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# REGULATION GAME AND COPYRIGHT IN DIGITAL MEDIA INDUSTRIES: THE DESTRUCTIVE-CREATION OF THE FRENCH AUDIOVISUAL ECOSYSTEM

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## Abstract

Media industries are facing radical transformations due to the evolution of broadcasting technologies, consumer behavior and new business models. Digitization modifies externalities and internalization mechanisms within the industrial ecosystem formed by the production and broadcasting firms.

While the American studios are reinforcing their vertical integration to compete with new entrants, French incumbents remain very scattered. This situation stems from France's institutional path for creating audiovisual markets, privileging vertical disintegration and dispersion of copyright.

We show how entry of new players, bypassing traditional means of transmission challenges the regulated sharing of property rights. In the early 2000s, a first wave of new players, allowed by the increase in the number of terrestrial channels, has been internalized by the incumbents, by the sharing of the rent in a positive-sum game. The transition to a negative-sum game in recent years prevents a similar process from taking place and may unlock the regulation game by way of creative-destruction.

**Keywords** Copyright · Regulation · Media Economics

## 1 Introduction

The French audiovisual ecosystem reflects the institutional choices made in the 1960's and the 1980's regarding the television externalities and the ways to internalize them. Television in France started as a state monopoly and has remained as such until 1984. During this period, administrative rules prevailed. No ownership was formally granted, neither for the broadcasting licenses, nor for TV programs.

The state monopoly was justified by the political instability of the Fifth republic installed by De Gaulle in 1958, after the unrest of the Algeria war. The political power wanted to keep control over the most

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powerful mass media (Peyrefitte 2002) while censorship and the allocation of subsidies muzzled the cinema (Gimello-Mesplomb 2003). The opening of the TV market was decided in 1984 by President Mitterrand who granted a broadcasting license to a private company in order to set up a pay-TV service. France is the only country in the world where TV de-monopolization started with a pay-TV channel on terrestrial broadcast.

The first broadcasting license was granted for free to Canal Plus, who did also benefit from market exclusivities such as the right to air a film one year only after its theatrical release, or the right to show adult movies. In counterpart, the broadcaster should spend a fixed share of his turnover to buy films and TV shows from independent producers. The TV operator was chosen for his political loyalty. The wide differentiation between the old public TV and the glamorous Canal Plus, accessible countrywide, boosted the success of the service. Therefore, independent producers were allocated large budgets, which generated the surge of new talents as well as an institutional gratitude from the entertainment community.

The conditions of this first deal shaped all the further concessions granted to commercial broadcasters. The principle was to separate the broadcasting license from the ownership of the shows. The same scheme applied to all Hertzian channels – whether new or formerly public – granted to private operators. The license was given for free, the operator was selected through a beauty contest, and obligations were attached to the license for commissioning and funding independent producers.

Finally:

- All broadcasters, including the public ones, were granted free terrestrial licenses in exchange for funding independent cinema and TV producers. Through this funding, the TVs would acquire temporary broadcasting rights for the programs.
- The producers flourished in a large ecosystem gathering 700 companies specialized in cinema and 2000 companies focused on TV shows. These producers kept the ownership of the copyrights.

An objective of this regulation was to prevent the broadcasters to amass copyrights so to restrain their assets to the broadcasting concessions. From an institutional standpoint, it kept the broadcasters under political control. The principle was almost comparable to what North, Wallis, and Weingast 2009 call a “limited access order” where monopolies are granted to individuals against political allegiance. More precisely, the TV ecosystem was an island of limited access order in an open access (a market economy) State. The so-called “cultural exception” was the ideological justification, the belief associated with it. On the economic side, it did make sense as long as TV was the only access to residential viewers. The broadcasters were even given new licenses (new accesses) when digital terrestrial TV increased the competition among channels. Therefore, the copyrights of the shows were mostly valued through the broadcast on domestic TV. Although their residual value was small, producers were attached to it as a patrimonial asset.

The 50-year growth of the TV market has been a positive sum game between broadcasters and producers. It dramatically changed with the surge of *over the top* (OTT) services<sup>2</sup>. The Internet has brought in a large set of externalities (both in transactions and in media) that could not get regulated with the same tools as television. Therefore, a new competition arose that compromised the former equilibrium.

The funny thing is that reforming the TV ecosystem has proven quite impossible, for reevaluating the obligations and the rights is perceived by producers as an expropriation. During the fifty years of the TV game, the producers with easy access to media have organized to protect their interests. Any threat regarding what they consider as their patrimony is promptly denounced as an offence against French culture. Since 2008, great reforms are periodically announced that rapidly end in anticlimax.

The topic of this paper is then: how does this path-dependent media ecosystem adapt to the new paradigm of platforms? Who are the winners and the losers of the regulation game? How do the winners keep on capturing it when the sum of the game turns into negative? If the system can’t be reformed, how will its destructive-creation proceed? To the benefit of whom?

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<sup>2</sup>Over the top is a term used to describe content providers distributing streaming media over the Internet, bypassing the traditional means of telecommunications

A subsidiary advantage of the French TV regulation is that it provides extensive data regarding all the orders related to TV obligations. It allows to illustrate how some producers have captured the regulation to their own benefit and how the entry of platforms has modified the game. In the next section we detail the TV regulation and its impact on both the industrial organization and the performance of the sector. The third section examines the impact of the entry of over-the-top platforms on the ecosystem.

## 2 The System of obligatory funding and its implications

### 2.1 The French system of obligatory funding

The French regulation scheme is based on a partition of property rights between licenses to broadcast and copyright. The licenses are granted to private firms in exchange for obligatory funding and broadcasting of the French cinema and audiovisual production.

The terms and level of quotas, concerning both investment in independent production and in so-called heritage works<sup>3</sup>, vary according to various criteria such as the broadcaster's turnover, its presence or not on the terrestrial network, the channel's business model and the type of program broadcast.

The broadcasting quotas concern the share of broadcasting hours of European works, or of works of *French original expression*, that is to say works produced entirely or mainly in their original version in the French language or in a regional language in use in France. Similarly, European audiovisual works are produced in member states of the European Union or, under certain conditions, works from European third countries.

Quotas for contributions to audiovisual production are imposed on channels that devote more than 20% of their broadcasting time to audiovisual works, or whose turnover exceeds €350 million. The cinema investment obligations concern channels broadcasting more than 52 movies or 104 unique cinema broadcasts per year, as well as specialized channels. Table 5 in the appendix present a summary of the terms and conditions offered to broadcasters with regards to their obligations. In all cases, a minimum of 75% of the investment must be directed to independent production. This independency clause creates a separation of the broadcasting and production industries.

