	1	0	RFO Sat	généraliste	0	0	1	1	1
Pathé Sport	sport	0	0	1	1	0	RTL 9	généraliste	1	1	1	1	1
Première	service	0	0	0	1	0	Série Club	fiction	1	1	1	1	1
RTPI	généraliste	1	1	0	0	0	Télétoon	jeunesse	1	1	1	1	1
Santé	art de vivre	0	0	0	1	0	Télétoon +1	jeunesse	0	0	0	0	1
Spectacle	téléachat	1	1	0	0	0	Téva	art de vivre	1	1	1	1	1
TV Festival	généraliste	0	0	0	0	0	Tfou	jeunesse	0	0	0	0	1
TVPI	art de vivre	0	0	0	0	0	TF6	généraliste	0	0	0	1	1
Zaléa TV	généraliste	0	0	0	0	0	TV5	généraliste	1	1	1	1	0
Zik	musique	0	0	0	0	0	TF1	généraliste	1	1	1	1	1
Zoé	service	0	0	0	1	1	France 2	généraliste	1	1	1	1	1
123sat.tv	musique	0	0	0	0	0	France 3	généraliste	1	1	1	1	1
13e Rue	fiction	0	1	1	1	1	La Chaîne Parlementaire	information	0	0	0	1	1
AB 1	fiction	0	0	1	1	1	La Cinquième	généraliste	1	1	1	1	1
AB Moteurs	sport	0	0	0	0	1	Arte	généraliste	1	1	1	1	1
Alegria	art de vivre	0	0	0	0	0	M6	généraliste	1	1	1	1	1
Banques	services interactifs	0	0	0	0	1	AB Moteurs	sport	0	0	1	1	1
Bloomberg TV France	information	1	1	1	1	1	Ciné info	services	0	0	0	0	1
Boutiques	téléachat	0	0	0	0	1	Club Téléachat	téléachat	0	0	1	1	1
Canal Jimmy	jeunesse	1	1	1	1	1	M6 Boutique	téléachat	0	0	0	0	0
Canal J	jeunesse	1	1	1	1	1	CNBC Europe	information	0	0	0	0	1
Canalsat Jeux	divertissement	0	1	1	1	1	CNN International	information	0	1	0	1	1
Cartoon Network	jeunesse	0	0	1	1	1	Equidia	sport	0	0	1	1	1
Cash TV	divertissement	0	0	0	0	0	Game one	divertissement	0	0	0	1	1
Cinécinéma Info	services	0	0	0	0	1	KTO	généraliste	0	0	0	0	1
Club Téléachat	téléachat	0	0	0	1	1	TF1	généraliste	0	0	0	0	0
M6 Boutique	téléachat	0	0	0	0	1	TV Breizh	généraliste	0	0	0	1	1
CNBC-NBC	information	0	0	1	1	1	Annonces et Shopping	téléachat	0	0	0	0	0
Comédie	fiction	0	1	1	1	1	Astrologie (Equilibre)	service	0	0	0	0	0
Cuisine.TV	art de vivre	0	0	0	0	1	Bandiagara	divertissement	0	0	1	1	1
Demain!	service	0	1	1	1	1	Espace annonces	service	0	0	1	1	0
Equidia	sport	0	0	1	1	1	Fi (CATV/Vega/Echos)	service	0	0	1	1	1
ESPN Classic Sport	sport	0	0	0	0	1	Info Express	service	0	0	1	1	1
Euronews	information	0	1	1	1	1	Le journal de chez vous	service	0	0	0	1	0
Eurosport France	sport	1	1	1	1	1	Météo Express	service	1	1	1	1	1
Eurosport Interactive	services interactifs	0	0	0	0	1	Pari à domicile	service	0	0	0	1	1
Extreme Sports Channel	sport	0	0	0	0	1	TPS Hors Série	généraliste	0	0	1	1	0
Festival	généraliste	0	0	0	0	1	TPS Mail	service	0	0	0	1	1
Fox Kids	jeunesse	0	1	1	1	1	Alegria	art de vivre	0	0	0	0	0
France 2	généraliste	0	0	0	1	1	RTM	généraliste	0	0	0	0	0
France 3	généraliste	0	0	0	1	1	TV7	généraliste	0	0	0	0	0
Game one	divertissement	0	0	0	1	1	Chronobourse	service	1	0	0	0	0
Gourmet TV	art de vivre	0	0	0	0	1	La Chaîne Sud	généraliste	0	0	0	0	0
Histoire	documentaire	0	0	0	0	1	Canal Auto	service	1	1	0	0	0
Télévision	information	0	0	1	1	1	Superfoot	sport	0	0	0	0	0
La chaîne météo	service	1	1	1	1	1	VH-1	musique	0	1	0	0	0
LCI	information	1	1	1	1	1	knowledge TV	documentaire	0	0	0	0	0
L'équipe TV	sport	0	0	1	1	1	France Supervision	généraliste	1	1	0	0	0
Live 1	musique	0	0	0	0	1	Eurosport Breizh	sport	0	0	0	0	0
Ma Planète	documentaire	0	0	0	0	1	France courses	service	1	1	0	0	0

