

Gender bias and movies box office performance: An international comparative analysis

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Abstract

There is an increasing concern regarding the presence of a gender bias against women in different stages of the movie industry. As Smith et al (2014) point out this is a male-dominated industry: only 16 percent of the leaders of studios are female, and 7 percent of directors, 13 percent of writers and 20 percent of producers were females. Moreover, women represent less than 30% of speaking roles. This underrepresentation of women may be the outcome of a better market performance of male oriented films, as some industry leaders have established (Smith et al, 2014). However, the quantitative empirical evidence is not so conclusive: Linder et al (2015) point out that, after controlling for budget size, the gender orientation of movies does not contribute to explain box office revenues. In this paper, using panel data techniques to control for unobserved heterogeneity of movies, we analyze whether the existence of a gender bias has an effect on the box office performance, after controlling for other relevant characteristics of the film like rating, genre or number of releasing theatres. We also test if this gender bias impact it changes over time. To quantify the gender bias we use the Bechdel test, which is passed when the movie contains at least two women in it, who talk to each other about something besides a man.

To carry out the empirical analysis, we have constructed a data set using information on box office and the main characteristics of those films subjected to the Bechdel test, that were released in five countries (France, Germany, Spain, United Kingdom and United States) in the period 2002-2015.

“We are no longer doing movies with women in the lead”¹
Jeff Robinov, President of Production at WB

1. INTRODUCTION

It is quite frequent to qualify movies as a man’s business: men dominate both in front and behind the camera. This fact has been sometimes justified by the idea that female oriented movies perform worse at the box office.

The main goal of this paper is to provide new empirical evidence on this matter. More specifically, our paper contributes to the analysis of the determinants of box office introducing a new argument, the presence of gender differences. Although there is an extensive literature analyzing the contribution of different factors to explain box office revenues, little attention has been paid to the role played by gender differences and the scarce evidence focuses on the US market. Hence, it would be worthy to provide new and international evidence on this point and, at the same time, test another common place, namely “movies that are female-driven do not travel”².

The paper is organized as follows: Section 2 reviews briefly the literature on box office determinants, in general, and on the impact of gender differences in particular. In section 3 we propose and discuss the Bechdel test as a measure of the presence of gender differences on a movie. We describe the data set and the main variables in Section 4. The econometric estimates and the main results are discussed in Sections 5 and 6, respectively. Finally, Section 7 concludes.

2. RELATED LITERATURE

The analyses of box office revenues and movies profitability have a long history (see Chisholm et al, 2015) and we can find profuse empirical evidence on the effect of different potential determinants of box office performance. Releasing conditions of

¹See the blog [deadline.com](http://deadline.com/2007/10/warners-robinov-gets-in-catfight-with-girls-3362/) (available at <http://deadline.com/2007/10/warners-robinov-gets-in-catfight-with-girls-3362/>)

²An opinion by Krista Smith, West Coast editor of Vanity Fair, cited in Hickey (2014)

films have been one of the spotlights, including releasing dates (Smith and Smith, 1986; Einav, 2007), number of screens (Elberse and Eliashberg, 2003), and rival releases (Basuroy et al, 2006; Gutiérrez-Navratil et al, 2014) among others. Another set of studies has focused on movie production features, such as production budget and advertising expenses (Prag and Casavant, 1994; Elberse and Eliashberg, 2003; Ho et al, 2009), the relative power of stars (Ravid, 1999; De Vany and Walls, 1999; Elberse, 2007); directors (John et al, 2015) and distributors (Prieto-Rodríguez et al, 2015). Movies' characteristics have been always an attraction point when studying box office revenues: genre (Sochay, 1994; Simonoff and Sparrow, 2000; Fernández-Blanco et al, 2013); rating (De Vany and Walls, 2002); screenplay (Eliashberg et al, 2007; Goetzman et al, 2013); or sequel (Ravid, 1999; Palia et al, 2008; Bohnenkamp et al, 2015). Finally, we cannot forget the influence of different quality indicators, particularly awards (Sochay, 1994; Goetzman et al, 2013; Ginsburgh and Weyers, 2014) as well as critics and users' reviews and word-of-mouth, including the new opportunities that the Internet has opened (Hirschman and Pieros, 1985; Chintagunta et al, 2010; Basuroy and Ravid, 2014).