This division of property rights is accompanied by a market organization fixed by the law which specifies the exclusive window granted to each contributor, so-called *chronologie des médias*. This regulatory device allows the broadcasters to exploit movies according to a timetable reflecting their level of investment. Each window provides an exclusivity guaranteed by law. It operates a discrimination scheme through which different versions of the movie are gradually marketed at a decreasing price, and reflects a principle of coherence in relation to the weight and obligations of each party in the pre-financing of the movies.

This system is unique, as exclusive broadcasting windows are usually freely negotiated between the relevant parties. It also protects the French movies from the foreign competition: non-French studios can benefit from the one-year TV window<sup>4</sup>, only if they sell to the pay-TV duopoly, Canal Plus and OCS<sup>5</sup>. Otherwise, they have to wait for three years<sup>6</sup> before accessing free TV. In the meantime, their release investment has been lost.

In 2009, a new exclusive window for SVOD platforms complying with the obligations system is added six months after free-to-air TV. Timeframes have been shortened in 2018, in accordance with requests from broadcasters.

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<sup>3</sup>Defined by the CNC as original audiovisual works with a heritage vocation that are of particular cultural, social, technical, scientific or economic interest.

<sup>4</sup>8 months from 2018 onwards

<sup>5</sup>Orange Cinema Series, a subsidiary of Orange, the French telco incumbent.

<sup>6</sup>30 months from 2018 onwards

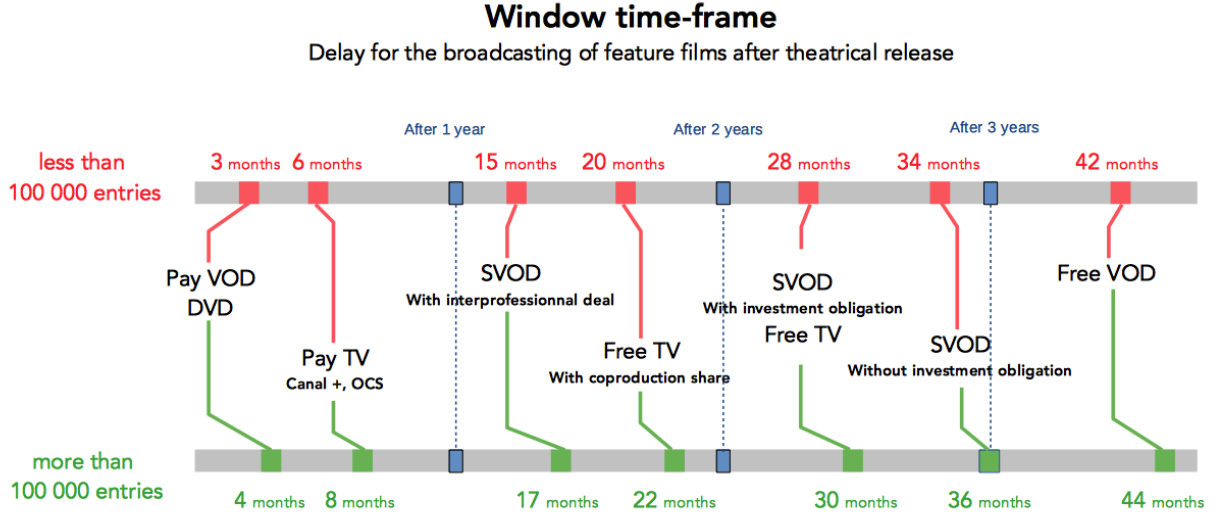


Figure 1: Window time-frame, *Chronologie des Médias*

## 2.2 Data and empirical methodology

This study is based on a database completed by the CNC<sup>7</sup>, including all orders for audiovisual programs over the 2007-2018 timeframe.

Each of these orders corresponds to an application for admission to the Audiovisual Support Fund (COSIP), which represents 21% of total audiovisual funding in 2014. To be eligible, these programs must qualify as heritage works, defined as “original audiovisual works with a heritage vocation that are of particular cultural, social, technical, scientific or economic interest”. Such a work must belong to one of the following genres: fiction, animation, creative documentary or recreation and recording of live performances based on a unitary and autonomous work. So-called flux programs (news, sports, games, talk shows, reality shows, ...) are excluded from this database. Finally, to be eligible, these works must be produced with the assistance of authors, main actors, technical collaborators of French creation, or nationals of European countries, and technical industries established in these same countries.

This first database is completed by another one indexing all French-initiated movies approved by the CNC during the period. It details the year of approval, the date of release in theaters, the title, the producer(s), the estimated budget as well as the details of the financing plan with contributions from the various French and foreign partners.

Very few producers are active both on the audiovisual and movie production sectors. Between 2007 and 2014, 270 companies produced audiovisual and cinematographic works, out of 3658. The production ecosystem is complex and difficult to assess: many companies are capitalistically linked to the same entity. This results in an overestimation of the number of producers and therefore underestimation of the industry’s level of concentration. We choose to consider the subsidiaries as belonging to the parent group. This cross-checking is carried out using the data from *Ecran Total* grouping together the capitalist links between the various

<sup>7</sup>The CNC (National Centre for Cinema and the Moving Image) is an agency of the French Ministry of Culture, responsible for the production and promotion of cinematic and audiovisual arts in France. Its role is to administer the regulation of cinema, support its economy, as well as this of audiovisual arts, and protect the French cinematographic heritage. It also collects extensive data on the funding of audiovisual and cinema works in France

production companies.

Genre	Frequency	%	Budget 2007-2018 (M€)	Average budget by hours (€)	Annual volume (hours)
TV Magazine	515	1,42	368	122 942	382
Live Entertainment	4 758	13,11	1 166	143 145	736
Documentary	24 058	66,28	4 662	158 217	2 415
Non-fiction Total	29 331	80,81	6 197	141 434	3 534
Animation	712	1,96	2 416	636 022	316
Fiction	3 034	8,36	8 558	980 616	815
Cinema	3 219	8,87	15 274	2 711 401	469
Fiction Total	6 965	19,19	26 249	1 442 680	1 601
<b>Total</b>	<b>36 296</b>	<b>100,00</b>	<b>32 445</b>	<b>792 057</b>	<b>5 134</b>

Table 1: Database Description

Table 1 summarizes the cinema and audiovisual production over the 2007-2018 timeframe. Fiction works represent a majority of the total investment (79%) for 24% of produced hours.

### 2.3 Industrial organization and regulation capture

We implement a hierarchical classification algorithm to describe the production industry for audiovisual and cinema works. Details of the methodology can be found in the appendix. We present a division of the industry in 4 different classes of producers, mainly differentiated by their annual budget and volume of production.

