A Multivariate Analysis of Regulated Funding of the French Cinema by Broadcasters *

Victor Lavialle[†][‡]

November 29, 2018

Abstract. French television and cinema are closely linked. The current ecosystem of production and broadcasting of audiovisual and cinema works has been shaped by a regulation dating back to the 1980's. The right to broadcast on hertzian frequencies was granted to public, and later on to private companies, in exchange for obligations of investment in independent production. In compensation of these investments, TV channels were granted broadcasting rights, but the producer kept the ownership of other rights.

This system and the unique copyright structure it implied has allowed the French cinema industry to thrive, but now shows its limits: audience for movies on television is declining and the popularity of TV series rises, as well as that of SVOD platforms which base most of their editorialization strategy on serialized productions.

TV broadcasters currently represent over 30% of total investment in movie production, and prime-time television is an important target for movies. However, those movies generally aren't financially profitable and rely greatly on the institutional devices to go through production. The strategic decisions of investment and broadcasting are strictly regulated within the concession-obligations system.

In this article, we analyze the impact of the regulation on the broadcasters' strategic choice of investment in movies and audiovisual productions using a multivariate logistic model. We study a database provided by the CNC of 22 000 orders from broadcasters to 2000 audiovisual producers and 1600 movies by 600 producers between 2007 and 2014. We provide evidence that, by transferring most of the risk towards the investor, the current regulation may negatively affect the financing diversity of the industry by creating incentives for the broadcasters invest on the bigger producers to minimize the risk of a financial loss.

We also show how the current regulation creates an artificial separation between the audiovisual and cinema formats, which appear to be increasingly substitutuable from the broadcasters' point of view.

1

1 Introduction

French television and cinema are closely linked. The current ecosystem of production and broadcasting of audiovisual and cinema works has been shaped by a regulation dating back to the 1980's. The right to broadcast on public hertzian frequencies was granted to public, and later on, to private companies in exchange for obligations of investment in independent production. Broadcasters were requiered to invest a fixed percentage of their turnover in audiovisual and cinema production.

This regulation is completed by a specific copyright system: in compensation for their investments, TV channels are granted broadcasting rights, but the producer kept the ownership of other rights. This system is institutionalized through chronological timeframes of exclusivity in broadcasting, the *chronologie des médias*. The economic value of concessions is thus closely linked to this of the exclusive window of broadcasting.

This organization has allowed to protect domestic movies and the French cinema industry, by restricting their exposure to foreign competition: American movies had to be sold to CANAL+, to be aired 10 month after their release, or three year for free-to-air TV.

This system allowed French cinema industry to thrive but now shows its limits: audience for movies on television is declining, and the popularity of TV series is on the rise, as well as that of SVOD platforms which base their editorialization strategy on serialized production. As alternative devices grow in popularity as a means of consumption of audiovisual and cinema works, the value of concessions and of exclusive broadcasting falls. As the *chronologie des médias* relies on proportionality of the value of the different timeframes relative to the obligations of investment in production, this observation calls to a reform of the concession-obligation system, advocated

by several institutional reports since 2010.

In this article, we analyze the investment strategies of broadcasters in both audiovisual and cinema production. We study a database provided by the CNC of 22 000 orders from broadcasters to 2000 audiovisual producers, and 1600 movies by 600 producers between 2007 and 2014. Using a multivariate probit model, we estimate the determinants of the investment choice and the effect of regulation on strategic broadcaster decisions. We provide evidence that, by transferring most of the risk towards the investor, the current regulation may negatively affect the financing diversity of the industry, by crating incentives for the broadcasters to invest on bigger producers to minimize the risk of a financial loss.
We also show how the current regulation creates an artificial separation between the audiovisual and cinema formats, which appear to be increasingly substituable from the broadcaster's point of view.

Our analysis is similar to one conducted by Benhamou, Gergaud, Moureau[1] (2009), which is, to our knowledge, the only empirical study concerned with the question of the financing of cinema by television channels in France. The authors identify the main variables influencing a broadcaster's investment decision from the definition of a quality indicator *ex ante*. They conclude that the channel's efforts and their choice of investment depend mostly on the quality of the films and the nature of the co-financing. They also observe a complementarity between the funding of cinema by television channels and public support. We seek here to extend this analysis to audiovisual financing and to shed light on the institutional and economic mechanisms that justify broadcasters' choice of investment. This study can then lead to numeric applications, in order to estimate the impact of institutional changes on the ecosystem.

---

[1] [11]

2 Institutional context

The French audiovisual ecosystem has been developed with a public model, strictly controlled by the state since the early 1960s, and the creation of the first public channel. Later, in 1964, a second public channel is created, along with the ORTF, public office in charge of handling radio and television in France and satisfying the "needs of information, culture, education and entertainment of the public"[2]. The French audiovisual ecosystem is thus built as a State monopoly, by opposition to its neighbours, such as the United Kingdom, opting for a hybrid private-public since the beginning.

According to Chevalier (1990 [3]), the choice of a state monopoly is justified by technical and political arguments. The spectrum of hertzian frequencies, used to broadcast the signal is a rare good, distributed among states by international conventions. What's more, with the rise in influence of the radio and television as a means of political and cultural information, other concerns are put forward: only public management could protect from pressure from lobbies and guarantee the diversity of ideas and programs.

After this first period of public management and total independence from private interests, the adoption of advertising in 1968 marks a turning point for the French ecosystem, by allowing use of private funding, and therefore opening competition.

The liberalization process that followed this decision took a path of several steps, and was mostly guided by the evolution of technology and the release of technical constraints. This process started in the 1970s, as the ORTF was dissolved and three public channels, TF1, Antenne 2 and France 3, were created, institutionalizing competition in the ecosystem, as a way to fight

---

[2]Law n64-621 of 1964

a monolithic public service. The transition is brought *via* institutional mechanism of obligatory funding and financial aid. The market logic gains ground, through a greater emphasis on economic profitability for channels, as competition reinforces the importance of the advertising market.

