Regulating the Mandatory Participation of TV Networks in Financing the Movie Industry: The Case of Spain

Víctor Fernández-Blanco and Ricard Gil

1 Introduction: Public Policies in the Spanish Movie Industry

Given the numerous headlines in the tabloids about movie stars, one may wonder why any government would subsidize and protect such a glamorous industry at the expense of other social and welfare programs. Some say that governments subsidize their domestic movie production to promote its country's culture as well as to satisfy demand for a product that otherwise the market would fail to deliver. In this paper, rather than testing these hypotheses, we focus on evaluating the impact of a very specific type of indirect government intervention in Spain starting in 1999. In this particular case, the Spanish Government mandated by law that TV networks invest 3% of their revenues on the production of Spanish movies.

Although we focus on the case of Spain, many other countries (both developed and developing countries as well as those with solid movie industries) intervene in their domestic motion picture industries, both through grants and tax incentive programs.

Despite the fact that these programs are pervasive around the world and their cost comes to the expense of social and welfare programs, this topic has not received much attention from economists. This is mostly due to the lack of good data and the absence of natural experiments that may allow estimating the impact of government intervention on movie production. Nonetheless, this is an important understudied question, and therefore our paper's main contribution is to be among the first attempts (to the best of our knowledge) to evaluate a particular type of government intervention in the movie industry.

V. Fernández-Blanco (✉)
Universidad de Oviedo, Oviedo, Asturias, Spain
e-mail: vfernan@uniovi.es

R. Gil
Johns Hopkins University, Baltimore, MD, USA
e-mail: ricard.gil@jhu.edu

Our paper uses the Spanish movie industry as empirical setting.[1] The Spanish *Ministry of Culture* uses a combination of regulatory and direct instruments to influence the domestic film industry. Examples of the latter are grants for production, distribution, and promotion for Spanish films, reductions in the interest rate for production and exhibition loans, and fiscal benefits for private investment in film projects. In 2008, the then Socialist Spanish Government spent 76.3 million euros on these programs.

In this chapter, we evaluate the impact of a change in regulation occurred in 1999 through which the Government obliged TV operators to invest 5% of their annual gross income on European audiovisual productions and 3% on productions of Spanish language. We do so by exploiting cross-sectional variation in movie box office revenues and TV network participation in Spanish movies between 2000 and 2008. Here we cannot answer the question of whether countries should support their domestic movie industries. Instead, this paper sheds light on whether this specific government program has improved the economic performance of the Spanish movie industry.

To do so, we use a data set that combines information from *Nielsen Edi* (which was sold to *Rentrak* in 2009) on box office revenues and attendance on 621 Spanish movies released in Spain between 2000 and 2008[2] with information on the movie's genre, release year, and distribution firm. We complemented these data with information for each movie on whether any of the TV networks formed part of its production or distribution team and whether a movie is an international co-production as well as the share of the production budget financed by Spanish capital. Finally, we obtained data on the movie's production budget by searching several internet webpages such as the Internet Movie Database (IMDb) website, the *Ministry of Culture* website, and press releases. We were only able to collect information on production budgets for 515 of all 621 movies. In the end, the average movie in our sample collects 1.1 million euros, sells 250,000 tickets, and loses money in the theatrical business according to our measure of gross profitability. The average production budget is almost 4 million euros of which 81% are financed with Spanish funds. Of the 621 movies, 72% count with TV network funding, 20% in production, and 65% through TV rights acquisition and distribution.

We do not have data before the law change, and there is no apparent break or exogenous change in regulation during our sample period. Therefore, we identify a cross-sectional relationship between our measures of movie performance (box office revenues, admissions, and gross theatrical profitability) and TV network participation. We use various fixed effects to control for unobservable factors that

---

[1]The present chapter version firmly relies on a prior publication on the same topic published on *ResearchGate* in 2012. An advanced version of this chapter may be found in Fernández-Blanco and Gil (2012).

[2]We only have information for a few movies for year 2000. For years between 2001 and 2008, movies in our data set account for between 86% and 96% of the box office of Spanish movies each year.

may drive movie performance and be correlated with TV network participation. Finally, we use a simultaneous equation model approach to address the problem of endogeneity that happens when an explanatory variable is correlated with the error term in an econometric model.

Our most robust finding is that there is a positive empirical relationship between box office revenues and TV network participation. Moreover, our findings show that it is the participation of a private TV network that raises the profile of a movie by increasing (in the cross section) box office revenues, admissions, and gross return on investment. The result is stronger when private TV network participation takes place through production, than sale of TV rights, in movies of higher production budgets.

This main result differs much from a secondary result that shows a negative correlation between movie performance and government-owned TV network participation. This is consistent with the idea that the two types of organizations are targeting very different types of movies. The former looks for movie projects that will have good market performance, whereas the latter supports movie projects that aim to promote artistic and cultural criteria. We also find a robust positive association between production budgets and movie performance.

Our estimation of "three stages least squares" (3SLS) in simultaneous equations models yields mixed results. If we assume that production budgets are set exogenously, we do not find a statistically significant impact of TV participation on movie performance. However, when taking production budgets as endogenous, our results show a statistically (and economically) significant impact of TV participation on movie performance. The validity of our econometric model leans on our exclusionary restrictions and the exogeneity of movie demand, movie genre, and percentage of participating foreign capital.[3]

Our inference of these results takes two different directions. First, it may be that TV network participation has no impact whatsoever on movie projects, and our results just show that private TV networks are better at selecting projects that are more attractive to movie audiences and that otherwise would have not been selected for final production. Second, private TV networks are able to tilt projects in directions that will be more attractive to audiences. Regardless, the conclusion is that private TV networks are either better at identifying projects worth pursuing or making existing projects more profitable. Therefore, the Spanish Government did well by reaching out to private initiative to maximize revenues obtained by movies produced domestically.

The policy implications derived from the empirical result found in the cross section of movies are various. First, movies produced by TV networks collect higher revenues, and therefore we are tempted to be positive about the impact of this policy on the Spanish movie industry. Second, having in mind our first implication, we argue that the fact that TV network participation is positively correlated with movie performance even after controlling for movie production

---

[3]Exogeneity means that all these explanatory variables are not correlated with error term.

budget suggests that policies targeting the augment of production budgets may be necessary but not sufficient. It is the participation of experts working in the private sector that increases movie performance beyond what production budgets alone may do.

Finally, let us be precise in what the contribution of this paper is. Here we can only provide a grasp of what the short-term gains of this specific policy may be. We cannot evaluate the magnitude of long-term gains such as the increase in highly skilled personnel in the domestic media industries. For the same reason, we cannot provide an estimate of the trade-off between short-term and long-term gains as well as money and resources spent on policies targeting higher domestic production budget movies versus other social programs. At best, our paper is limited to provide a sign on the gross effect of the policy on movie performance.