Both the cinema and audiovisual sectors are highly concentrated: a small group of large firms take up a large share of the orders (table 2). The audiovisual production industry is dominated by fifty producers (2.3% of the industry) who account for 25% of the market in terms of total budget. The most productive class, the leaders declare an average annual budget close to €70M and produce 24 times more hours of programs than their competitors.

Most of the registered producers are absent from the market for capital-intensive programs, such as fiction and specialize in magazine or documentary. The group of small producers (85% of the industry) produce on average 3 hours of content each year (one or two programs), with an average hourly budget of €30 000.

The cinema sector is more concentrated with 25% of the total budget captured by 0.4% of the producers. As our dataset doesn't give us a precise breakdown of the co-productions funding (35% of movies), we consider that co-producers have an equivalent contribution to the film budget. In doing so, we underestimate the share of the largest and overestimate the share of the smallest. Despite all this, the average allocated budget per film of a large cinema producer is €6M, three times the budget of 98% of the firms.

Producer group	Frequency (%)	Average annual budget (M€)	Market share (over budget)	Average production (hours/year)
Leaders	0.1 %	69.2	9.1%	170.2
Large	2.2 %	4.2	15.4 %	29.9
Medium	11.9 %	2.1	40.7 %	10.1
Small	85.8 %	0.3	34.8 %	2.9
Total	100%	0.6	100%	7.1

Table 2: The Audiovisual production industry - Clustering

Producer group	Frequency (%)	Average annual budget (M€)	Market share (over budget)	Average production (moves/year)
Large	0.4%	43.5	25.6 %	7
Medium	21.0 %	4.7	57.9 %	2
Small	78.6%	2.6	16.5 %	1
<b>Total</b>	<b>100%</b>	<b>4.2</b>	<b>100%</b>	<b>2</b>

Table 3: The Cinema production industry - Clustering

Both the audiovisual and cinema industries are dependent on broadcasters' funding, as well as on various subsidies. This is especially true for audiovisual fiction, where TV channels represent on average 70% of the total budget. The production ecosystem is mostly constituted of suppliers without equity capital, whose

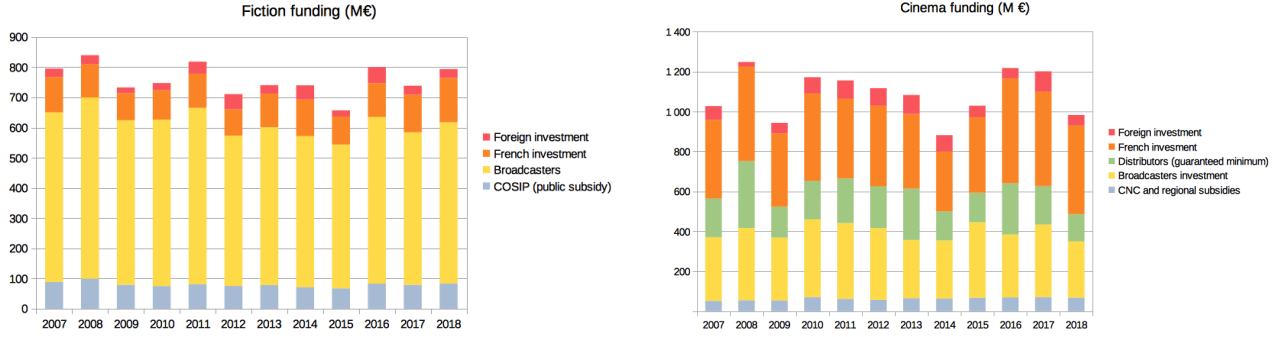


Figure 2: Audiovisual Fiction and cinema Funding

survival depends on the mandatory orders of television channels. In contrast, the larger firms capture a large portion of the obligatory investment. 76% of the leaders' budget come from broadcasters, compared to 52% for small structures.

The existence of this extremely dispersed production sector is due to a number of factors, including the obligatory investments. The lack of barriers to entry in the production sector makes it possible for new entrants to set up a production structure and get funds from broadcasters. The discourse of the French cultural exception, allows producer lobbies to obtain diversity clauses in the regulatory game.

The partition of property rights puts the ecosystem on a path of vertical disintegration between production and broadcasting. This separation is established by the Tasca decrees (1990), which include a clause of independence in mandatory investments (75% of investment should go to a capitalistically independent producer<sup>8</sup>).

As television channels obtain only an exclusive broadcasting right as a compensation for their initial investment, they have low incentive to order exportable programs. This results in an orientation of the production ecosystem towards fulfilling domestic demand. Thus, the property rights given to producers have a low value, as the demand outside of the antenna of TV channels is poor. Very few productions have an international funding strategy (figure ??), which reflects the ecosystem's national orientation.

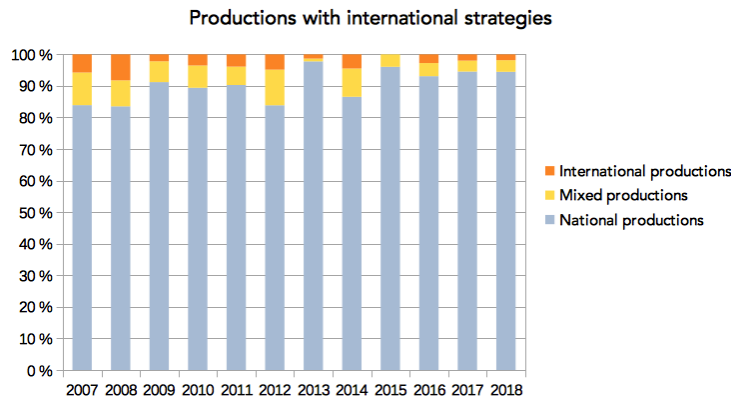


Figure 3: International funding strategies

<sup>8</sup>Article 11 of the 90-67 decree defines an independent production company as a company:

- In which the channel does not hold, directly or indirectly more than 5% of the capital
- Who does not own, directly or indirectly more than 5% of the capital of the channel
- with which the company or service does not have links constituting a lasting community of interest

In contrast, the studio model adopted in the USA or UK allows investments to be internalized on several media, and thus gives incentives to resell and export (figure 4) .