In the 1980s, technical constraints that legitimated the state monopoly have become obsolete, and a political alternation opens the way to reforms. The law of July 29, 1982 redefines the framework of the audiovisual and acts the end of the monopoly of state. The sector is opened to private actors in a highly regulated system of concessions-obligations, which is still used today, and is supervised by the *Haute Autorité de la communication audiovisuelle*, in charge of guarantying the independence of the public service and to grant authorization of hertzian broadcasting.

This process of emancipation, reinforced by the creation of an independent commission, the CNCL in 1986, later on replaced by the CSA (French superior council of the audiovisual), is not enough to completely free the audiovisual sector from the political sphere. The creation of CANAL+, first pay-TV channel was directly handled by the French President, along with the president of the media group Havas, without consulting the High Authority, nor call for tender.

The creation of this first pay-TV channel has been set with the goal of developing the French cinema ecosystem, through a mechanism of obligation of investment in cinema works. This allowed for a very dynamic production industry, with around 200 movies produced each year, for a market share of around 35 to 40% in movie theaters.

In the 2000s, the evolution of broadcasting technologies, allowed for a profusion of free-to-air channels on Digital terrestrial television, leading to a commoditization of cinema and movies.

For these new entrants, broadcasting a blockbuster is a guarantee of strong audience. With thousands of films aired each year and a daily offer of around 30 movies, cinema becomes a consumer product[3].

This liberalization process had direct consequences on the shape of the ecosystem. First, private broadcasters have become highly dependent on the value of their concession of hertzian frequencies and windows of exclusivity. This system of protected markets and exploitation windows following a chronological timeframe (the *chronologie des médias*), which is weakened by the release of technical broadcasting constraints: it is now possible for *over the top* players to bypass the traditional means of distribution. Increased competition between channels, widespread use of the Internet via online platforms and catch-up TV are leading to a decline in free channel advertising revenue. The CANAL + group is weakened and the terrestrial channels lose money by broadcasting the films they have pre-purchased. Several institutional reports[4] point to the low profitability of the sector, as well as to inflationary pressures. This is due to an increase in the volume of the production costs and the rigid price formation mechanism (the movie ticket price is not a market variable).

What's more, the french production of audiovisual works suffers from a lack of spontaneous demand from national broadcasters. Despite the quota system and the various regulatory funds, French production of audiovisual fiction is among the less dynamic in Europe.

The history of the French audiovisual and cinema ecosystems is one of tension between the regulation and evolution of technical constraints. The recent developments of broadcasting techniques questions the pertinence of the current regulation. In this article, we estimate the

---

[3] [17]
[4] see [15], [16]

consequences on broadcaster's choice of investment.

3 Conceptual framework: broadcaster's investment under regulatory constraint

The point of this article is to analyze how the institutional system of concessions-obligations and the copyright structure of the audiovisual and cinema industry affect broadcaster's investments. In this section, we present a simple model of investment choice for a broadcaster, under an exogenous constraint. From this model, we derive empirical predictions.

This model aims at providing better understanding of the broadcaster's investment choice before production, which is subject to the obligations regulation. We consider a market of n *projects*. The broadcaster chooses an investment for each of those projects, searching to maximize his expected profit, which corresponds to total revenue from the programs, minus total investment.

We assume that broadcasters only acquires broadcasting rights in exchange for their investment, which is consistent with the French institutional framework presented in the previous section.

Thus, broadcaster revenue depends on two variables: advertising revenue and subscriptions.

For this conceptual framework, we take inspiration in the economic literature of broadcaster competition (Motta and Polo 1997[5], Armstrong and Weeds 2007[6]).

For simplicity, we normalize total audience to 1. Utility for watching program i, u_i can be

---

[5] [10]

[6] [1]

written:

$$u_i = \theta q_i - \delta n_i - p \tag{1}$$

where q_i is the quality of the program, n_i the number of advertisement and p the subscription fee required by the broadcaster.

From there, we can write the broadcaster's total profit as follows:

$$\Pi = \sum_{i=1}^{n} (\theta q_i - \delta n_i - p)(p + R(n_i)) - \sum_{i=1}^{n} I_i \tag{2}$$

With $R(n_i)$ the advertising revenue and I_i the initial investment of the broadcaster on program i.

We consider a regulation $\Lambda = (X)$ defining the level of obligatory funding.

The broadcaster's program can be written as:

$$\max_{(I_i)_{i \in [\![1,n]\!]}} \Pi \tag{3}$$

So that:

$$\sum_{i=1}^{n} I_i \geq X \tag{4}$$

We suppose for simplicity that the quality of the program is proportional to the initial investment of the broadcaster.

$$I_i = \frac{q_i^2}{2} \tag{5}$$

The broadcaster's program is:

$$\max_{q_i, i \in [\![1;n]\!]} \Pi = \sum_{i=1}^{n} (\theta q_i - \delta n_i - p)(p + R(n_i)) - \sum_{i=1}^{n} \frac{q_i^2}{2} \tag{6}$$

so that

$$\sum_{i=1}^{n} \frac{q_i^2}{2} \geq X \tag{7}$$

As the problem is concave, the first order conditions give us

$$\forall i \in [\![1; n]\!], I_i^* = \frac{\theta(p + R(n_i))^2}{2} \tag{8}$$

If $\sum_{i=1}^{n} I_i^* < X$, the broadcaster has to adjust his investment so as to fulfill his obligation. In this case, he will invest an amount he considers suboptimal I^R:

$$\forall i \in [\![1; n]\!], I_i^R = \frac{1}{n}[I_i^* - \frac{\sum_{j \neq i} I_j^*}{n - 1}] + \frac{X}{n} \tag{9}$$