More recently, it has been acknowledge that women are underrepresented in the movie industry. However, less attention has been paid to the effect of gender differences on movies' box office performance. In an analysis of the top-grossing movies Smith et al (2014a) conclude that in 2013 only 29.2% of the speaking characters are females. Moreover, behind the screen things are even worse: only 1.9% of directors, 7.4% of writers, and 19.6% of producers are females. And these figures are quite similar for the whole period 2007-2013. This underrepresentation of women in movies may be the outcome of a better market performance of male oriented films, as some industry leaders have established in a qualitative research (Smith et al, 2014b). Following Lindner et al (2015) there are two possible explanations to this hypothesis: the downstream and the upstream effects. The downstream effect lies on audience preferences: moviegoers prefer movies where the presence of men is highlighted. The upstream effect lies on gatekeepers' behavior: producers and studio executives consider male films less risky and, therefore, put more resources and efforts on films that outstandingly feature men.

Empirical evidence on the impact of gender differences on box office is very scarce, probably due to the lack of reliable measures regarding the role of men and women in films. Although not in academic work, we can still find some interesting results from other sources of information, that do not always confirm the hypothesis the man's movies yield better results. This has been possible thanks to the resurgence of the so called Bechdel test. As described below, this test provides us with a measure to evaluate the gender gap in a work of fiction, such as a film.

In Vocative web site, Sharma and Sender (2014), using a small sample defined by the top 50 box office movies in USA in 2013, find that those films that pass the test earn more money than those films that don't pass it and conclude that "Hollywood movies with strong female roles make money" (Sharma and Sender, 2014).

On the other hand, Hickey (2014, p.1) analyses a sample of 1,615 films from 1990 to 2013 and concludes that the "median budget of movies that passes the test (...) was substantially lower than the median budget of all the films of the sample". Moreover, those films do not perform worse in the box office and achieve a better return on investment than films that do not pass the test. To be more precise, movies passing the Bechdel Test had a 16% lower median budget relative to the whole set of movies considered and, furthermore, a 35% lower median budget than movies that failed the Bechdel test. Moreover, movies that passed the Bechdel test had a higher gross return on investment: \$2.68 for each dollar spent against \$2.45 in the case of movies that failed the test. And beyond the industry preconceived idea that international markets do not want to see women-led films, those films that passed the test had similar return on investment in the international markets as films that failed the test. In sum, this analysis suggests that passing the Bechdel test is not a relevant factor to explain box office success.

Finally, from a more academic view, Lindner et al (2015), using a sample of nearly 1,000 movies with the widest distribution between 2000 and 2009 and after controlling for several variables such as genre, distributor, critics' valuation, the presence of stars and, especially, production budget, point out that passing or not the Bechdel test does not determine box office revenues of a movie. And, although movies that pass the test have significant lower box office revenues, this fact seems to be due to those movies tending to have lower production budgets. They conclude that "given two otherwise

equivalent movies with the same budget, audiences do not appear to penalize those with a female presence, providing a strong evidence for an upstream effect” (Lindner et al, 2015, p. 23).

3. THE BECHDEL TEST: SOME HISTORICAL SKETCHES

In 1929, Virginia Woolf wrote an essay, “A Room of one’s Own”, where she highlighted the secondary and subsidiary role of women, as mothers, wives or daughters, in the English Literature. The Bechdel test is claimed itself as an heir of Virginia Wolf’s opinion. This test was presented, for the first time, by Alison Bechdel in 1985 in a comic strip titled “Dykes to watch out for” and, after 2000, it has become a simple and widely used measure of the gender gap when analyzing women’s participation in fiction works, especially movies. A movie passes the Bechdel test if it satisfies three requirements:

1. The movie has to have at least two women in it
2. They have to talk to each other
3. And they have to talk about something other than a man

Other requirements can be added, particularly that the two women have to be named and that they have to talk each other for at least 60 seconds. It is worth noting that if these three simple rules were applied in reverse, i.e. for men, we would find that almost all films released meet the requirement. But when it is applied according to the original design we find a large number of films that do not pass the test.