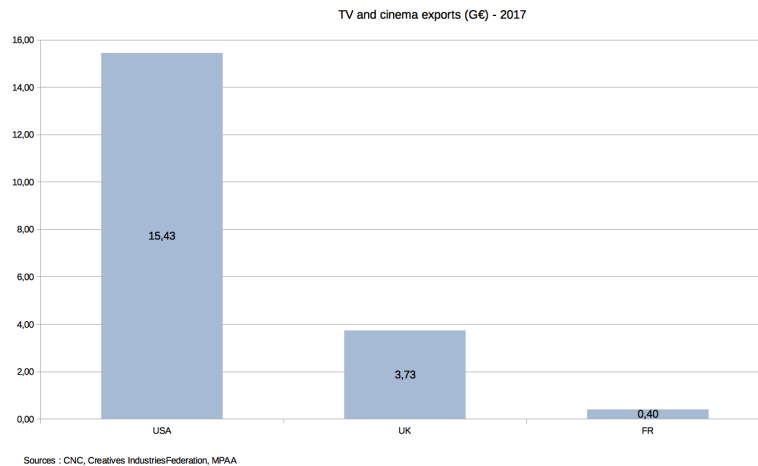


Figure 4: TV and Cinema exports

## 2.4 How works the regulation game

Several institutional reports call for an in-depth reform of the regulatory system (Vallet 2013, Boutonnat 2018), in order to reflect the change in technology, externalities and new entrants. However, a reform can be perceived as an expropriation by the producers, especially the bigger ones who benefit from the obligatory funding. Even players not directly gaining anything from the regulation may fear situations of uncertainty and the risk of imbalance that would result from a reform. Institutional change always induce a period of disequilibrium, which makes support for such changes more costly (Sened 1991, Fink 1987).

Reforming requires this *diagnostic* phase, but also a strategic one, to mobilize support and avoid criticism, a phase during which it is necessary to “find a grip on the institution”, i.e. to find room for maneuver in order to be able to act (Lagroye and Offerlé 2011). The *winners* of the regulatory system, which we identify as the largest producers, have a more solid grip on the institution than the reformer: they can mobilize coalitions to avoid change, while the potential beneficiaries of the change ignore the long-term benefits they could gain from a reform. They are also less united than the proponents of the institutions. The larger producers are more mobilized to maintain the status quo than smaller producers for reform, but in addition, not all players are equally gifted with power. Gimello-Mesplomb 2003 show how, since the late 1940s, film producers have been able to organize collectively in order to defend their interests.

The collective organization bodies of the cinema professionals, in the form of associations or trade unions give them a strong capacity to mobilize and defend their interests. These are grouped into three main organizations, the ARP, the BLIC and the BLOC. The ARP (*Association des Réalisateur et Producteurs*) is mostly composed of employers’ organizations and defends the producers’ interests. Its position is the absence of justification to change the regulation, as producers have no incentive to change. They benefit from an automatic support fund after their first production, a source of income is ensured by the obligations, and rely on the *intermittent* status of to reduce their fixed costs (Menger 2011).

The BLIC (*Bureau de liaison de l’industrie cinématographique*) is composed of several associations and federations of distributors and theater-networks. It defends a form of protectionism of the cinema ecosystem: media timeframe, strict control over movie screening. Several reports (Gomez 2011, Kopp 2016, Boutonnat 2018) point to the lack of transparency of the sector, mostly due to the absence of contractual relations.

These interest groups have an influence on the political debate, and are regularly heard in the context of the elaboration of reform projects. They can easily mobilize talents (actors, directors) to defend the cultural exception if their interests are threatened.

Finally, Knight and Sened 2000 show that the long-term maintenance of an institution can be explained by its ability to provide distributional benefits to those who have the power and/or authority to change it. In that sense, the benefits distributed to small businesses (diversity investment clauses for CANAL+ for instance) are a key element to consolidate their adherence to the status quo.

### 3 Entry of platforms and transition to a negative-sum game (2015-2018)

Digitization, and the evolution of broadcasting technologies lead to a progressive fall of barriers to entry. With the generalization of broadband access, the French administered ecosystem is facing a sudden opening to competition from international players, bypassing traditional means of distribution, and regulation.

#### 3.1 Digitization and the fall of barriers to entry

Digitization, the process of allowing the transmission of information in a digital format, changes the nature and distribution of rents in the ecosystem (Weeds and Seabright 2006). In the context of analogue broadcasting, transmission capacity formed a major barrier to entry, as the number of available channels was restricted by spectrum availability. Broadcasters earned massive rents, which were compensated by the obligatory investments and quotas.

The fall of costs of reproducing and transmitting information, and digital compression allowing for the transmission of more channels than what was previously possible with analogue technology reduced these barriers to entry in the broadcasting market. The competitive introduction of DTT channels to new entrants in the early 2000s posed a first threat to incumbents. This was cancelled by the gradual purchase of DTT operators by Hertzian groups, who maintained their position in a growing market (TF1 group takes over TMC and NT1 in 2009). In that sense, the first consequences of digitization were internalized by the ecosystem, and the changes in competition took place in a national and highly regulated frame. The growing market for television content allowed for rent sharing between incumbents and new entrants in a positive-sum game.

The entry of platforms, starting in 2014 with Netflix, creates a break in this process. The roll-out of high-speed internet connection allows entry of *over the top* (OTT) operators, distributing content over the internet without any intermediary. Their services are marketed directly online to the consumer, with access possible through mobile devices or television. This mode of broadcasting is not subject to the scarcity of frequencies, nor barriers to entry. Competition then takes on an international aspect, and is accompanied by a change in usage and consumption patterns.

The entry of OTT platforms is correlated to a gradual decline in television audiences (figure 4):

	15+	15-24	25-49	50+
2011	3h57	1h59	3h45	4h56
2017	-1.3% (3h54)	-23% (1h31)	-12%(3h17)	+3% (5h05)

Table 4: Evolution of the individual watching time: live TV+replay (Médiamétrie)

According to Concurrence 2019, this trend is confirmed by a -6.3 minutes fall in 2018. CSA 2018 establishes a causal link between consumption of audiovisual content online and this fall of TV consumption, especially for younger audiences.

Development of online advertising, weakens revenue for free to air channels<sup>9</sup>. Similarly, this new competition weakens pay-TV channels by offering similar offers at a lower cost. According to CNC and CSA , the low

<sup>9</sup>Decision n°18-A-03, 6/03/2018 autorité de concurrence



price offered by OTT offers encourages consumers to leave traditional offers, and could explain a 3.5% decline of pay-TV revenue in Europe between 2015 and 2018. Analysis of individual consumption time for free-to-air television shows a fall of audience between 2011-2017 (figure 5). This fall of audience also impacts advertising revenue.