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Market shares

	CanalSatellite		TPS		TOTAL
	Number of Subs.	Market share	Number of Subs.	Market share	Number of Subs.
1993	0.1	100%			0.1
1994	0.21	100%			0.21
1995	0.3	100%			0.3
1996	0.45	100%			0.45
1997	0.78	70.90%	0.32	29.09%	1.12
1998	1.1	64.30%	0.61	35.67%	1.71
1999	1.37	62.30%	0.83	37.73%	2.2
2000	1.62	61.80%	1	38.17%	2.62

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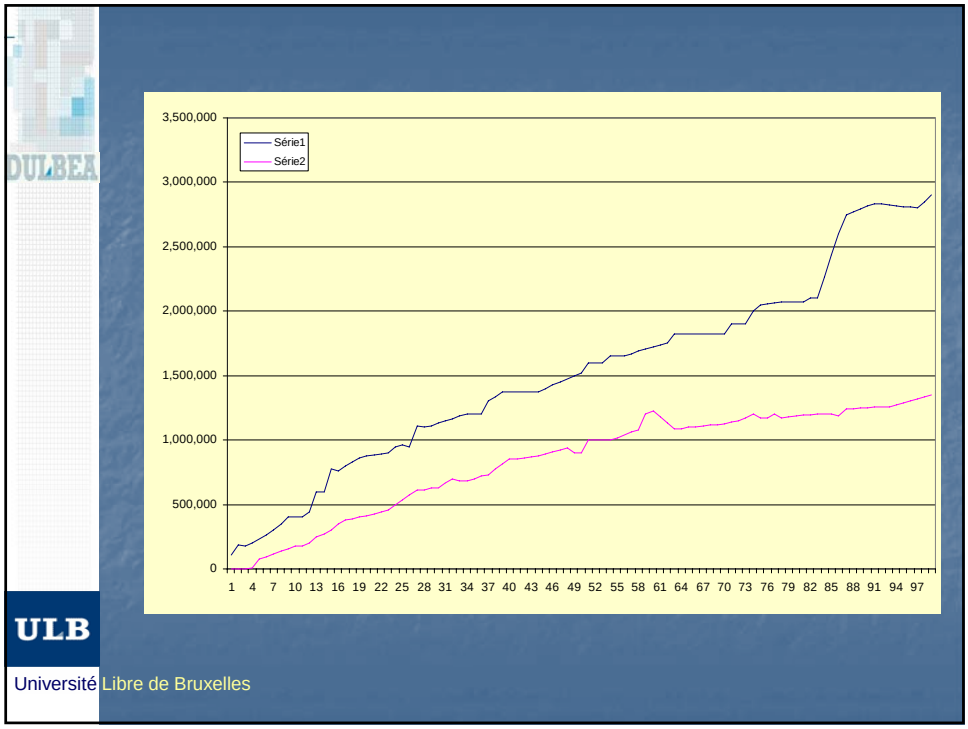