Nevertheless, the paper contributes to two separate parts of existing literature. The first part details the determinants of performance of movies as ours evaluates government intervention as a possible factor.[4] The second is the literature examining the optimality of government intervention since no private firm may be willing to produce domestic movies if these have externalities on others that qualify them as public goods (Casson, 2006; Frey, 1994) forcing governments intervene directly or indirectly into this industry.

The chapter is structured as follows. Section 2 documents the different ways in which governments intervene in their respective motion picture industries and describes the institutional framework in which our empirical setting takes place. In Sect. 3, we describe the data at hand. Section 4 details the empirical methodology, results, and a discussion of the results. Finally, Sect. 5 concludes.

2   Institutional Framework

Let us now provide an overview of the institutional framework before our empirical section. First, we provide a general description of government intervention in the movie industry in the world. We follow that introduction by focusing in a description of the regulatory framework in Spain.

Government Intervention in the Movie Industry
Government intervention in the movie industry can take different forms: direct or indirect intervention. Regulation would imply screen quotas and foreign film rationing among other policies. Direct intervention policies by the government influence directly the process of production through own production, subsidies to production, prizes, and film festivals.

Let us first take the United States as an example. As movies have become an increasingly risky investment, private investors and banks have reduced their investment and loans to this industry. For this reason, the federal government

---

[4]See Hadida (2010) for an extended review of that literature.

established in 2004 a federal tax incentive program that allows the deduction of production cost of certain qualified audiovisual works for income tax purposes with the aim of fostering movie production inside the United States.[5]

Turning now our attention to Europe, using public grants for funding the audiovisual industry is common policy in the *European Union* (EU hereafter) since 1991 when the MEDIA Programme was first introduced. A 5-year program in its three previous appointments, the EU has spanned the program to 7 years (2007–2013) and an endowment of 755 million euros to strengthen the competitiveness of the European audiovisual sector. It is important to emphasize that 65% of the budget focuses on distributing and promoting European films outside their originating country, across Europe and worldwide.[6] Additionally, the *Council of Europe* manages since 1989 its own *Eurimages* program supporting co-production (90% of the budget), distribution, and exhibition of European movies.

On top of these EU-wide programs, the European countries have their own programs. For instance, France has a very complex system of public financial support of its film industry, including public grants, tax credits, and tax incentives for private investors. In Germany, there are federal and regional public subsidies and a system of automatic reimbursement of a percentage of production costs for film production. In Italy, subsidies, based in box office revenues, are combined with interest-free or soft-term loans. And, finally, in the United Kingdom, those movies qualified as British films can apply for national funding and tax benefits.

This type of programs extends beyond the United States and the EU. In Argentina, we can highlight the presence of a funding system linked to box office performance facilitating the recovery of film production costs. In Brazil, besides funding programs targeting the development of movie projects, there are also tax reliefs for donations to audiovisual projects and investment in the movie industry. Finally, even India, one of the largest movie producer countries in the world, has recently begun public financing policies for the film industry by co-producing a certain number of films and offering tax benefits linked to some co-production treaties.

The Case at Hand: The Spanish Movie Industry

In Spain, the *Ministry of Culture* intervenes in the domestic movie industry through a combination of regulatory and direct policies. The most common example of the former is the presence of screen quotas: at least 25% of shows in domestic theaters

---

[5]This tax incentive program, which was initially supposed to last only until January 2010, has been extended to 2010 and thereafter, and it was compatible with any other incentive that could be available in each of the states. In that sense, many states have their own incentive programs. For instance, California offers tax exemptions and some advantages for films located in this state (see "Entertainment Legal Resources" at www.marklitwak.com). Christopherson and Rightor (2010) pointed out that the use of public money is inefficient or ineffective to build a sustainable movie industry outside New York or Los Angeles.

[6]MEDIA is now a subprogram of the *Creative Europe Program*. It is funded with 817.6 million euros for the period 2014–2020.

must be used for screening EU films each year. The system of direct interventions is more complex because it combines grants for production, distribution, and promotion for Spanish films, grants for protection of Spanish audiovisual heritage, reductions in the interest rate for production and exhibition loans, and fiscal benefits for private investment in film projects. In 2008, the Spanish Government expended 76.3 million euros in direct funding, and 73.4% of this amount (56 million euros) was direct grants paid to movie producers related to box office performance.[7]

The Spanish Government also intervenes in the movie industry through regulation. An example is the law that since 1999 obliges TV operators to invest 5% of their annual gross income on European audiovisual productions, excluding TV series. This new regulation did not change any previous law or substituted existing government programs. Let us next describe the timeline and nature of this regulatory change.

In 1994, the Law 25/1994 defined the new framework of the TV industry in Spain adapted to the European Union Directive 89/552/EEC "Television Without Frontiers" which aims to guarantee the free movement of EU television content within the internal market and to require TV channels to reserve more than half of their transmission time for European works. In 1989, the Spanish Law included these criteria when it defined the new legal environment for new and old operators as well as for the newer technologies. In 1999, an Addendum (Law 22/1999) renewed the previous Law and introduced the 5% of revenue requirement on investment on European production for all the TV operators that broadcast movies. This regulation did not replace any of the existing aid programs in Spain but added a new line of support to the Spanish movie industry.

In addition to this, in 2001, the Law 15/2001 added a refinement to the 5% requirement on investment on movie production. It specified that 60% of the 5% previously established, that is, 3% of the total revenues, had to be invested in national production as opposed to European non-Spanish production. Finally, in 2004, the Royal Decree 1652/2004 did not add any substance to this previous legislation but established a system of checks and balances that would monitor contributions from TV stations and make sure the existing regulation was followed diligently.

In 2007, a new *Cinema Law* (Law 55/2007) was written down, and it consolidates this 5% revenue requirement. Out of the period we have analyzed,

---

[7]After satisfying some release conditions, a producer might obtain 15% of the first 12 months gross box office of his/her movie. There were also funding programs that promote the presence of Spanish movies in international film festivals and the development of screenplays and production projects. In 2015, the Conservative Spanish Government introduced important changes in the public policies applied to the Spanish movie industry (see Royal Decree 1084/2015). Under the Socialist Government, grants were linked to box office performance of each movie. Nowadays, the main part of the grants is paid in advance to movie projects. At the same time, there have been important cuts in public funding of cinema. For instance, in 2015, the Spanish Government spent 45.2 million euros on the Spanish movie industry. See *Boletín Informativo*, *Instituto de la Cinematografía y las Artes Audiovisuale*s, Spanish Ministry of Culture (http://www.mcu.es/cine/MC/BIC/index.html).

the Law 7/2010 and the Royal Decree 988/2015 introduce some relevant novelties. There is a change in the percentages of investment: public TV networks have to invest 6% of their annual gross income on audiovisual products. For all the TV networks, it is now allowed to invest on TV series. Moreover, 60% of this investment (75% in the case of public TV networks) should be on movies. The requirement of 60% invested in national movies remains.[8]

3   Data Description

The Spanish Movie Industry from 1990 to 2008
Spain is a relevant market within the international movie industry due to its size and demand for movies. With 107.8 million admissions in 2008, Spain is the fifth European market in absolute terms, but in relative terms, its 2.37 average admissions per capita are above the EU (1.85), Germany (1.58), and Italy (1.88) and below the United Kingdom (2.69) and France (3.06).[9] Despite these encouraging numbers, admissions have fallen for the fourth consecutive year (7.8% on 2007), and in spite of rising average ticket prices, total revenues have decreased 3.8% on 2007.