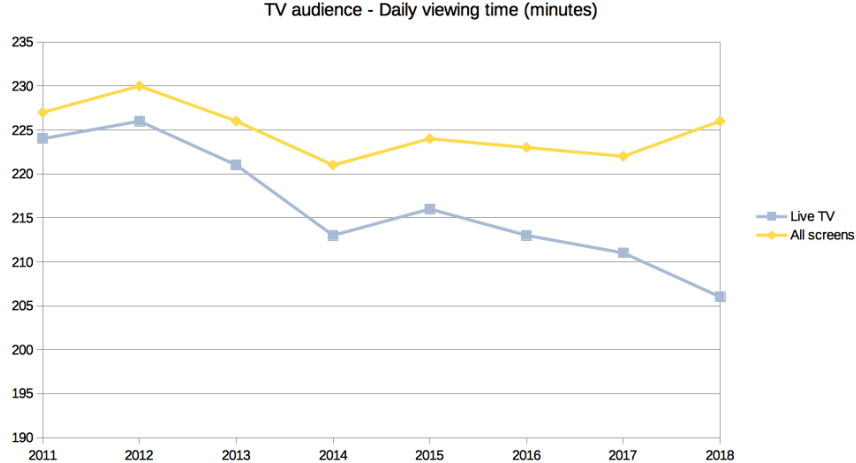


Figure 5: TV audience

As for online advertising, taking up a larger market share, revenue is captured by the search engines and social networks, with Google and Facebook at the top of the list, while audiovisual incumbents occupy a weak position (9% market share in 2017<sup>10</sup> for audiovisual operators) and benefit from limited growth prospects. (IREP 2018).

In that sense, this second opening of the French audiovisual market shifts the regulation game to negative-sum. Over the top broadcasting puts an end to the technological oligopoly of broadcasters, and thus lowers the value of their concessions, which was an important source of rents. Control over these means of distribution of content no longer grants exclusive access to the consumer. In this sense, platforms threaten to end the *limited access order* of the audiovisual industry.

### 3.2 Consequences on the competition game

This opening of the broadcasting market results in control over scarce content being gaining importance over control over the means of transmission. As sports rights or other valuable content has always been a key element in the competition between broadcasters (Steiner 1952), the increase in the number of channels and opening of the broadcasting market to a wide range of new players reinforces its value (Weeds and Seabright 2006).

As content is becoming easier to create and broadcast, the proliferation of screens and stories makes the viewer’s attention even rarer. TV that was the only home media able to convey video stories has become a source amongst many others. Even social networks have become competitors. Their success can eventually be explained by the attention paid by each member to the creation of her own personal stories.

In that sense, control over *premium* content becomes the main source of rents, as such content would guarantee a high audience.

Nicita and Rossi 2009 use the notion of substitutability with other contents to define *premium*. Such contents can be defined as specific information goods characterized by a low degree of substitutability with other contents from the consumer’s perspective. In other words, low quality content is not a good substitute for high quality *premium* content. Examples of such programs for the TV market include successful movies or

<sup>10</sup>Observatoire de l’e-pub, 20e édition, PWC 2018

series, as well as sports rights.

*Over-the-top* broadcasting changes the nature of competition for attention. By investing in addictive stories or programs, series-centered SVOD players make their content even less substitutable from the consumer's point of view (Lavialle and Bomsel 2017). In that sense, competition focuses on radical differentiation of content, in order to keep the attention of subscribers as long as possible.

On the production side, investments to vertically differentiate content add to the already high fixed costs in the industry, as *premium* content is generally capital-intensive<sup>11</sup>, involving high sunk costs and economies of scale. This leads to an increase in market concentration, by pushing small producers who cannot bear such high costs towards marginal formats.

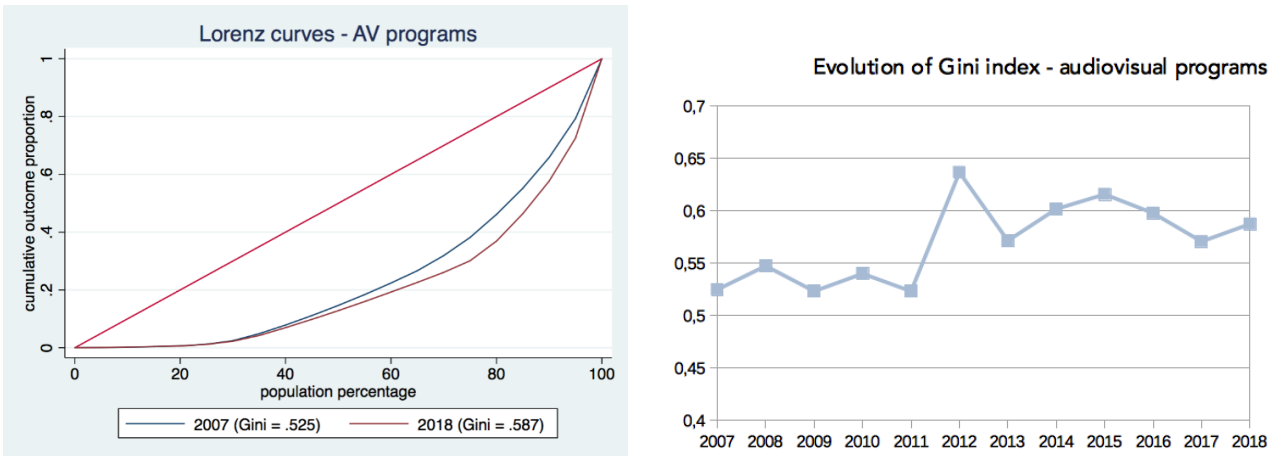


Figure 6: Rise in capital-intensity of audiovisual programs

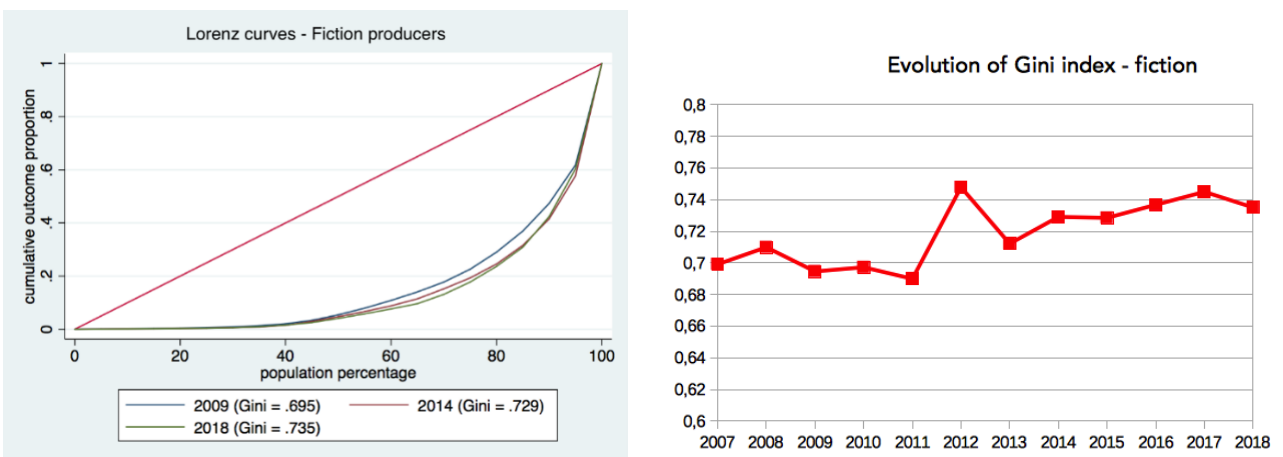


Figure 7: Concentration among the fiction producers

Figures 6 and 7 illustrate this process of rise in capital intensity of programs, leading to a concentration of the production sector between 2007 and 2018.