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Descriptive statistics

Variable		Mean	Std. error	Min	Max
net annual subscription price (euros)	p1	288.13	29.12	228.67	334.78
	p2	269.38	37.05	158.55	300.02
# of subscribers	q1	1212789	508735	200000	2000000
	q2	726392	361634	0	1172000
advertising	a1	1069	268	447	1414
	a2	810	268	0	1083
total # of channels	nt1	73.68	19.8	29	108
	nt2	49.36	10.3	16	59
total # of channels in the basic bundle	nb1	37.83	14	15	56
	nb2	40	9.53	21	52
total # of channels in the movie bundle	nc1	6.53	1.51	5	11
	nc2	3.76	0.78	3	5
total # of bundles	o1	9.25	1	5	11
	o2	7.49	2.12	2	11
industrial production index (OECD)	y	112.59	4.72	101.3	118.3

1 = CS

2 = TPS

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Methodology (Gasmi et al. 1992)

- Demand equation:

$$N_i = \gamma_{i0} + \alpha_{ii} p_i + \alpha_{ij} p_j + \gamma_{ii} A_i^{\frac{1}{2}} + \gamma_{ij} A_j^{\frac{1}{2}}, \qquad i,j = 1,2 \; i \neq j$$

$$\gamma_{i0} = \beta_{i0} + \beta_{i1} Y + \beta_{i2} D + \beta_{i3} U, \qquad i = 1,2$$

- Cost equation:

$$c_i = \eta_{i1} B_i + \eta_{i2} F_i + \eta_{i3} S_i + \eta_{i4} O_i \qquad i = 1,2$$

- Profit:

$$\pi_i(p_i, p_j) = (p_i - c_i)(\gamma_{i0} + \alpha_{ii} p_i + \alpha_{ij} p_j + \gamma_{ii} A_i^{\frac{1}{2}} + \gamma_{ij} A_j^{\frac{1}{2}}) - K_i - A_i \qquad i = 1,2 \; i \neq j$$

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System of 4 equations (2 demand equations + 2 first order conditions) to be estimated (by 3SLS):

$$N_1 - \gamma_{10} - \alpha_{11}p_1 - \alpha_{12}p_2 - \gamma_{11}A_1^{\frac{1}{2}} - \gamma_{12}A_2^{\frac{1}{2}} = \epsilon_1$$

$$N_2 - \gamma_{20} - \alpha_{21}p_1 - \alpha_{22}p_2 - \gamma_{21}A_1^{\frac{1}{2}} - \gamma_{22}A_2^{\frac{1}{2}} = \epsilon_2$$

$$N_1 + \upsilon_{11}p_1 + \upsilon_{12}p_2 - \delta_{11}B_1 - \delta_{12}F_1 - \delta_{13}S_1 - \delta_{14}O_1 = \epsilon_3$$

$$N_2 + \upsilon_{21}p_1 + \upsilon_{22}p_2 - \delta_{21}B_2 - \delta_{22}F_2 - \delta_{23}S_2 - \delta_{24}O_2 = \epsilon_4$$

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Strategic behaviour

- Competitive (Nash) model

$$\upsilon_{ii} = \alpha_{ii}, i = 1,2 \text{ and } \upsilon_{12} = \upsilon_{21} = 0$$

- Stackelberg with CanalSatellite as leader

$$p_1 = \frac{1}{2}c_1 - \frac{h_1}{2h_0}\gamma_0 - \frac{h_2}{2h_0}A_1^{1/2} - \frac{h_3}{2h_0}A_2^{1/2} - \frac{h_4}{2h_0}c_2$$

$$h_0 = \alpha_{11} - \frac{\alpha_{12}\alpha_{21}}{2\alpha_{22}}$$
$$h_1 = 1 - \frac{\alpha_{12}}{2\alpha_{22}}$$
$$h_2 = \gamma_{12} - \frac{\alpha_{12}\gamma_{21}}{2\alpha_{22}}$$
$$h_3 = \gamma_{22} - \frac{\alpha_{12}\gamma_{22}}{2\alpha_{22}}$$
$$h_4 = \frac{\alpha_{12}}{2\alpha_{22}}$$

- Stackelberg with TPS as leader
- Collusion on Price

$$p_1 = \frac{1}{\alpha_{11}}c_1 - \frac{1}{\alpha_{11}}N_1 - \frac{\alpha_{21}}{\alpha_{11}}p_2 + \frac{\alpha_{21}}{\alpha_{11}}c_2$$

$$p_2 = \frac{1}{\alpha_{22}}c_2 - \frac{1}{\alpha_{22}}N_2 - \frac{\alpha_{12}}{\alpha_{22}}p_1 + \frac{\alpha_{12}}{\alpha_{22}}c_1$$