The french regulation separates two kinds of obligations: for audiovisual and for cinema works. Within this framework, we can consider a two-dimension regulation $\Lambda = (X_1, X_2)$ and distinguish between the different sectors without changing the results. With I_1 the total investment in audiovisual and I_2 total investment in cinema, the regulation constraint can is:

$$I_1 \geq X_1; I_2 \geq X_2 \tag{10}$$

and with I_i^* the level considered optimal by the broadcaster, the investment level will be:

$$\forall i \in \{1, 2\}, I_i = \begin{cases} I_i^* & \text{if} & I_i^* \geq X_i \\ X_i & \text{if} & I_i^* < X_i \end{cases} \tag{11}$$

According to equation 9, if the broadcaster is willing to invest more than required in sector i but less in sector j, it is possible that he reduces his investment in sector i in order to fulfill the constraint on sector j.
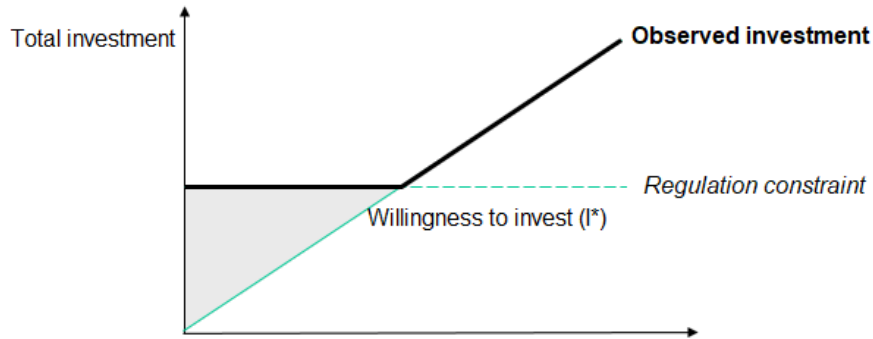
Figure 1: Investment of a broadcaster subject to obligations constraint

This simple model leads to the following predictions:

1. The actual willingness to invest of the broadcaster is observable only if he invests more than the quota imposed by regulation (figure 1):

2. If both products are considered substitutes for the broadcasters, an augmentation of obligations on sector i can lead to a reduction of the investment on the other sector j

4 Descriptive statistics

Our empirical observations are based on the CNC (National Center for Cinema and the Moving Image) database. The CNC is an agency of the French Ministry of Culture, responsible for the production and promotion of cinematic and audiovisual works in France. It gathers a database of all orders from broadcasters to independent producers for audiovisual works as well as details of the cinema projects. We study a sample of 22 000 orders to 2000 audiovisual producers, 1600 movies for 600 cinema producers between 2007 and 2014.

Genre	Pre-purchase (AV) /projects (cinema)	Production cost 2007-2015 (G€)	Production cost/hour mean	Produced hours by year
Magazine	390	0.3	127 500€	400
Performing arts	3039	0.8	140 600€	700
Documentary	18561	3.5	152 500€	2 500
Total non-fictional	**21 990**	**4.6**	**150 360**	**3600**
Animation	523	1.7	600 000€	300
Fiction	2314	6.2	988 700€	800
Cinema	2259	11	2 782 000€	400
Total fictional	**5096**	**18.9**	**1 414 700**	**1500**

Table 1: Database description

Table 2 presents the detail of financing for audiovisual works and movies. Broadcasters represent the main source of funding for most genres of audiovisual works, and 26% of cinema funding. Most of this funding comes from CANAL+.

		Broadcasters	COSIP	Producers (FR)	Exports	Others
Fictional Works	Short series	65%	17%	12%	2%	4%
	TV Series	69%	10%	11%	6%	4%
	TV movies	74%	9%	9%	3%	4%
	Animation	27%	16%	22%	26%	9%
Non-fictional works	Documentary	50%	20%	16%	5%	9%
	Magazines	68%	12%	14%	0%	5%
	Performing Arts	35%	27%	28%	7%	3%
		TV[7]	Subsidies	Producer	Exports	Others
Cinema		26%	18%	25%	19%	12%

Table 2: Financing of French movies and audiovisual works (2007-2015)
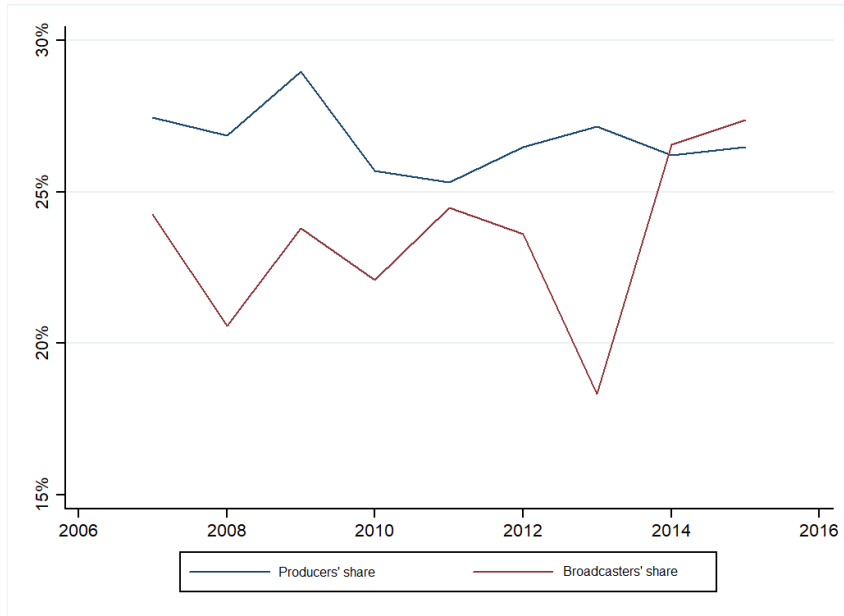
Figure 2: Cinema: evolution of producer and broadcaster contributions

There is an upward trend in the share of pre-purchase contributions from broadcasters, which exceed those of producers from 2014 onwards.