Although it is not very strict or, in other words, it can be considered a soft criterion, this test has become more and more recognized and used. For instance, several Swedish cinemas and the Scandinavian TV channel Viasat Film incorporate this test into their ratings. In addition, in 2014 Euroimages, a support Fund for cinema co-production, theatrical distribution, exhibition and digital equipment for cinema theatres established by the Council of Europe in 1988, developed a platform for the submission of projects that includes a Bechdel analysis of the script, supplied by the script readers, as part of an analytical grid relating to the gender of a project (see <http://www.ewawomen.com/en/eurimages-news.html>).

We should be aware that the Bechdel test has been frequently qualified as a soft or weak test for several reasons:

- It only measures the presence of women in a movie, not the presence of absence of sexist content.
- Some films can fail the test due to plot reasons rather than gender bias [for instance, *Gravity* (2013) or *Jeremiah Johnson* (1972)]
- Some women-oriented and women-starred films can fail the test [for instance, *Anna Karenina* (1935, 1948 and 2012)].

But at the same time, this test also has some advantages. Although it cannot be used to determine a “degree” of feminism, it provides us with an illustration of the presence of independent women image in a movie. Moreover, because it is a dichotomous measure and not a scale (a movie passes the test or not), it is subject to less subjective considerations. And at last, but not least, it is the only test we have data on (Hickey, 2014, p. 2).

4. DATA

In this section, we describe the different data sources we use to perform our empirical analysis. Firstly, we use information about the Bechdel test results for each movie available at Bechdel Test Movie List website (bechdeltest.com). Additionally, we use a database provided by Rentrak that contains information at the movie level for United States and the main European markets (United Kingdom, France, Germany and Spain), for the 2000-2015 period. For each movie and each country, this source provides the following information: the movie titles, the official release dates, total box-office revenues, number of theaters on the release date, the genre, the distributors, the country of origin and the MPAA rating.

We complement this data with movie-level information provided by Internet Movie Database website (imdb.com) and the Box Office Mojo website (boxofficemojo.com). We have collected information on production budget, main language and other languages of the movie, IMDb users’ and critics’ ratings and, Academy Awards (both nominations and winners).

Given the aim of this paper, we restrict our dataset to those films that have been subjected to the Bechdel test. Furthermore, after merging the different data bases several observations are dropped due to missing information for some variables. Thus, the final dataset contains information on 2,680 movies released in the period 2002-2015 and 9,175 valid observations. Of these movies, 2,152 were released in the USA, 2,157 in the UK, 1,157 in France, 1,858 in Germany and 1,858 in Spain. This database has a panel data structure where the time dimension has been substituted by a spatial (country) dimension. A summary of the descriptive statistics for all variables used in our empirical analysis is shown in Table 1.

Table 2 shows the differences in financial performance by country between films that have passed the Bechdel test and those that have not. Nearly 60% of films that were subjected to the test passed it. In all countries, films failing the test result in significantly higher revenues that go from 30% in Spain and Germany to 60% in USA. Of course, this better performance may be explained by differences in the characteristics of the film. In fact, as shown in the last three columns of the table, movies passing the test were released in fewer theaters, the difference ranging from around 25% in Spain and Germany to 66% in the USA.

We now turn to the empirical analysis in order to check whether these differences in revenues can actually be attributed to differences in gender roles or can otherwise be explained by differences in other characteristics of films.

5. EMPIRICAL SPECIFICATION

In order to examine the effect that the existence of a gender bias may have on the box office performance, we first estimate the total box office revenues including fixed effects by movie and controlling for country-varying variables. From this estimation we recover the fixed effects of each movie that capture the observed and unobserved heterogeneity among films, including a possible gender bias. Using these estimates, we are able to examine the impact that the gender bias could have in movie performance.

Thus, in the first step we estimate a fixed effects model according to the following empirical specification:

$$\ln(\text{Box Office}_{ic}) = \alpha + \beta X_{ic} + \theta_i + \delta_c + u_{ic} \quad (1)$$

where **Box Office** is the dependent variable and it accounts for the total box-office revenues (in real terms) obtained for movie i in country c . X_{ic} is a vector of country-varying variables that may affect revenues (i.e. MPPA rating, releasing characteristics, the competitive environment and the seasonality in underlying demand), and θ_i and δ_c are movie and country fixed effects, respectively. The error term u_{it} is assumed to be normal and iid.