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	Model 1 Nash		Model 2 Leader TPS		Model 3 Leader CanalSat		Model 4 Tacit collusion	
	Q TPS	Q CS	Q TPS	Q CS	Q TPS	Q CS	Q TPS	Q CS
Constant	-205	-399	-208	-429	-197	-427	-190	-414
	(1.16)	(2.20)**	(1.18)	(2.35)**	(1.11)	(2.35)**	(1.07)	(2.27)**
Qt-1	0.555	0.182	0.550	0.186	0.549	0.171	0.556	0.182
	(7.80)***	(3.05)***	(7.72)***	(3.12)***	(7.69)***	(2.90)***	(7.79)***	(3.06)***
P TPS	-18.087	14.162	-16.309	9.192	-16.560	15.670	-18.644	13.273
	(1.15)	(0.81)	(1.03)	(0.52)	(1.05)	(0.90)	(1.18)	(0.76)
P CS	18.773	-63.245	18.532	-60.606	-6.159	-95.005	11.163	-69.272
	(0.67)	(2.01)**	(0.66)	(1.92)*	(0.22)	(3.04)***	(0.40)	(2.20)**
A TPS	515	-270	518	-281	515	-291	517	-267
	(5.65)***	(2.94)***	(5.68)***	(3.04)***	(5.62)***	(3.17)***	(5.65)***	(2.90)***
A CS	-182	1,214	-182	1,212	-186	1,228	-183	1,205
	(2.68)***	(12.25)***	(2.68)***	(12.14)***	(2.73)***	(12.43)***	(2.69)***	(12.13)***
S2	-9,339	-7,726	-9,411	-7,100	-10,198	-10,003	-9,082	-7,514
	(1.40)	(1.01)	(1.41)	(0.92)	(1.52)	(1.31)	(1.36)	(0.98)
S3	-15,645	-20,637	-15,568	-21,388	-16,424	-22,367	-15,657	-20,046
	(2.31)**	(2.66)***	(2.30)**	(2.74)***	(2.42)**	(2.89)***	(2.31)**	(2.58)**
S4	-288	1,785	-420	1,336	-298	1,319	-13.265	2,311
	(0.04)	(0.22)	(0.06)	(0.17)	(0.04)	(0.17)	(0.00)	(0.29)
Y	1,779	1,156	1,785	1,510	2,109	1,926	1,762	1,441
	(0.94)	(0.58)	(0.94)	(0.75)	(1.11)	(0.96)	(0.93)	(0.72)
T	3,045	7,580	3,082	7,580	3,297	7,953	3,087	7,647
	(4.29)***	(10.23)***	(4.34)***	(10.19)***	(4.63)***	(10.81)***	(4.34)***	(10.33)***
Observations	69	69	69	69	69	69	69	69
R^2a	0.9278	0.8948	0.9281	0.8947	0.9274	0.8964	0.9285	0.8972
F stat	96.53	66.22	96.51	66.38	96.23	66.12	96.21	65.87

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Vuong Test

- Vuong (1989) developed a test for nonnested models. It is based on LR corrected for the number of estimated parameters.
- The test statistic is ass. normal under the null hypothesis (i.e. both models are equivalent).

	M2	M3	M4
M1	3.98	5.12	2.57
M2		2.11	-0.27
M3			-2.44

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Comparison with the British Case

- Note the preliminary and static aspects of comparison.
- Is this result still valid across periods and/or space?

	BskyB (UK)		CS (FR)		TPS (FR)	
	min	Max	min	Max	min	Max
Premium Movies	0	12	0	11	0	7
Premium Kids	0	4	0	9	0	3
Premum Sports	0	4	0	7	0	7
Price (EUR)	17	54	17	35	17	33

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Conclusions

- Given the sample size, and assumption on functional forms, care must be taken when interpreting our results.
- Our structural estimations produces similar results for four competitive behaviours.
- Vuong test suggests that the data can best be explained by Stackelberg model with CanalSatellite as leader.
- A comparison with the British [and Italian case] show that despite similarities, packages of pay-TV services are cheaper in France.
- But, one needs more precise methods (hedonic regression) to reach firm conclusion on cross country comparisons.

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