	TF1	M6	France TV	CANAL+
Animation	12%	6%	38%	20%
Documentary	5%	7%	29%	15%
Fiction	17%	5%	48%	11%
Magazine	1%	6%	35%	9%
Performing Arts	2%	3%	32%	3%
Cinema	8%	4%	27%	66%

Table 3: Frequency of investment for broadcasters

The public sector, with France Televisions participates in the financing of a large part of the programs. The other broadcasting groups are more specialized: CANAL+'s high rate of investment in animation is due to the inclusion of specialized channels.

The cinema investments of the main broadcasters are more strongly correlated than for the

12

audiovisual sector. This reflects a concentration of broadcaster financing on high-budget movies, which are more likely to be profitable[8].

	Cinema				Audiovisual			
	TF1	CANAL+	M6	FTV	TF1	CANAL+	M6	FTV
TF1	1				1			
CANAL+	0.1857	1			-0.0817	1		
M6	-0.0179	0.1069	1		-0.0626	-0.0935	1	
France TV	-0.1761	0.334	-0.1029	1	-0.12	-0.1283	-0.1775	1

Table 4: Investment correlation matrix between groups of broadcasters

[8]see [18]

Average overrun of obligations (cinema, 2007-2014)
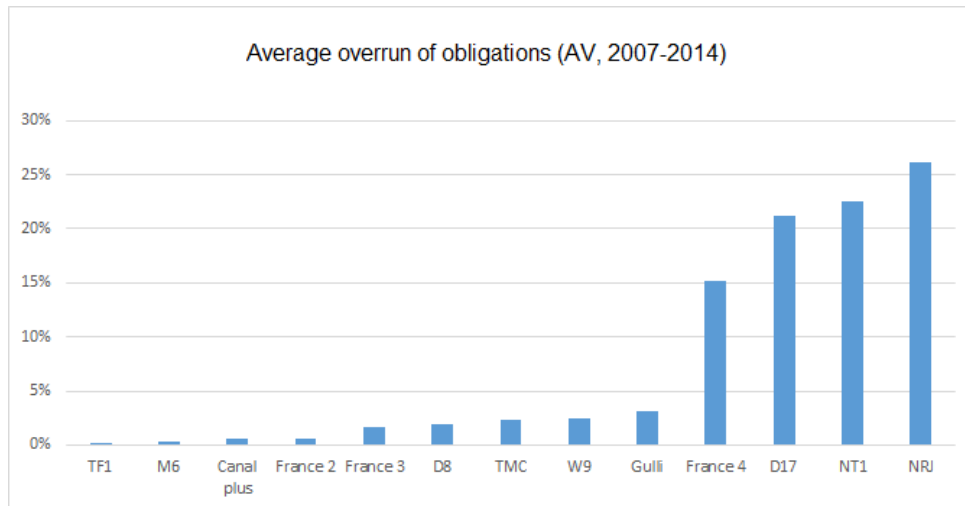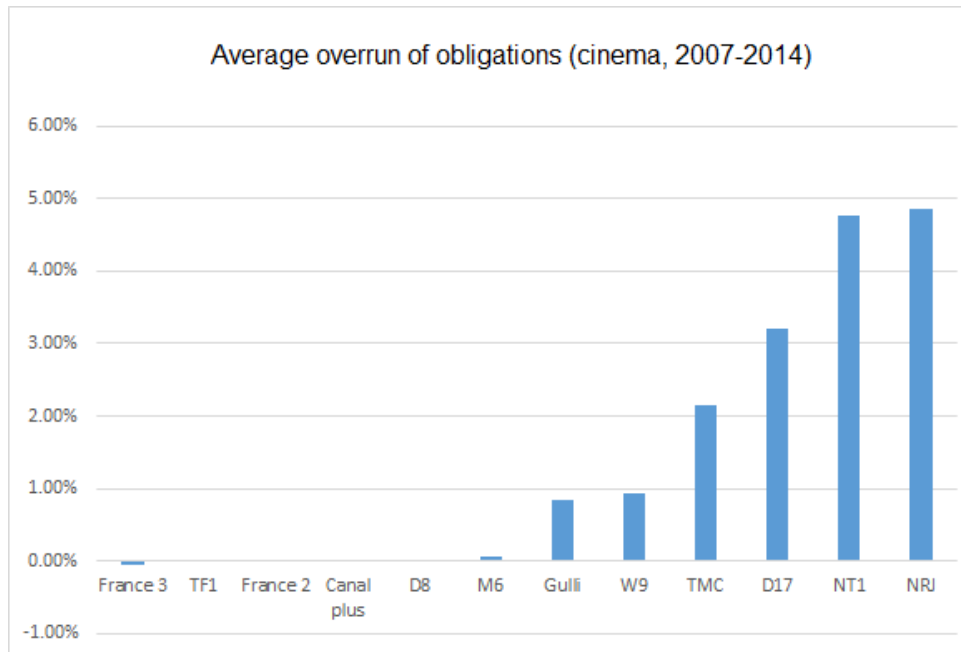
The largest audiovisual groups, on average, only marginally exceed investment requirements. This indicates that these quotas are binding, and that the actual availability to pay for channels is lower than their amount.

The saturation of the regulatory constraint for the major free-to-air television groups illustrates a more fundamental problem of valuing these programs[9]. By investing, the broadcaster actually purchases an exclusive broadcast window of the film or program. His ability to dispose of residual rights even in the context of a co-production is extremely limited. What's more, as suggests the model presented in the previous section, the level of the constraint could be reducing investment on other programs. The lack of sufficient incentives to finance programs can be explained by this, particular copyright structure, induced by the concession-obligations system, along with the progressive devaluation of the economic profitability of the exclusive broadcasting window.