Similarly to other Western economies, the American movie industry dominates the Spanish movie theater industry in terms of box office revenues generated. In 2008, the Spanish movie market share was 13.2% of the box office, while the share of US movies was 71.7%.[10] Moreover, see in Fig. 1 that this has been the norm in the Spanish movie theatrical market for the last 20 years. The market for movie distribution offers a very similar picture since six international distributors associated to Hollywood studios control three quarters of the box office revenues in Spain.

Let us now pay closer attention to the domestic movie production industry in Spain. Figure 2 provides time series of Spanish movie production between 1997 and 2008 by whether the movie was released in the theatrical market or not. See that there is a clear upward trend over the whole period. Nevertheless, the growth occurred between 1997 and 1999 was much slow than the observed growth after 1999. This is especially relevant to our paper because 1999 is the year that the 5% requirement of TV operator investment was first introduced by law.

Despite the revealing upward trend, this picture is telling us more than that. Martin (2009) in an article published in a major Spanish newspaper *El País Digital* claims that even though Spanish domestic movie production is at a record high, a

---

[8]During the period 2010–2015 and on average, the distribution of these TV network investments was as follows: Spanish movies, 37.9%; Spanish TV movies, 7.3%; European (non-Spanish) movies, 6.4%; European (non-Spanish) TV movies, 0.3%; Spanish TV series, 37.8%; and European (non-Spanish) TV series, 10.3% (see *Comisión Nacional de los Mercados y la Competencia* 2017).

[9]In the United States, the average admissions per capita in 2008 was 4.46 and in India 2.81.

[10]In the EU, the US market share in 2008 was 63.2%.

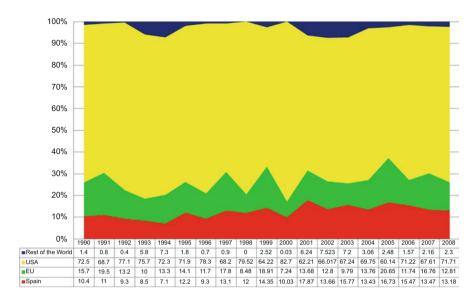|	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Rest of the World	1.4	0.8	0.4	5.8	7.3	1.8	0.7	0.9	0	2.52	0.03	6.24	7.523	7.2	3.06	2.48	1.57	2.16	2.3
USA	72.5	68.7	77.1	75.7	72.3	71.9	78.3	68.2	79.52	64.22	82.7	62.21	66.017	67.24	69.75	60.14	71.22	67.61	71.71
EU	15.7	19.5	13.2	10	13.3	14.1	11.7	17.8	8.48	18.91	7.24	13.68	12.8	9.79	13.76	20.65	11.74	16.76	12.81
Spain	10.4	11	9.3	8.5	7.1	12.2	9.3	13.1	12	14.35	10.03	17.87	13.66	15.77	13.43	16.73	15.47	13.47	13.18

Fig. 1 Market shares in Spain 1990–2008. Source: Spanish Ministry of Culture
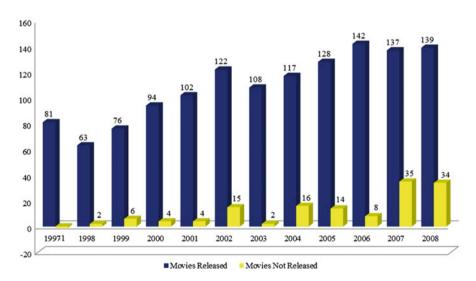

Fig. 2 Spanish movies released and not released 1997–2008. Source: Spanish Ministry of Culture

significant number of these films are not released in the theatrical market because they do not pass the market test. Following Martin's claim, we see that even though it is true that the number of movies produced and released has increased dramatically since 1997, it is also true that the number of movies produced and not released in the theatrical market has also increased significantly. See that between 1997 and

2001, the number of non-released movies barely ever went beyond 5, and how after 2001, this number averaged 15 non-released movies. This could be indicative that the Spanish Government has been spending too much money on projects that are not passing the market test and probably not helping much in the promotion of Spanish cinema.

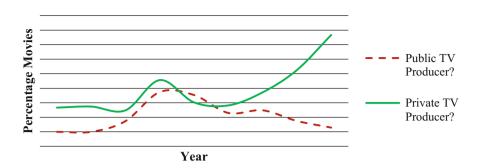### Summary Statistics for the Spanish Movie Data Sample 2000–2008

In this paper, we use a data set that combines data acquired from *Rentrak* detailing the full list of Spanish movies released in the domestic theatrical market between 2000 and 2008. This contains information regarding the movie title, genre, distribution firm, total box office revenue, and admissions. We complemented this information with other data such as production budget, whether a TV network was involved in the production or distribution of each movie, percentage of foreign capital involved in production, as well as whether the movie had been mainly financed through the sale of TV distribution rights to a network. This information was not readily available from *Rentrak* or other centralized sources, and so we searched for information on individual movies through different websites such as IMDb.com, the movie archive website at ICAA within the Spanish Ministry of Culture webpage, and different press releases for specific movies (see summary statistics of these variables in Table 1).

Overall we have information for 621 movies. We have full information for all variables except for "percentage domestic production" (619) and "budget" (515). Using the information on production budgets, we compute a rough measure of

Table 1 Summary statistics for all variables

	No. Obs	Mean	Std. Dev.	Min	Max
Box office revenues (Euros)	621	1,159,033	2,796,461	691	27,100,000
Admissions	621	252,220.8	558,374.2	0	5,237,066
Gross return on investment	458	−0.91	0.16	−1.00	0.26
TV?	621	0.72	0.45	0	1
TV producer?	621	0.20	0.40	0	1
TV rights sold?	621	0.65	0.48	0	1
Public TV producer?	621	0.06	0.24	0	1
Private TV producer?	621	0.15	0.36	0	1
Private TV rights sold?	621	0.47	0.50	0	1
Public TV rights sold?	621	0.49	0.50	0	1
Budget (thousand euros)	515	3933.55	9290.91	60	130,000
Percentage domestic production?	619	0.81	0.29	0	1

Note: This table provides summary statistics for all variables used in our empirical analysis. The gross rate of return on investment by calculating 1/4 of box office revenue minus the budget and dividing the result by the budget itself. We dropped multinational co-productions for which Spanish contributions were less than 30% of the total budget when calculating the variable on the gross rate of return

Fig. 3 Evolution of TV production by network type. Source: Spanish Ministry of Industry, Trade and Tourism, several years

profitability that we call "gross return on investment." This is the result of the formula RoI = (0.25*box office revenue−production budget)/production budget.[11] We also dispose those movies for which Spanish capital accounts for 30% or less of the total production budget.[12] In these cases, our measure of "gross return on investment" is largely misleading, and therefore we prefer to leave these observations out.