The rules of vertical separation between the production and broadcasting sectors give French producers an incentive in the short term to sell their under-exploited catalogue collections, financed by national channels, to platforms.

<sup>11</sup> Fiction programs cost on average 1M€ per hour, 2.8M€ for cinema, compared to 150k€ for documentary

The current regulation system also suffers from the profound changes in uses, directly linked to these evolutions in the transmission of information (see previous section). The possibility of accessing content on various devices and time frees the spectator from the television schedule. The window time-frame, which guaranteed the value of movies for each broadcaster is made obsolete: consumers demand a quick availability of content, and may turn to piracy if not the case. The American ISP Sandvine's Global Internet Phenomena report (Sandvine 2019) shows that peer-to-peer piracy is growing after a long period of decline (BitTorrent representing 3% of global downstream and 22% of upstream traffic in 2018 in the US). The report points to the dispersion and exclusivities of *premium* content as an explanation for the growth.

### 3.3 The destructive creation of the French audiovisual ecosystem

The status quo maintained in recent years is threatened in a context where SVOD platforms play a major role on the market, without complying with the rules of the *chronologie des médias* or creative funding obligations, while incumbent players are in great difficulty. Pre-purchases, particularly of pay-TV channels, are in the center of the French cinema financing model. In accordance with its obligations, Canal+ has pre-purchased 107 films in 2016 for a total of 141.7 million euros. However, as this investment is directly correlated to turnover of the channel, of which it must represent 12.5%, any decline in the broadcaster's activity will transfer to the movie industry.

The entry of OTT platforms and the decline in profitability of TV channels shift the French regulation game from positive-sum to negative-sum (Lavialle and I. 2016). In the end, the more the market deteriorates, the more prohibitive the costs of restoring a positive-sum and reforming.

As the exclusive broadcasting windows do not give enough compensation for the investments in production, there are low incentives for new entrants to invest in independent production and take part in the regulatory system. In that context, new entrants operate a form of *destructive creation*, by avoiding the regulation game altogether, and forcing traditional actors to imitate them. Indeed, the international platforms adopt a bypass strategy, using the regulatory heterogeneity between European countries to escape the regulation imposed on French broadcasters. This gives them a competitive advantage compared to regulated agents. To escape the French regulatory framework, Netflix has set up its head office in the Netherlands. The company therefore has no obligation to contribute to the funding of audiovisual production in France, nor any obligation to promote French works on its service. Moreover, the editorial approach based on a personalized recommendation algorithm does not allow the application of broadcasting quotas in a manner similar to that of traditional channels.

Although not subject to financing obligations, the video-on-demand service does invest in French production (*Marseille* 2015, *Plan Coeur* (2018) *Deutsch les Landes* (2018) ...). However, contrary to the incumbents' obligatory investments, the platform retains the copyright of the purchased works. This is still a winning situation for large producers working with platforms: they still gain from keeping the regulation as it stands, capturing funding both from regulated and non-regulated players.

The incumbents' best response strategy to compete with these new entrants is to enter the market for SVOD platforms: traditional Pay-TV operator CANAL+ launched the service *MyCanal*, followed by the free-TV broadcasters TF1, M6 and France Télévisions with *Salto*.

Bellon 2016 explains the difficulties for the regulation to integrate the new entrants by the diverging interests of the institutional structures in charge. The Ministry of Economy seeks to encourage activity and digital technology, while the Ministry of Culture's main objective is to preserve the system of support for creation and the *cultural exception*. In addition, the development of a French player capable of competing with the international platforms is hampered by regulatory authorities, less attentive to the political objectives set by each ministry than to compliance with competition rules in the audiovisual and telecommunications markets.

Indeed, the French new media services are subject to a heavier regulation than international platforms: in the 08/12/2019 decision<sup>12</sup>, the French competition authority imposes on *Salto* to limit its joint purchases of

<sup>12</sup>décision 19-DCC-157 du 12 août 2019

linear and non-linear broadcasting rights. In addition, *Salto's* supply conditions will be regulated in several ways, to limit its ability to supply exclusive content to its parent companies.

## 4 Conclusion

The French audiovisual ecosystem is formed by two very separate subsystems, TV and cinema, whose separation has been created and kept on by the regulation. The production ecosystem is formed by large suppliers who benefit from economies of scale in the production of recurrent products, and a large number of small firms with very little capital. The rise of TV series as the main premium fiction program leads to an increase in the capital-intensity of orders, and to the concentration of supply. The smaller producers' lack of capital makes them dependent on the order of TV channels. As the broadcasters do not have sufficient incentive to invest in programs that can be valued outside of their exclusive window, the residual property rights granted to these producers have low value (copyright on programs with low export/resale potential).

After a first wave of new entrants with the addition of new digital frequencies, this ecosystem is now threatened by the entry of the OTT players, made possible by the adoption of broadband access. This, accompanied by changes in modes of consumption is turning the television game into a negative-sum one.

The adaptation of the ecosystem to this new industrial paradigm cannot be achieved by way of reform, as disrupting the status quo would incur prohibitive costs for the reformer. Indeed, the strong path dependency effects attached to the regulation means that a reform will have more difficulties attacking the core of the institution, which is defended by a series of inheritances and vetoes from interest groups. In that context, it is possible that the new entrants, by succeeding in avoiding regulatory control will operate a destructive creation, by making obsolete the institutional frame of the French audiovisual and cinema markets. The choice made by the French regulator to disintegrate broadcast from content production has kept down the market value of audiovisual copyrights. This choice corresponded to a balance kept between regulated broadcasters and disintegrated producers so to keep the ecosystem under political control. The transfer of asset value from the broadcasters to independent producers may eventually benefit to non-French players who will in the end purchase the wealthiest production companies.