---

[9]see [6]

In is interesting to note that most of the digital terrestrial television channels exceed their quotas on average. This could be explained by the fact that their turnover is generally lower than bigger groups, which makes the obligation is easier to fulfill.

5 Determinants of broadcasters' investment choices

At the moment of their decision to invest, broadcasters do not know the success of a movie, and the return-on-investment they can hope for. They derive most of their revenues from the sale of advertising space, which is proportional to the total audience reached. The box office success of a movie can be a good predictor of its commercial success on Television. However, this variable is not observable by broadcasters *ex ante*.

In order to solve the problem of maximization, the broadcaster must identify a series of *ex ante* variables that they can use to predict the future success of a program. In cinema, there is a significant correlation between the production's estimated costs and the box office entries. It can be assumed that television channels use this amount as a proxy for future film revenue.

	Box office
	(Std. Err.)
Production costs	0.015**
	(0.005)
Year of production	4220.923
	(10315.466)
Promotional Costs	5.108**
	(0.297)

Table 5: Correlation with movie commercial success

Table 5 shows a positive correlation with both estimated production costs and promotional costs and box office success of a movie. Financial success of movies is generally considered highly unclear, and risk is a central part of this industry. Various economic papers estimate the

determinants of box-office success and conclude to the positive effects of some variables such as movie *star* notoriety or critical reviews: Elliott, Simmons (2008)[10]. The main difficulty of such an analysis is that movies are both commercial products and artistic realizations. More precisely, they are experience goods, which quality can only be observed after consumption. One of the first econometric studies of the determinants of box office success, Litman (1983)[11] conclude to a significant effect of the presence of *stars*, production cost, distributor and awards. Most studies show that elements of investment in a movie and marketing costs have a positive effect on success: Litman (1983), Zufryden (2000). Prag and Casavant (1994) show that the marketing effort affects positively movie success[12].

From the broadcaster point of view, the investment problem amounts to maximizing expected return on investment based on *ex ante* characteristics of the movie. From the variables mentioned above, only the estimated production costs and producer characteristics can be observed by the broadcaster at the moment of the investment decision.

We use multivariate probit models to estimate the determinants of the broadcaster's choice of investment. We chose this model so as to take into account the simultaneity of the choice from several broadcasters. Our main variable of interest is the impact of the producer's group on the probability of investment.

5.1 Separated analysis

In this first analysis, we make the hypothesis that audiovisual programs and cinema movies are independent goods from the broadcaster's point of view.

The main difference between cinema and audiovisual fiction is the specific editorial protocol

---

[10] [5]

[11] [7]

[12] see [8], [13], [12]

16

of movie theaters. Development costs of a movie are near to three times as much as a TV series[13], and the film's screening in theaters is crucial to its long term success. It also creates a specific market, where spectators, producers and theater owners interact.

In order to take into account characteristics of the producers, we use a producers groups established in earlier work[14], based on the CNC database. Using the average yearly production cost, number of movies or audiovisual orders and average production cost by hour for each producer, we use a clustering methodology to divide producers into homogeneous classes. The results of this process are summarized in the appendix in tables 13 and 14. The structure of both sector is similar, with a small group of *leaders* and *big producers* with a high market share, a group of *middle* producers and a large group of smaller firms with a very small production level.

Results of the analysis are presented in table 7. Declared production cost has a positive effect on the decision of investing for audiovisual and cinema, for every broadcaster except TF1. Bigger producers benefit more from broadcasters' investments in cinema.
For audiovisual works, investments are more likely to be spread out. The fact that CANAL+ is more likely to invest in animation programs reflect the investment of youth channels in the group. The public broadcaster has a higher probability to invest on TV movies and on the Leading producing firms, while TF1 seems to specialize in TV series.

As expected, a rise in the obligation level positively impacts the probability of investment. The negative coefficients associated with TF1 and M6 could be explained by the fact that the regulatory constraints are not always saturated for these groups, as well as the lack of significant changes in the level of obligations. The effect of the different audiovisual genres on the probability

---

[13]see [18], CNC data
[14] [18]

of investments illustrates horizontal differentiation between channels.

5.2 Joint analysis

In this second section, we make the more realistic assumption that cinema and audiovisual investments are substitutes from the broadcasters' perspective. In the context of free-to-air TV, there is no fundamental difference between a TV-movie and a cinema work: both are a 1-unit fictional program and can be aired in similar circumstances. Thus, it seems reasonable to assume that a broadcaster doesn't make a difference between these two formats when investing and only considers the program which will maximize his expected audience.

Because values of coefficients are not informative about the magnitude of the effects of covariates on probabilites of success, either marginal or joint, except for determining the signs of effects, we follow Ferrante (2008)[15] and summarize results in terms of marginal effects on success probability for each dependent variable.

Each marginal effect represents the change in probability of success given a one unit change in the associated regressor.