According to our data set, on average movies collect close to 1.12 million euros during their Spanish theatrical run. This translates into 252,000 admission tickets sold. Of the 621 movies available in the data set, 72% have some degree of TV network influence. We can separate this into 20% due to movie production and 65% due to financing through the sale of TV rights. It is important to highlight also that 15% of the movies are produced by private TV networks, whereas only 6% are produced by public networks. On average private and public TV networks show very similar participation rates through TV rights sales with 47% and 49%, respectively.

Let us also note that on average, 81% of the capital used to produce movies in our sample is domestic and that the average budget in our subsample of 515 movies is 3.9 million euros. The gross return on investment (after dropping those movies with less than 30% domestic capital) averages 91% and ranges from plus 26% to minus 100%.
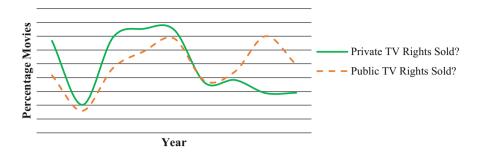
Since we are primarily interested in disentangling time variation in movie demand across years from patterns in TV participation in our empirical analysis, we next plot averages of the evolution of TV network production and TV network acquisition of TV rights over time in Figs. 3 and 4.[13]

Figure 3 below plots averages of the evolution of TV network production by whether the network is private or government-owned. While private TV network

---

[11]This is a very rough measure and follows finding in Gil and Lafontaine 2012 who show that average sharing term between distributors and exhibitors in Spain is 50% approximately. Other anecdotal evidence shows that producers and distributors enter similar sharing agreements at 50% of the distributor revenues.

[12]An example is *Sahara* a Spanish-US co-production that only counted with 10% Spanish capital out of 130 million euros of the total budget.

[13]See Table 4 in the appendix for summary statistics per variable and year. Figures 3 and 4 plot directly results from Table 4.

Fig. 4 Evolution of TV rights sales by network type. Source: Spanish Ministry of Industry, Trade and Tourism, several years

tripled their production of domestic movies, the production by public networks plummeted after a shy increase in 2003 to levels similar to 2001 and 2002.

Finally, Fig. 4 above shows the evolution of the percentage of movies financed through the sale of TV rights to private and government-owned networks. See that there is no difference in behavior during this period with the exception of the last 2 years when public networks bought significantly more TV rights than private networks. Combining evidence from both Figs. 3 and 4, it is tempting to conclude that private and public networks chose very different strategies regarding how to abide the Law of 1999. While private networks relatively focused on production, public networks mostly limited their involvement to distribution channels through the purchase of TV rights.

4   Empirical Methodology and Results

Empirical Methodology

We start our empirical exploration by using a rather simple methodology that aims to uncover the empirical relationship between different measures of movie performance Y and different measures of "TV participation." Uncovering this empirical association will inform us of whether the Spanish regulation forcing TV networks to participate in domestic movie production has any potential effect. We use as dependent variables the three different measures of movie performance: cumulative box office revenues, cumulative admissions, and gross return on investment. While the first two are highly correlated, the third measure may not be correlated since it depends on the production budget of each individual movie. To do so, we run ordinary least squares (OLS) on the following regression equation:

$$Y_{ijt} = \alpha + \beta_k{}^*[\text{TV Participation}_k]_{ijt}) + \theta^*[\text{Pctg Dom Prod?}]_{ijt}$$
$$+ \gamma^*[\text{Production Budget}]_{ijt} + \lambda_j + \delta_t + u_{ijt}$$

where Y_{ijt} is the particular performance measure for movie i in genre j and released in year t. The main variables in this specification are the various measures of "TV participation" (indexed by k in the expression), "percentage domestic production," and "production budget" that vary across movies. These are cross-sectional regressions because we only observe each movie once in our data set. This means that endogeneity and reverse causality may be present in every variable regression coefficient that we are estimating. In other words, private investors may self-select into higher budget projects because these may be also the projects that generate higher revenues. Similarly, higher revenue projects (in expectation) are also more likely to increase production budgets. For this reason, we are not planning to make any causal statements regarding the regression coefficients in these specifications. If anything, we will talk about the sign of the empirical correlation in our results and evaluate their implications for policies looking to strengthen a country's domestic movie industry such as that of 1999 in Spain and other EU countries that mandated a bigger investment from TV networks on the production and distribution of domestic movies.

Regardless of whether we cannot interpret these coefficients causally, we still want to estimate the empirical relationship as clean as possible of spurious correlation effects. For that reason, in our specifications, we control for different variables that may influence movie performance such as "percentage domestic production" and "production budget." We also acknowledge that there will be a lot of unobservable variation that may bias our estimated coefficients. We control for these by including genre and year of release fixed effects (λ_j and δ_t). An unobservable driver could be the fact that most movies are also taken abroad (Spanish movies are likely to play in other Spanish-speaking countries) or released in DVDs. This may systematically vary by genre or year, and therefore these fixed effects may be able to partially solve the existence of these unobservables. We also assume that u_{ijt} is zero-mean error term and run OLS regressions hoping the bias in our estimation is not strong enough to reverse the sign of the coefficient. Given the cross-sectional nature of the data, our empirical specification below corrects for the possible presence of heteroskedasticity across observations.

Finally, since we are aware of the endogeneity problem of the analysis above, we use a simultaneous equation approach (even if empirical associations are meaningful in this setting because TV stations select the movie projects that they invest on). For this reason, we estimate two systems of simultaneous equations with different number of equations. The first system of equations that we estimate consists of two equations such that

$$Y_{ijt} = \alpha + \beta^* [\text{TV Participation}]_{ijt} + \theta^* [\text{Pctg Dom Prod?}]_{ijt} + \delta_t$$
$$+ u_{ijt} [\text{TV Participation}]_{ijt} = \alpha' + \gamma^* [\text{Production Budget}]_{ijt} + \lambda_j + e_{ijt}$$

This system of equations assumes that movie projects are predetermined when the project idea is conceived, and therefore TV participation is driven by movie genre and production budget. Once this is set, box office revenues are influenced by TV participation, domestic and international presence in the production team, and

yearly demand seasonality (mainly year fixed effects). The error terms e_{ijt} and u_{ijt} are normally distributed and may be correlated with each other.

The second system of equations that we estimate consists of three equations such that

$$
\begin{aligned}
Y_{ijt} &= \alpha + \beta^*[\text{TV Participation}]_{ijt} + \gamma^*[\text{Production Budget}]_{ijt} \\
&+ \delta_t + e_{ijt}[\text{Production Budget}]_{ijt} = \alpha' + \beta'^*[\text{TV Participation}]_{ijt} \\
&+ \theta^*[\text{Pctg Dom Prod?}]_{ijt} + u_{ijt}[\text{TV Participation}]_{ijt} \\
&= \lambda_j + z_{ijt}
\end{aligned}
$$

The innovation here is that production budgets are now also endogenously determined as we assume that they are driven by TV participation and the presence of domestic and foreign producers, while TV participation is only determined by movie genre (TV stations are more likely to produce movies in some genres than others). Finally, box office revenues are affected by TV participation, production budget, and year fixed effects. Similarly to the first equation system, the error terms z_{ij}, e_{ijt}, and u_{ijt} are normally distributed and may be correlated with each other. We estimate both systems of equations through 3SLS. The following section describes our results.