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## Appendix

## Additional Tables

	Audiovisual obligations			
	Free-to-air channels		Pay-TV channels	Cinema channels/CANAL+
	Choice 1	Choice 2		
Independence Clause		75% of investments		
AV works	15%	NA	15%	NA
Heritage works	10.5%	12.5%	8.5%	3.6%

	Cinema obligations			
	Non-specialized channel	Specialized channel	1st broadcast-specialized	CANAL+
			75% of investment	
Independence Clause				
European Movies	3.2%	21%	26%	12.5%
French Movies	2.5%	17%	22%	9.5%

Table 5: Simplified representation of obligatory investments

	COSIP (public subsidy)	Broadcasters	French private Investment	Foreign Investment
2007	88	562	117	28
2008	99	601	111	29
2009	79	545	89	19
2010	75	551	97	24
2011	81	584	113	40
2012	75	498	87	50
2013	78	523	111	28
2014	71	501	121	47
2015	67	476	93	20
2016	83	552	112	53
2017	79	505	125	30
2018	84	534	147	29

Table 6: Fiction Funding (2007-2018), M€

	CNC and regional subsidies	Broadcasters investment	Distributors (guaranteed minimum)	Foreign private investment	French private investment
2007	51,3	319,4	193,5	68,9	394,1
2008	54,7	362,2	335,1	22,3	473,9
2009	53,6	315,3	154,6	52	367,8
2010	70,4	389,7	192,8	80,8	438
2011	61,7	380	223,5	91,2	399,3
2012	56,8	359,6	209,3	87,1	404,3
2013	65	291,8	257,4	94,6	374,1
2014	63,2	291,4	144,9	81,3	300,9
2015	67,6	378	147,9	56,1	379,7
2016	69,2	315	256,5	52	525,1
2017	70,9	363,3	192,5	102,4	472
2018	68	281,7	136,8	52,7	443,7

Table 7: Cinema Funding (2007-2018), M€

	Shortcom	Sitcom	Serie 52'	Serie 90'	TV movie
2007	43	281	262	53	168
2008	69	369	267	33	174
2009	68	260	198	42	184
2010	46	253	166	49	216
2011	77	220	241	62	174
2012	124	245	213	52	134
2013	172	168	270	64	108
2014	127	192	257	50	124
2015	104	196	276	61	105
2016	135	200	405	62	95
2017	139	292	340	18	82
2018	75	438	354	23	105

Table 8: Number of fiction hours

	Audiovisual programs	Fiction programs
2007	0,52	0,70
2008	0,55	0,71
2009	0,52	0,69
2010	0,54	0,70
2011	0,52	0,69
2012	0,64	0,75
2013	0,57	0,71
2014	0,60	0,73
2015	0,62	0,73
2016	0,60	0,74
2017	0,57	0,74
2018	0,59	0,73

Table 9: Gini indexes

## Hierarchical upward classification

### Audiovisual Database

The hierarchical upward classification allows us to obtain a partition of the population into homogeneous groups.

The objective of the model is to divide  $n$  individuals (production companies) into a given number of classes. Classification is based on a measure of dissimilarity, or distance between individuals. The goal is to minimize the distance between individuals within a group and to maximize it between groups.

We choose here to use a hierarchical upward classification algorithm which has the advantage of allowing an ex-post choice in the number of classes. We start from a situation where all individuals are alone in a class, then are grouped into larger and larger classes, grouping at each stage the nearest classes in the sense of the distance measurement chosen.

Let  $\Omega$  Be the entire study population. We define,  $H$ , a hierarchy so that:

$$\Omega \in H \tag{1}$$

$$\forall \omega \in \Omega, \{\omega\} \in H \tag{2}$$

$$\forall (h, h') \in H^2, (h \cap h' = \emptyset) \vee (h \subset h') \vee (h' \subset h) \tag{3}$$

At the top of the hierarchy, all individuals are grouped into a single class. At the bottom, all individuals are alone. So we start from  $n$  classes and try to reduce this number to  $p$  classes, with  $p$  arbitrary. At each step, the two closest classes are merged. We call aggregation index the distance between those two classes. Since the closest individuals are grouped first, the first iteration has a low aggregation index, which will increase from iteration to iteration.

For the estimation of the model, we use the Ward method, aiming to maximize the inter-class inertia, defined as follows:

$$d(C_1, C_2) = \frac{n_1 n_2}{n_1 + n_2} d(G_1, G_2) \quad (4)$$

with  $n_1$  et  $n_2$  the number of individuals within each class, and  $G_1$  et  $G_2$  their respective center of gravity.

Inertia, or the within-cluster sum of squares criterion, can be recognized as a measure of how internally coherent clusters are. It suffers from various drawbacks:

Inertia makes the assumption that clusters are convex and isotropic, which is not always the case. It responds poorly to elongated clusters, or manifolds with irregular shapes. Inertia is not a normalized metric: we just know that lower values are better and zero is optimal. But in very high-dimensional spaces, Euclidean distances tend to become inflated (this is an instance of the so-called ‘‘curse of dimensionality’’). Running a dimensionality reduction algorithm such as PCA prior to k-means clustering can alleviate this problem and speed up the computations.

Once the hierarchy is established, the choice of the number of classes chosen is arbitrary, as the model is primarily descriptive. However, different criteria can be used to ensure the relevance of this choice. We present in details the methodology adopted for the classification of audiovisual producers, then present the results for the cinema producers.

First, we determine the variables of interest used to classify producers. This selection is made by means of a principal component analysis on the centered and reduced variables. The procedure gives us principal axes summarizing the information by operating a reduction of dimensionality. We choose to keep 3 components, accounting for around 75% of the information (table 10). The model is run of the following variables:

- **Devis** : is the total budget for all productions of an industrial group
- **Nb<sub>film</sub>** : *isthetotalnumberofproductions* **Heures** : *isthetotalnumberofhoursproduced*
- **gAnim** ; **gDocu** ; **gFict** ; **gMaga** ; **gSpec** : are the budgets used by genre (respectively animation, documentary, fiction, magazine and live entertainment )
- **F100** : is the number of movies with a funding entirely french
- **MINO** : is the number of movies with a foreign funding share below 50
- **MAJO** : is the number of movies with a foreign funding share above 50

Table 11 shows the position of the variables on each axis of the selected components. We generate a cluster analysis from these coordinates.

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	5,47106	4,10702	0,4974	0,4974
Comp2	1,36404	0,26643	0,124	0,6214
Comp3	1,09761	0,0840711	0,0998	0,7212

Table 10: Principal components analysis



Variable	Comp1	Comp2	Comp3
$z_{devis}$	0,3563	0,3046	-0,2832
$z_{nb_{film}}$	0,3973	-0,2636	0,0142
$z_{heures}$	0,4005	-0,0777	-0,004
$z_g Anim$	0,0624	0,393	0,3367
$z_g Docu$	0,3259	-0,3683	-0,023
$z_g Fict$	0,2701	0,3822	-0,5123
$z_g Maga$	0,1079	-0,2661	0,391
$z_g Spec$	0,2688	0,1618	0,2912
$z_F100$	0,3682	-0,354	0,002
$z_M AJO$	0,3423	0,1926	-0,0088
$z_M INO$	0,1875	0,3691	0,5527

Table 11: Principal components analysis: variable projections

We then define a producer by its coordinates in the plane formed by the three principal axes:

$$P = (x, y, z) \in \mathbb{P} \tag{5}$$

We then generate the hierarchy, illustrated in figure 9.