_____

[15] [4]

	Prob Marg CANAL +	Prob Marg FTV	Prob Marg TF1	Prob Marg M6
Prod. Cost	2.12E-08***	1.30E-08***	1.27E-08***	6.20E-09***
Animation	0.0136***	0.0589***	-0.0195***	0.00638***
Cinema	0.369***	-0.0724***	-0.0518***	-0.0411***
Magazine	-0.0658***	0.0603***	-0.0456***	-0.00687***
Series	-0.164***	0.124***	0.127***	-0.0321***
Short series	0.0268***	0.0631***	-0.0321***	0.0133***
Performing arts	-0.11***	0.0142***	-0.0239***	-0.046***
TV movie	-0.142***	0.283***	0.0792***	-0.0273***
Documentary		ref		
Ad hoc	-0.204***	-0.334***	-0.152***	0.298***
Middle	0.0756***	0.0354***	-0.0108***	0.0477***
Big	0.00913***	-0.0281***	0.135***	0.0134***
Leaders	0.00376***	0.107***	0.0374***	0.0145***
Small producers		ref		
Foreign coproduction	0.0431***	0.0271***	0.0109***	-0.054***
Ob. cinema CANAL	0.0122***			
Ob. AV CANAL	0.0404***			
Turnover AV CANAL	-3.77E-10***			
Turnover cinema CANAL	-1.18E-10***			
Ob. cinema FTV		0.144***		
Ob. AV FTV		0.0505***		
Ob. AV TF1			-0.00248***	
Ob. AV M6				-0.00682***
Constant	0.589***	-1.211***	0.0749***	0.15***
Observations	23,381	23,381	23,381	23,381
R-squared	0.966	0.998	0.949	0.907

Table 6: Variation of probability of investment: probit model

The coefficients presented in table 6 can be read as the variation in probability of success (investment) following a marginal change in the regressor variable. Results from the probit model are presented in table 12, along with robustness checks.

Once again production cost is a significant factor impacting the probability of investment. We interpret this as a bet on the box-office success of the movie, which is correlated with production cost, and one of the best predictors of future success available *ex ante* to broadcasters, along with the history of the producer.

Thus, it is not surprising that for each audiovisual group, the probability of investment is higher if the producer is from the *leaders* group or from the bigger structures than for small producers, and only the public service broadcaster France Télévisions has a higher probability to invest

in a project from a small producer than a bigger one. In earlier work (see [19]), we show how producers from the *Big* and *Leaders* groups are the only one producing profitable[16] movies on average, while no movie with production cost higher than 7M€from a small producer has been profitable[17].

Only CANAL+ is more likely to invest in Cinema than audiovisual works, which can be explained by the higher level of obligations.

---

[16]Here, we define profitability of a movie as the difference between total income (box office, broadcasting, DVD, VOD) and total production and marketing costs
[17]From 2007 to 2013

6 Conclusion

The regulation and specific copyright structure of audiovisual and cinema production in France is unique in Europe. Though always closely linked to the political power, the evolution of the ecosystem formed by the producers, broadcasters and the regulation evolved with technology and the release of technical constraints set on broadcasting. After the opening to competition and the end of the State monopoly, the concession-obligations system ensured the funding and dynamism of the French production. The recent evolution in broadcasting technology, allowing to bypass the traditional hertzian or digital networks strongly impacts the strategies of investment of TV channels. The value of the temporal exclusivity in broadcasting decreases in front of the rise in popularity of TV series and online video-on-demand platforms.

We provide evidence to how the regulation may now negatively affect the diversity of production, as the channels are more likely to invest on projects from the bigger producers, in order to minimize the risk. What's more, it is possible that popular formats such as TV series are financed in a sub-optimal manner by broadcasters, as the structure of copyright distorts the financing decisions towards content providing a better live audience.

For further research, estimating or simulating the actual willingness to invest of broadcasters could give a better understanding of the effects of regulation on the decisions to invest. A specific study on the degree of substituability of audiovisual works and cinema from the channels point of view could also provide insight on the effects of the separated obligations for cinema and audiovisual works.

References

[1] Armstrong, M. Weeds, H. (2007) *Programme Quality in Subscritpion and Advertising-Funded Television*

[2] Bomsel, O., Chamaret, C. (2008) *Rentabilité des investissements dans les films français* Note de recherche CERNA Mines ParisTech

[3] Chevalier Jacques. *L'évolution du système audiovisuel français : ruptures et continuités*. In: Quaderni, n10, Printemps 1990. Réformes de l'audiovisuel. pp. 9-28.

[4] Calia Ferrante 2008, *A Multivariate framework to explore firms' internationalization patterns: the role of individual heterogeneity*

[5] Elliott, C. Simmons, R. 2008 *Determinants of UK Box Office Success: The Impact of Quality Signals* Review of Industrial Organization

[6] Lavialle, V. Bomsel, O. 2017 *Rational Addiction to Audiovisual Narratives: an Analysis of Broadcasting and Consumption of Fiction in France*, CERNA working paper

[7] Litman, B. R. (1983). Predicting Success of Theatrical Movies: An Empirical Study. Journal of Popular Culture, 16, 159-175.

[8] Litman, B. R., Ahn, H. (1998). Predicting Financial Success of Motion Pictures. B. R.Litman The Motion Picture Mega-Industry. Needham Heights, MA: Allyn Bacon.

[9] Motta, M., M. Polo, (1997), *Beyond the Spectrum Constraint: Concentration and Entry in the Broadcasting Industry* Working Paper 115, IGIER, Università Bocconi

[10] Motta, M., M. Polo, (1997), *Concentration and Public Policies in the Broadcasting Industry: The Future of Television*, Economic Policy 25, 294-334

[11] Moureau N., Gergaud O., Benhamou F. *Le financement du Cinema par la télévision : une analyse économétrique des investissements des chaînes* . In: Économie prévision, n188, 2009-2. pp. 101-112.

[12] Prag, J., Casavant, J. (1994). *An Empirical Study of the Determinants of Revenues and Marketing Expenditures in the Motion Picture Industry.* Journal of Cultural Economics, 18, 217-235.

[13] Zufryden, F. S. (1996). *Linking Advertising to Box Office Performance of New Film Releases: A Marketing Planning Model.* Journal of Advertising Research, July- August, 29-41.

[14] Zufryden, F. S. (2000). *New Film Website Promotion and Box-Office Performance.* Journal of Advertising Research, (January-April), 55-64.