Results

In this section, we begin showing results of estimating the OLS regression equation above for our three movie performance measures and for our different measures of TV network participation.

Table 2 shows results of regressing box office revenues, admissions, and gross return on investment on four dummy variables that take value 1 depending on whether TV participation took place through production or the acquisition of TV rights sales and whether the participating network was a private or public network. In particular, we include a variable that takes value 1 if a private network participated through production and 0 otherwise, a dummy that takes value 1 if a private network participated through TV acquisition rights and 0 otherwise, a dummy for whether a public network participated through production, and a dummy for whether a public network participated through TV acquisition rights. We also include interaction variables of public and private participation through the production and the acquisition of TV rights sales and an interaction between production budget and the dummy for whether a private TV network participates directly through production.[14]

---

[14]In the appendix, we provide Tables 5 and 6. The former replicates the analysis in Table 2 with only a dummy variable for whether TV participation took place, while the latter substitutes the "TV Participation" dummy variable by two different dummy variables, one that takes value 1 if TV participation took place in production and 0 otherwise, and another dummy variable that takes value 1 if TV participation took place through the sale of TV rights and 0 otherwise. Table 6 also includes an interaction term between these two dummies. Results in both Tables 5 and 6 are consistent with those in Table 2.

Table 2 OLS regressions of box office, admissions, and return on investment on whether movie produced or distributed by public or private TV network

Dep Var	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Box office revenues					Admissions					Gross return on investment				
Public TV producer?	−159,888 (222,192)	−248,566 (243,339)	−267,996 (252,074)	−255,143 (255,674)	−54,545 (287,759)	−16,064 (61,092)	−37,882 (64,300)	−18,816 (64,750)	−34,860 (63,474)	−54,831 (85,909)	−0.0276** (0.0123)	−0.0285** (0.0128)	−0.0289** (0.0132)	−0.0315** (0.0139)	−0.0148 (0.0163)
Private TV producer?	1,990,930*** (564,650)	1,895,090*** (566,170)	231,389 (926,149)	244,870 (903,204)	275,005 (735,391)	216,072*** (84,721.7)	192,791** (87,712.4)	77,286 (132,459)	86,223 (133,507)	139,164 (119,092)	0.0857*** (0.0305)	0.0841*** (0.0310)	0.0769* (0.0405)	0.0827** (0.0397)	0.0960* (0.0493)
Public and private TV producer?	−297,659 (2,163,210)	−208,605 (2,188,570)	423,501 (2,084,730)	317,096 (2,112,220)	517,192 (2,120,860)	−411,504*** (116,023)	−389,203*** (114,987)	−375,026*** (121,459)	−404,683*** (119,533)	−331,605** (145,036)	0.0327 (0.1268)	0.0340 (0.1274)	0.0358 (0.1285)	0.0222 (0.1279)	0.0297 (0.1346)
Private TV rights sold?	1,234,880*** (475,181)	1,321,280*** (500,680)	1,208,930*** (501,977)	1,333,120*** (504,096)	656,784 (504,898)	141,475* (80,312.6)	161,218* (84,274.9)	150,576** (67,674.8)	124,694* (72,533.4)	33,410 (82,275)	0.0614* (0.0351)	0.0638* (0.0357)	0.0635* (0.0369)	0.0496 (0.0366)	0.0079 (0.0309)
Public TV rights sold?	−422,389** (180,406)	−477,419*** (181,644)	−279,943 (181,791)	−10,418 (165,637)	96,709 (214,344)	−74,029 (45,987)	−87,748* (468,405)	−30,239 (50,189)	4462 (55,154)	18,534 (62,665)	−0.0162 (0.0170)	0.0166 (0.0170)	−0.0170 (0.0169)	−0.0059 (0.0159)	−0.0094 (0.0163)
Public and private TV rights sold?	−610,487 (518,533)	−666,444 (533,143)	−703,571 (551,108)	−1,047,620* (559,246)	−451,016 (556,256)	7601 (98,400)	−4631 (100,355)	−8885 (93,725)	−34,601 (100,606)	13,684 (103,723)	−0.0305 (0.0396)	−0.0326 (0.0400)	−0.0317 (0.0410)	−0.0376 (0.0415)	0.0075 (0.0346)
Percentage domestic production?		572,448 (361,225)	1,437,430*** (414,225)	1,464,860*** (414,813)	1,106,230*** (360,676)		141,845* (73,269.6)	178,076** (78,909.6)	174,450** (78,641.6)	181,978** (778,273)		0.0139 (0.0396)	0.0141 (0.0394)	0.0118 (0.0420)	−0.0179 (0.0452)
Budget			70.92*** (18.60)	73.18*** (19.30)	56.01* (29.06)			3.07* (1.84)	2.91* (2.29)	3.39 (5.52)			−0.000001 (0.000003)	0.000001 (0.000003)	0.000003 (0.000003)
Budget* Priv_TV_Prod?			348.89 (219.20)	378.67* (218.13)	360.89* (171.11)			32.11 (24.46)	37.16 (25.47)	22.70 (15.13)			0.000002 (0.000006)	0.000002 (0.000005)	−0.000001 (0.000007)
Constant	690,984*** (149,465)	254,655 (330,279)	−719,595** (332,561)	−862,536** (353,735)	1,812,570 (2,053,360)	190,956*** (34,491)	82,873 (59,060)	8454 (69,033)	11,320 (70,770)	435,711 (419,224)	−0.9287*** (0.0107)	−0.9407*** (0.0367)	−0.9381*** (0.0374)	−0.9416*** (0.0408)	−0.6013*** (0.1878)
Year FE	No	No	No	Yes	Yes	No	No	No	Yes	Yes	No	No	No	Yes	Yes
Genre FE	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	Yes
Observations	621	619	513	513	513	621	619	513	513	513	458	456	456	456	456
R^2	0.11	0.11	0.27	0.29	0.44	0.04	0.04	0.08	0.10	0.21	0.08	0.08	0.08	0.11	0.30

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Specifications from column (1) to (5) show a strong positive relationship between revenues and private TV network participation through production and TV rights sales. The introduction of the interaction term between production budget and the dummy for private TV networks participating in the film as producers seems to be responsible for this correlation as the impact of private TV producers is larger for movies of higher production budgets. If anything, public TV networks seem to participate in movies associated with lower revenue profiles than private networks do. This result is robust to the inclusion of genre and year fixed effects. Results in column (6) to (15) are similar to these in that private TV network participation is positively associated with admissions and higher levels of gross return on investment. We also find in Table 2 a strong positive relationship between production budget and revenues, as well as a strong positive relationship between percentage of domestic production and revenues and admissions.