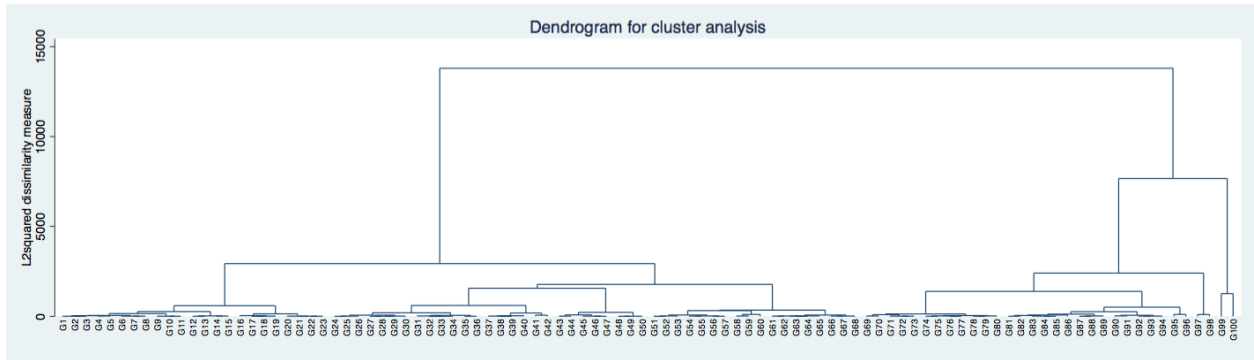


Figure 8: Dendrogram for cluster analysis

In order to choose the number of classes, we use two criteria. First, the Calinski Pseudo-F criterion (Caliński and Harabasz 1974) corresponds to a weighting of the intra-group variance by the number of groups. The higher the value of the index, the better the cut. Secondly, we use the Duda criterion (**Duda**), given at each step by the ratio between the sum of standard deviations of the groups to be divided (Je(1)) and the sum of the standard deviations of the two resulting subgroups Je(2). A high value of this index indicates a good cut. Table 12 presents the evolution of the two criteria for each number of classes.

As a first step, we choose 5 classes. The fourth group is differentiated only by a large foreign funded production. In a concern of clarity we decided to merge it with the third group Large producers. Results of the model are presented in the main paper, table 2.

### Cinema classification

The same model is estimated for cinema producers. We use the following variables:

- $montant$  : is the budget of the movies produced
- $mttEq$  : is the budget divided by the number of coproducers. This biased variable is used in absence of a precise breakdown of investments.
- $nb_{film}$  : *isthenumberofproductions*  $F100$  : *isthenumberofmovieswithafundingentirelyfrench*
- $MINO$  : is the number of movies with a foreign funding share below 50

Number of Clusters	Calinski/ Harabasz (Pseudo-F)	Duda (Je(2) / Je (1))
2	1347,54	0,4703
3	1508,87	0,7236
4	1374,14	0,5664
5	1357,08	0,7123
6	1356,41	0,5184
7	1404,6	0,5448
8	1495,67	0
9	1641,92	0,5469
10	1648,57	0,6088
11	1690,66	0,6017
12	1739,45	0,701
13	1746,33	0,4774
14	1763,65	0,6114
15	1774,93	0,6075

Table 12: Duda and Calinski indicators

- MAJO : is the number of movies with a foreign funding share above 50
- act : is the number of active year on the period

Our three main components represent 94% of the information.

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	5,04129	3,93632	0,7202	0,7202
Comp2	1,10497	0,691038	0,1579	0,878
Comp3	0,413934	0,145579	0,0591	0,9372

Table 13: Principal components: cinema

Below, the position of the variables on each axis of the selected components.

Variable	Comp1	Comp2	Comp3
$z_{montant}$	0,4065	-0,318	0,301
$z_{ttEq}$	0,3906	-0,3117	0,3889
$z_{bfilm}$	0,4384	0,0638	-0,0446
$z_{F100}$	0,4185	-0,1824	-0,1747
$z_{MAJO}$	0,3967	0,017	-0,2154
$z_{MINO}$	0,2001	0,7774	0,5583
$z_{act}$	0,3428	0,3998	-0,6063

Table 14: Principal components: cinema, projection

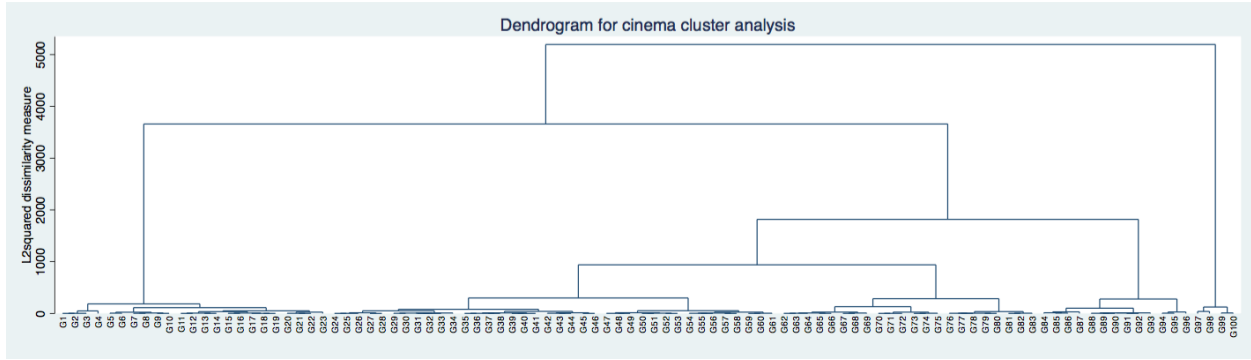


Figure 9: Dendrogram for cluster analysis (cinema)

Number of Clusters	Calinski/ Harabasz	Pseudo-F	Duda Je(2) / Je (1)
2		626,38	0,5809
3		905,54	0,5981
4		1112,25	0,5745
5		1248,7	0,5744
6		1163,32	0,497
7		1139,72	0,4411
8		1168,97	0,6658
9		1169,44	0,4253
10		1153,48	0,2804
11		1156,33	0,6401
12		1169,69	0,454
13		1191,42	0,7049
14		1204,5	0,5957
15		1192,63	0,4984

Table 15: Duda and Calinski criterion: cinema