Institutional reports

[15] Bonnell, R. (2013) *Le financement de la production et de la distribution Cinematographiques à l'heure du numérique*

[16] Schwarz, A. (2003) *La production audiovisuelle française et son financement*

Other articles:

[17] Bomsel, O. *Cinema et séries: quand le récit construit la demande*, https://theconversation.com/ april 2, 2018

[18] Lavialle V., Montecino I. (2016). *L'Écosystème audiovisuel Français: qui gagne, qui perd, comment réformer?*, Chair of Médias and Brands report

[19] Lavialle V., Montecino I. (2016). *Rentabilité économique des films à gros budget*, Chair of Médias and Brands report

7 Appendix

Regresions are run at the group level for broadcasters, and not channel level. This is due to the fact most of the obligations of investment apply at group level.

Audiovisual groups in the database:

1. CANAL+ Group : Canal plus, Comédie+ , Piwi, Planete, Teletoon

2. France Télévisions Group : France 2, France 3, France 4, France 5, TV5

3. TF1 Group : TF1, HD1, NT1, TMC

4. M6 Group : M6, W9, Paris premiere, TEVA, Série club, 6ter

5. Lagardère Group : Canal J, Gulli, TIJI

6. NRJ Group : Nrj, Cherie HD

7.1 Regression Tables

	CANAL+	France TV	TF1	M6
Production cost	9.57e-08***	3.85e-08***	5.07e-08***	4.24e-08***
Animation	0.0259	0.149**	-0.105	0.118
Cinema	1.088***	-0.241***	-0.268***	-0.404***
Magazine	-0.396***	0.145**	-0.840***	-0.0584
TV series	-0.926***	0.280***	0.468***	-0.239**
Short series	0.127**	0.156***	-0.294***	0.150**
Spectacle vivant	-0.915***	0.0685**	-0.354***	-0.447***
TV movie	-0.907***	0.717***	0.405***	-0.258***
Ad Hoc structure	-0.780	-1.081**	-0.438	1.136***
Middle	0.396***	0.0886***	-0.0732*	0.478***
Big prod.	0.0207	-0.0934**	0.766***	0.211***
Leaders	-0.0360	0.283***	0.350***	0.183**
Coproduction étrangère	0.200***	0.0658***	0.107***	-0.627***
Ob. cinema Canal				
Ob. AV Canal				
Ob. cinema FTV				
Ob. AV FTV				
Ob. AV TF1				
Ob. AV M6				
Number of movies				
Taxable Turnover (CANAL+ AV)				
Taxable Turnover (CANAL+ cine)				
Intercept	-1.478***	-0.629***	-1.743***	-1.773***
Observations	23,381	23,381	23,381	23,381

Table 8: Reg 1

	CANAL+	France TV	TF1	M6
Production cost	9.58e-08***	3.80e-08***	5.01e-08***	4.22e-08***
Animation	0.0242	0.154**	-0.0898	0.131
Cinema	1.087***	-0.226***	-0.255***	-0.390***
Magazine	-0.411***	0.172**	-0.827***	-0.0261
TV series	-0.933***	0.319***	0.490***	-0.217**
Short series	0.122**	0.178***	-0.285***	0.164**
Spectacle vivant	-0.906***	0.0397	-0.361***	-0.459***
TV movie	-0.920***	0.734***	0.419***	-0.251***
Ad Hoc structure	-0.807	-1.020**	-0.416	1.188***
Middle	0.393***	0.108***	-0.0709*	0.483***
Big prod.	0.0174	-0.0784**	0.765***	0.212***
Leaders	-0.0417	0.296***	0.352***	0.187**
Coproduction étrangère	0.195***	0.0776***	0.112***	-0.619***
Ob. cinema Canal	0.0504***			
Ob. AV Canal	-0.254***			
Ob. cinema FTV		1.461***		
Ob. AV FTV		0.308***		
Ob. AV TF1		0.0222		
Ob. AV M6			0.0128	
Number of movies	-0.000329***	-0.000525***	0.000204***	0.000243***
Taxable Turnover (CANAL+ AV)				
Taxable Turnover (CANAL+ cine)				
Intercept	-0.0637	-10.06***	-2.651***	-2.705***
Observations	23,381	23,381	23,381	23,381

Table 9: Reg 3

	CANAL+	France TV	TF1	M6
Production cost	9.58e-08***	3.80e-08***	5.01e-08***	4.22e-08***
Animation	0.0254	0.153**	-0.0898	0.131
Cinema	1.086***	-0.226***	-0.255***	-0.391***
Magazine	-0.409***	0.172**	-0.827***	-0.0262
TV series	-0.935***	0.319***	0.490***	-0.217**
Short series	0.120**	0.178***	-0.285***	0.163**
Spectacle vivant	-0.905***	0.0397	-0.361***	-0.459***
TV movie	-0.918***	0.734***	0.419***	-0.251***
Ad Hoc structure	-0.812	-1.020**	-0.416	1.188***
Middle	0.394***	0.108***	-0.0710*	0.483***
Big prod.	0.0191	-0.0785**	0.765***	0.211***
Leaders	-0.0402	0.296***	0.352***	0.187**
Coproduction étrangère	0.194***	0.0776***	0.112***	-0.619***
Ob. cinema Canal	0.0646***			
Ob. AV Canal				
Ob. cinema FTV		1.478***		
Ob. AV FTV		0.307***		
Ob. AV TF1			0.0205	
Ob. AV M6				0.0120
Number of movies	-0.000248***	-0.000528***	0.000199***	0.000242***
Taxable Turnover (CANAL+ AV)				
Taxable Turnover (CANAL+ cine)				
Intercept	-1.516***	-10.09***	-2.615***	-2.688***
Observations	23,381	23,381	23,381	23,381