Our last set of results provides evidence of using a simultaneous equation approach to shed some light on the problem of endogeneity readily admitted up to this point. Up to now, most right-hand side variables in specifications of Table 2 were endogenously and simultaneously determined. This circumstance may limit the value of our findings even if one may think that empirical associations are meaningful given that TV stations select the movie projects that they invest on. For this reason, we apply a simultaneous equation method with different number of equations and show results in Table 3.

The estimation of the two-equation system (taking production budgets as exogenous) shows that lower production budgets (not statistically significant) and certain movie genres (54 different movie genre combination dummies not shown here) increase TV participation, while TV participation does not seem to increase box office revenues (statistically speaking). When taking into account the (more than likely) endogeneity of production budgets in the three-equation system, TV participation and percentage of domestic participation are associated with lower production budgets, while TV participation seems to increase box office revenues according to the third and final equation. These results lean on the fact that we are assuming differences in movie demand for domestic movies to change exogenously as well as movie genres and foreign participation to be determined orthogonally to TV participation, production budgets, and domestic box office revenues. These assumptions seem plausible since ideas for movie projects are predetermined to participation of movie producers, overall demand for domestic movies varies with macroeconomic factors orthogonal to the movie industry, and foreign participation may be driven by foreign demand of certain type of domestic movies. In the next section, we discuss the results detailed here.

Discussion of Results

In the previous section, we have presented a number of results that deserve discussion. In particular, we focus here on the positive relationship between private TV network participation, production budget, and percentage of domestic production with movie performance measures. Let us start with the percentage of domestic

Table 3 Simultaneous equation regressions of box office revenues, TV participation, and production budgets

	System of two simultaneous equation		System of three simultaneous equation		
	(1)	(2)	(3)	(4)	(5)
Dep Var	TV participation?	Box office revenues	TV participation?	Production budget	Box office revenues
TV participation?	–	1,441,329.00 (968,421.70)	–	−9368.30 (1802.50)***	2,973,821.00 (944,069.7)***
Production budget (€m)	−0.10 (3.05)	–	–	–	119.05 (17.53)***
Percentage domestic producer?	–	359,539.60 (463,201.00)	–	−7662.88 (1407.93)***	–
Constant	0.99 (0.41)**	815,321.80 (630,866.70)	0.92 (0.39)**	17,274.70 (1689.50)***	641,702.90 (2,153,067)
Year FE	No	Yes	No	No	Yes
Genre FE	Yes	No	Yes	No	No
Observations	513	513	513	513	513
RMSE	0.41	2,852,083	0.42	9646.69	2,849,536
"R^2"	0.10	0.02	0.06	-0.07	0.02

Note: Columns (1) and (2) are the first system of simultaneous equation which takes production budget as exogenous. Columns (3), (4), and (5) are the second system of simultaneous equations that takes production budgets as endogenous. Both systems of equations take percentage domestic production, movie genre, and year fixed effects as exogenous variables to the end endogenous variables. We estimate these systems using the STATA command reg3 that uses 3SLS ** significant at 5%; *** significant at 1%

production, then comment on production budget, and finally conclude with private TV network participation.

We find a strong positive empirical relationship between the percentage of domestic production and revenues, admissions, and in some instances gross profitability. This suggests that international co-productions are less likely to achieve success than fully national movies. An easy interpretation of this result is that local production companies are more likely to understand domestic tastes and identify local trends in movie demand. Note that this is consistent with reasons to protect domestic movie industries that we postulated at the beginning of this paper. Domestic firms are able to produce a product that is closer to local taste and identity and therefore generate products that domestic demand value more at similar budget levels and within the same genre.[15]

The second result that we should highlight is the robust positive correlation between production budget and revenues and admissions. This result may explain why public policies target movie production budgets. Clearly our regression results should not be interpreted as causal such that an increase of X in the production budget should deliver $\gamma*X$ extra revenue. Instead, our result indicates that higher production budgets are associated with higher revenues and attendance levels. Therefore, policies targeting increases in production budgets of domestic movies are being effective in raising the revenue profile of domestic movies. We cannot tell whether they are doing so efficiently, and therefore we cannot fully evaluate this policy.

Our main result in the paper is that movies with private TV network participation through production are also associated with higher levels of revenue, admissions, and gross profitability. A side result to this is the fact that private TV network participation through TV rights sales also seems to be associated with higher levels of revenue, admissions, and gross profitability. Nevertheless, the correlation coefficients seem to be more robust and of larger magnitude when the private TV acts as a producer. Therefore, participating as a producer appears to be a stronger commitment to contribute to better movie performance. In addition to this, we also find that public TV network participation through production seems to be negatively associated with revenue, admissions, and gross profitability. These results are robust to the inclusion of controls such as genre and year fixed effects as well as controlling for production budget amount.

Finally, when we deal with endogeneity concerns with the estimation of a system of simultaneous equation model through 3SLS, we confirm our initial result since we find evidence that TV network participation increases box office revenues when taking production budgets as endogenous and making some exclusionary restriction assumptions. If anything, when taking production budgets as exogenous, we find that the effect of TV participation is positive but statistically insignificant, and therefore we can assert that TV participation does not decrease box office revenues.

---

[15]See Chung and Song (2008) for a similar result in the Korean movie industry.

Our empirical strategy does not reveal whether private networks are better at picking which movie projects they should participate in or whether they better make random projects, but we offer separate pieces of evidence such that both effects may be at work. Nevertheless, we can definitely argue that if the private sector is able to attract more skilled people through more attractive wages and compensation packages, it is not surprising to find that once we compare movie projects with private TV network participation to projects with public TV network participation, we find that the former outperform the latter. Not only that, results in Table 2 show that public network participation through production is associated with lower levels of gross profitability. This does not necessarily mean that those movies are worst with public network participation. This just means that private networks are better at identifying projects with good market prospects, while public networks could be investing in projects of more artsy and cultural characteristics and yet worse market performance.

5   Conclusion: Regulation Can Improve Economic Performance in Spanish Movie Industry

In this paper, we empirically establish the correlation between movie market performance (box office revenues, admissions, and gross return on investment) and TV participation in the movie production for a sample of 621 movies produced and released in Spain between the years 2000 and 2008. The interest behind this empirical exercise lies on the evaluation of regulation through which the Spanish Government forced TV networks to invest 5% of their revenues on domestic movie production while keeping in place other common policies (tax credits, subsidies, screen quotas, etc.) to stimulate its domestic motion picture industry.

Our main result indicates that movies with private TV network participation through production are more likely to be successful in the theatrical market than movies with no TV participation or public TV participation. By forcing private TV networks to invest on movies, the Spanish Government may have redirected the use of highly skilled personnel employed in the media industry towards the selection of profitable projects and perhaps a more efficient use of resources and production budgets. Regardless of whether the finding is interpreted as causal or a mere selection effect, we conclude that the use of better, more highly skilled employees seems to be a way to go towards the protection and promotion of the domestic motion picture industry.

Additionally, we infer from our results that private and public TV networks follow very different behaviors in our sample: private networks select projects that are more likely to be successful in the local exhibition market, while public networks select projects that are more idiosyncratic and therefore less likely to be successful in front of large audiences in the Spanish market. This means that this type of regulation is operative both to encourage industry development through market-oriented products and products satisfying other artsy and cultural criteria.

Nevertheless, the results in this paper cannot offer any insights on whether this particular regulation will have any long-term effects. If anything, the increase in the number of movies produced (even if not released) may have long-term effects in that more personnel is being trained currently that may achieve higher levels of human capital in the future and this may increase the number and caliber of future domestic films.

Appendix

Table 4 Summary statistics by year

Variable	2000 Obs	2000 Mean	2001 Obs	2001 Mean	2002 Obs	2002 Mean	2003 Obs	2003 Mean	2004 Obs	2004 Mean	2005 Obs	2005 Mean	2006 Obs	2006 Mean	2007 Obs	2007 Mean	2008 Obs	2008 M
Box office revenues (Euros)	12	1,566,206 (1,903,953)	69	1,520,511 (4,320,168)	81	912,576.6 (1,896,483)	73	1,289,031 (3,129,859)	79	1,044,469 (2,516,370)	77	1,326,456 (2,759,565)	81	1,162,850 (2,556,901)	80	946,168.9 (2,914,025)	69	1,065,181 (1,937,854)
Admissions	12	365,758 (449,504)	69	316,228.7 (761,412)	81	242,143 (517,242)	73	355,850.5 (735,554)	79	212,344.4 (514,913)	77	315,597.5 (531,842)	81	217,944.3 (479,189)	80	168,413.4 (510,974)	69	182,997.1 (331,559)
Gross return on investment	2	−0.59 (0.38)	33	−0.90 (0.12)	46	−0.89 (0.21)	63	−0.87 (0.22)	64	−0.91 (0.15)	67	−0.90 (0.14)	66	−0.93 (0.09)	75	−0.91 (0.19)	42	−0.95 (0.06)
TV?	12	0.67 (0.49)	69	0.29 (0.46)	81	0.74 (0.44)	73	0.95 (0.23)	79	0.90 (0.30)	77	0.56 (0.50)	81	0.69 (0.46)	80	0.84 (0.37)	69	0.78 (0.42)
TV producer?	12	0.08 (0.29)	69	0.09 (0.28)	81	0.10 (0.30)	73	0.29 (0.46)	79	0.22 (0.41)	77	0.16 (0.37)	81	0.21 (0.41)	80	0.25 (0.44)	69	0.35 (0.48)
TV rights sold?	12	0.67 (0.49)	69	0.20 (0.41)	81	0.74 (0.44)	73	0.89 (0.31)	79	0.87 (0.33)	77	0.47 (0.50)	81	0.59 (0.49)	80	0.73 (0.45)	69	0.68 (0.47)
Public TV producer?	12	0	69	0	81	0.04 (0.19)	73	0.14 (0.35)	79	0.13 (0.33)	77	0.06 (0.25)	81	0.07 (0.26)	80	0.04 (0.19)	69	0.01 (0.12)
Private TV producer?	12	0.08 (0.29)	69	0.09 (0.28)	81	0.07 (0.26)	73	0.18 (0.39)	79	0.10 (0.30)	77	0.09 (0.29)	81	0.14 (0.34)	80	0.21 (0.41)	69	0.33 (0.47)
Private TV rights sold?	12	0.67 (0.49)	69	0.20 (0.41)	81	0.69 (0.46)	73	0.75 (0.43)	79	0.75 (0.44)	77	0.36 (0.48)	81	0.38 (0.49)	80	0.29 (0.46)	69	0.29 (0.46)
Public TV rights sold?	12	0.42 (0.51)	69	0.16 (0.37)	81	0.47 (0.50)	73	0.59 (0.50)	79	0.68 (0.47)	77	0.38 (0.49)	81	0.44 (0.50)	80	0.70 (0.46)	69	0.49 (0.50)
Budget (Thousand Euros)	2	1653 (1062.07)	37	3722.57 (3562.78)	52	3565.62 (3830.30)	71	2487.75 (1713.51)	78	2838.60 (1851.45)	75	6576.00 (21072.49)	76	3492.80 (4081.04)	78	2712.49 (1817.52)	46	7196.87 (12,404.62)
Pctg domestic production?	12	0.81 (0.36)	69	0.83 (0.29)	81	0.79 (0.30)	73	0.82 (0.29)	79	0.78 (0.32)	77	0.77 (0.31)	79	0.80 (0.30)	80	0.84 (0.24)	69	0.84 (0.27)

This table provides summary statistics by year from 2000 to 2008 for all variables in Table 1. The number of observations per variable and year is also available

Table 5 OLS regressions of box office, admissions, and return on investment on whether movie was produced and/or distributed by TV network

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Dep Var	Box office revenues					Admissions					Gross return on investment				
TV?	637,432 (190,006)***	606,823 (182,528)***	697,430 (201,136)***	899,526 (288,568)**	773,469 (310,848)**	61,268.6 (45,750.2)	52,724.7 (46,049.9)	93,242.2 (46,260.5)**	97,763.1 (48,107.3)**	62,986.7 (55,408.8)	0.0309 (0.0139)**	0.0304 (0.0136)**	0.0288 (0.0137)**	0.0276 (0.0140)	0.0234 (0.0160)
Percentage domestic production?		453,915 (304,479)	1,251,720 (367,880)***	1,210,030 (360,013)***	981,409 (332,579)***		121,751 (61,643.7)*	166,560 (70,336.1)**	166,898 (71,134.8)**	195,680 (788,123)*		0.0196 (0.0378)	0.0251 (0.0382)	0.0241 (0.0405)	−0.0095 (0.0444)
Budget			99.16 (28.85)***	100.09 (29.51)***	84.59 (39.38)**			5.83 (3.19)*	5.68 (3.51)	5.54 (6.34)			0.00001 (0.000003)**	0.00001 (0.000003)***	0.00001 (0.000003)**
Constant	699,179 (119,349)***	356,902 (290,614)	−704,360 (370,430)*	−826,406 (421,431)*	1,730,460 (2,192,610)	208,021 (36,429)***	116,350 (52,977.4)**	24,459 (68,234)	21,371 (69,331)	412,211 (407,705)	−0.9299 (0.0102)***	−0.9470 (0.0365)***	−0.9662 (0.0382)***	−0.9708 (0.0406)***	−0.6277 (0.1859)***
Year FE	No	No	No	Yes	Yes	No	No	No	Yes	Yes	No	No	NO	Yes	Yes
Genre FE	No	No	No	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes
Observations	621	619	513	513	513	621	619	513	513	513	458	456	456	456	456
R^2	0.01	0.01	0.11	0.12	0.35	0	0.01	0.02	0.04	0.18	0.01	0.01	0.01	0.06	0.27

Robust standard errors in parentheses
*significant at 10%; **significant at 5%; ***significant at 1%