Table 10: Reg 4

	CANAL+	France TV	TF1	M6
Production cost	9.60e-08***	3.79e-08***	5.05e-08***	4.20e-08***
Animation	0.0221	0.158**	-0.0976	0.123
Cinema	1.086***	-0.224***	-0.260***	-0.395***
Magazine	-0.411***	0.172**	-0.836***	-0.0415
TV series	-0.931***	0.321***	0.483***	-0.225**
Short series	0.121**	0.178***	-0.287***	0.155**
Spectacle vivant	-0.905***	0.0408	-0.356***	-0.451***
TV movie	-0.922***	0.738***	0.410***	-0.259***
Ad Hoc structure	-0.825	-1.025**	-0.427	1.178***
Middle	0.390***	0.104***	-0.0741*	0.478***
Big prod.	0.0137	-0.0825**	0.761***	0.207***
Leaders	-0.0446	0.296***	0.349***	0.183**
Coproduction étrangère	0.196***	0.0773***	0.109***	-0.623***
Ob. cinema Canal	0.0665***			
Ob. AV Canal	0.239***			
Ob. cinema FTV		0.454***		
Ob. AV FTV		0.144***		
Ob. AV TF1			-0.0240**	
Ob. AV M6				-0.0619***
Number of movies				
Taxable Turnover (CANAL+ AV)	-2.08e-09***			
Taxable Turnover (CANAL+ cine)	-5.68e-10**			
Intercept	1.212*	-4.990***	-1.425***	-0.832***
Observations	23,381	23,381	23,381	23,381

Table 11: Reg 5

	CANAL+	France TV	TF1	M6
Production cost	9.59e-08***	3.80e-08***	5.01e-08***	4.21e-08***
Animation	0.0223	0.154**	-0.0898	0.131
Cinema	1.086***	-0.226***	-0.255***	-0.390***
Magazine	-0.412***	0.172**	-0.827***	-0.0261
TV series	-0.931***	0.319***	0.490***	-0.216**
Short series	0.121**	0.178***	-0.284***	0.164**
Performing Arts	-0.905***	0.0398	-0.361***	-0.459***
TV movie	-0.922***	0.734***	0.419***	-0.251***
Ad Hoc structure	-0.824	-1.021**	-0.416	1.189***
Middle	0.390***	0.108***	-0.0709*	0.483***
Big prod.	0.0139	-0.0785**	0.765***	0.212***
Leaders	-0.0450	0.296***	0.352***	0.187**
Coproduction étrangère	0.195***	0.0776***	0.112***	-0.619***
Ob. cinema Canal	0.0691***			
Ob. AV Canal	0.233			
Ob. cinema FTV		1.440***		
Ob. AV FTV		0.305***		
Ob. AV TF1			0.0219	
Ob. AV M6				0.0123
Number of movies	0	-0.000517***	0.000203***	0.000243***
Taxable Turnover (CANAL+ AV)	-2.07e-09***			
Taxable Turnover (CANAL+ cine)	-5.58e-10			
Intercept	1.221	-9.968***	-2.645***	-2.695***
Observations	23,381	23,381	23,381	23,381

Table 12: Reg 6

7.2 Details of the clustering

Group	Number	Market share	Annual prod. cost (M€)	Years in activity (/9)	Hours produced (/year)
Leaders	2	13.5%	109	9	206
Big	10	14.4%	37	6.3	59
Middle	242	39.6%	5.2	4	8.6
Small	1713	30%	0.6	3	3.4
Cinema producers	140	2.5%	0.9	2	1.5
Total	**2107**	**100 %**	**1.43**	**3**	**4.4**

Table 13: Ecosystem of audiovisual production (2007-2015)

Group	Number	Concentration (production costs)	Annual prod. cost (M€)	Number of movies (yearly)	Specialization (cinema)	years in activity cinema
Leaders	4	14%	41	3	86%	9
Big	28	27%	15	2	92%	7
Middle	163	36%	9	1	96%	3
Small	468	16%	2	1	78%	2
ad hoc structures	17	7%	33	1	100%	1
Total	**680**	**100%**	**4.9**	**1.1**	**83%**	**2**

Table 14: Ecosystem of cinema production (2007-2015)

	Cinema				Audiovisual			
	CANAL+	TFV	TF1	M6	CANAL+	TFV	TF1	M6
Production cost	1.11E-07***	3.08e-08***	5.70e-08***	3.66e-08***	2.98e-08***	3.79e-08***	1.31e-08	6.35e-08***
Adhoc	-1.071*	-0.453	-0.325	1.639***				
Middle	0.609***	0.785***	0.821***	0.900***	0.335***	0.0502**	-0.122***	0.438***
Big prod.	0.623***	0.843***	0.905***	0.988***	-0.177***	-0.232***	0.817***	0.102
Leaders	-0.311	0.0834	1.213***	0.913	-0.0287	0.282***	0.310***	0.153**
Foreign Coproduction	0.202**	0.224***	-0.314***	-0.504***	0.237***	0.0553**	0.189***	-0.644***
Ob. ciné (CANAL)	-0.0605				0.0664***			
Ob. AV (CANAL)	-0.0831				0.263***			
Assiette ciné (CANAL)	-1.54E-09*							
Assiette AV (CANAL)					-2.12e-09***			
Ob. ciné (FTV)		0.479				0.506***		
Ob. AV (FTV)		-0.0205				0.143***		
Ob. AV (TF1)			0.0315				-0.0331***	
Ob. AV (M6)				0.0448				-0.0685***
Animation					0.276***	0.202***	0.0107	0.112
TV series					-0.407***	0.355***	0.664***	-0.341***
Short series					0.198***	0.159***	-0.228**	0.116
Performing Arts					-0.889***	0.0364	-0.335***	-0.421*******
TV movie					-0.766***	0.772***	0.462***	-0.241
Observations	1,546	1,546	1,546	1,546	21,835	21,835	21,835	21,835

Table 7: Multivariate probit model (separated analysis)