Table 6 OLS regressions of box office, admissions, and return on investment on whether movie was produced or distributed by TV network

Dep Var	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Box office revenues					Admissions					Gross return on investment				
TV producer?	1,099,440 (659,887)*	1,063,310 (657,649)	1,052,690 (670,076)	1,196,130 (718,937)*	1,366,370 (647,209)**	38,577.8 (65,298)	19,041.5 (68,903)	47,865.9 (69,543.0)	67,795.3 (70,857.8)	65,269.9 (911,80.6)	0.0429 (0.0293)	0.0417 (0.0291)	0.0405 (0.0291)	0.0449 (0.0286)	0.0592 (0.0354)*
TV rights sold?	229,730 (169,298)	223,223 (166,656)	283,189 (166,790)*	516,600 (244,518)**	426,222 (282,986)	19,273.7 (47,213)	15,780.2 (47,302)	48,577 (46,527.8)	58,942.9 (49,546.9)	31,278.2 (57,172.1)	0.0124 (0.0141)	0.0124 (0.0139)	0.0125 (0.0140)	0.0121 (0.0153)	0.0065 (0.0164)
TV producer and TV rights sold?	650,594 (853,151)	665,816 (852,791)	754,214 (900,214)	680,422 (943,111)	157,222 (794,061)	178,092 (113,125)	186,544 (113,648)	189,564 (120,618)	175,645 (1261.50)	121,111 (129,549)	0.0302 (0.0415)	0.0309 (0.0411)	0.0270 (0.0405)	0.0228 (0.0414)	0.0026 (0.0451)
Percentage domestic production?		172,230 (295,640)	902,889 (330,534)***	857,815 (330,398)**	658,824 (322,998)**		97,980.5 (64,770.6)	133,206 (72,260.2)*	129,774 (72,469.1)*	164,273 (81,104.7)**		0.0118 (0.0381)	0.0158 (0.0387)	0.0139 (0.0411)	−0.0224 (0.0449)
Budget			93.41 (27.19)***	94.29 (27.89)***	81.14 (36.37)**			5.17 (2.96)*	4.97 (3.27)	5.28 (6.07)			0.000003 (0.000002)	0.000005 (0.000002)**	0.000004 (0.000003)*
Constant	699,179 (119,542)***	571,687 (285,057)**	−403,173 (330,439)	−549,082 (379,132)	2,273,710 (2,102,590)	208,021 (36,488.0)***	134,475 (54,935.3)***	53,835.1 (68,591.7)	48,031.3 (70,018.6)	460,782 (401,521)	−0.9299 (0.0102)***	−0.9402 (0.0368)***	−0.9529 (0.0387)***	−0.9576 (0.0415)***	−0.6007 (0.1844)***
Year FE	No	No	No	Yes	Yes	No	No	No	Yes	Yes	No	No	No	Yes	Yes
Genre FE	No	No	No	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes
Observations	621	619	513	513	513	621	619	513	513	513	458	456	456	456	456
R^2	0.05	0.05	0.15	0.16	0.38	0.02	0.02	0.04	0.06	0.19	0.03	0.03	0.03	0.08	0.28

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

References

Boletín Oficial del Estado. (1994). *Ley* 25/1994. https://www.boe.es/buscar/doc.php?id=BOE-A-1994-16224

Boletín Oficial del Estado. (1999). *Ley* 22/1999. https://www.boe.es/buscar/doc.php?id=BOE-A-1999-12694

Boletín Oficial del Estado. (2001). *Ley* 15/2001. https://www.boe.es/buscar/doc.php?id=BOE-A-2001-13268

Boletín Oficial del Estado. (2004). *Real Decreto* 1652/2004. https://www.boe.es/buscar/doc.php?id=BOE-A-2004-13468

Boletín Oficial del Estado. (2007). *Ley* 55/2007. https://www.boe.es/buscar/act.php?id=BOE-A-2007-22439

Boletín Oficial del Estado. (2015). *Real Decreto* 988/2015. https://www.boe.es/diario_boe/txt.php?id=BOE-A-2015-12053

Casson, M. (2006). Culture and economic performance. In V. Ginsburgh & D. Throsby (Eds.), *Handbook of the economics of art and culture* (pp. 359–397). Amsterdam: Elsevier.

Christopherson, S., & Rightor, N. (2010). The creative economy as big business: Evaluating state strategies to lure film makers. *Journal of Planning Education and Research, 29*(3), 336–352.

Chung, C., & Song, M. (2008). *Preference for cultural goods: Demand and welfare in the Korea films market*. Simon School Working Paper No. FR 08-23. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1349988

Comisión Nacional de los Mercados y la Competencia. (2017). *Informe sobre el cumplimiento en el ejercicio 2015, por parte de los prestadores del servicio de comunicación audiovisual televisiva, de la obligación de financiación anticipada de la producción europea de películas cinematográficas, películas y series para televisión, documentales y series de animación.* https://www.cnmc.es/sites/default/files/1629848_7.pdf

Fernández-Blanco, V., & Gil, R. (2012). Underneath the red carpet: Government intervention in the Spanish movie industry. *Journal of Media Economics, 25*(1), 54–72.

Frey, B. (1994). The economic point of view. In A. Peacock & I. Rizzo (Eds.), *Cultural economics and cultural policies* (pp. 3–16). Dordrecht: Kluwer Academic.

Gil, R., & Lafontaine, F. (2012). Using revenue-sharing to implement flexible pricing: Evidence from movie exhibition contracts. *The Journal of Industrial Economics, 60*(2), 187–219.

Hadida, A. (2010). Commercial success and artistic recognition of motion picture projects. *Journal of Cultural Economics, 34*(1), 45–80.

Martin, J. (2009). No hay salas para tanto cine (español). *El País Digital*. https://elpais.com/diario/2009/05/21/sociedad/1242856801_850215.html

Víctor Fernández-Blanco is a senior lecturer of Economics at University of Oviedo, Spain. He has published several papers on cultural issues and on the economics of movie industry in international journals such as *Journal of Cultural Economics*, *Empirical Economics*, *Journal of Media Economics*, or *Journal of Economic Psychology*. He is also the author of several books in Spain, including *Cinema Demand in Spain* (*Fundación Autor*, 1998), and coauthored the chapter "As Good As It Gets? Blockbusters and the Inequality of Box Office Results since 1950" in *The Social Science of the Cinema* (Oxford University Press, 2014). He is a member of the Editorial Board of the *Journal of Cultural Economics*. He is currently working on economic efficiency of nonprofit cultural institutions.

Ricard Gil is an associate professor at the Carey Business School of Johns Hopkins University in Baltimore, Maryland, USA. He has coauthored several articles on the film industry, published in various journals such as the *American Economic Journal*; *Journal of Economic History*; *Journal of Law, Economics, and Organization*; *Journal of Industrial Economics*; or *International Journal of Industrial Organization*. He is currently working on building a historical account of the adoption and diffusion of drive-in theaters in the United States between 1940 and 1960.