With respect to the variables in vector X_{ic} , we include the opening-week screens of movie i (in logs), **Opening Screens**, that is a proxy of the availability and potential attractiveness of the film. We also consider the share of opening-week theatres devoted to movie i , **Share Openings**, this is the proportion of opening-week theatres of all movies released the same week that have been allocated to movie i . We also include the rating of movies as a proxy for the moral characteristics of the film, this classification change across countries. In particular, **Age<7** is a dummy variable for movies suitable for audiences aged 7 and older, **Age>12** for movies for audiences aged 12 and older, and **General Audience** for all audiences, where films for restricted audiences are the reference category.

We include dummies for country of release and a time trend to control for changes over time. Additionally, when a movie is released first in its country of origin and after that in other countries, piracy could have a negative impact on movie revenues. For this reason we include the **Release Gap** variable that measures the time period between the release date of a movie in its country of origin and a specific country, interacted with the **Trend** variable that also accounts for the effect of internet penetration. To capture the strong seasonality of the motion picture industry we include **Week**, which is a set of dummy variables for the week of the calendar year in which the movie was released.

In order to predict the effect that movies that pass the Bechdel test have on commercial success, the next step is to estimate the following equation:

$$\theta_i = \gamma + \sigma_1 \text{Bechdel}_i + \sigma_2 \text{Bechdel}_i * \text{trend} + \delta Z_i + \varepsilon_i \quad (2)$$

where θ_i are the estimated movie fixed effects obtained from specification (1), which are plausible proxies for movie commercial success. Movie fixed effects are estimated by exploiting multiple observations for the same movie. Identification is driven by variation across countries in all variables listed above. **Bechdel** is a dummy variable that takes value 1 if the movie passes the Bechdel test and zero otherwise. This variable is also interacted with the time trend to take into account whether the effect of passing the test varies over time; Z_i is a vector of country-invariant movie characteristics and ε_i is a normally distributed error term.

Among the variables that characterize films³ we include a set of five dummy variables created by grouping movies according to the following classification of genres: **Adventure** (that includes action, adventure, western, fantasy and science fiction), **Animation**, **Comedy** (contains black comedy, comedy and romantic comedy), **Drama** and **Thriller** (includes horror and suspense) and **Documentary**. The reference category includes other genres such as family and musical events. Also, to capture the opinion of critics and audience we include **IMDb_score**, which accounts for the ratings given to the movie by users of IMDB.⁴

Regarding the country of origin of the movie, we include dummy variables for the countries in our dataset (**Origin_USA**, **Origin_UK**, **Origin_France**, **Origin_Germany**, and **Origin_Spain**), the rest of Europe (**Origin_Europe**) and Asian countries (**Origin_Asia**)⁵, as well as a control for international co-productions, **Coproduction**. To control for the type of distributor we include a set of dummy variables that identifies movies distributed by any of the Major distributors (**Disney**, **Fox**, **Sony**, **Paramount-Universal**, and **WB**), where the non-Majors are the reference category. Finally, the number of **Oscar Nominations** and **Oscar Winners** received by the film are considered.

³ We have not included the budget of the movie as there were many missing observations. However, given the high correlation between budget and opening screens, we expect that a large part of the effect of budget will be captured by the number of theatres.

⁴ We have not included the ratings by critics (Metascore) because of the high number of missing observations for this variable.

⁵ Some films are co-productions so some of these dummies can take value 1 for the same movie.

6. RESULTS

In this section we present the results of our empirical analysis. We first estimate the model using ordinary least squares and then the fixed effects specification. The last specification allows us to control for the observed (country-invariant) and unobserved film characteristics. Thus, we deal with one of the most relevant features of the movie market, namely the presence of highly differentiated products. When we estimate the model by OLS (without movie fixed effects) our parameter estimates could be biased, as some of these movie characteristics are likely to be correlated with our explanatory variables (e.g., Opening Screens).

Column (1) in Table 3 exhibits the results of the OLS estimation. As expected, films that were released in a larger number of theatres entail higher box office revenues. In particular, a 1% increase in the number of releasing theaters leads to a 0.76% increase in revenues, *ceteris paribus*. Passing or failing the Bechdel test does not significantly affect revenues, and this effect does not change over time. In general, the rest of the variables have the expected effect. The higher the share of opening theatres devoted to the film, the higher the box office and the longer the releasing gap the lower the revenues. Drama, comedy and animation films are associated with higher returns.

In column (2) of Table 3 we present the results of the fixed effect estimation as specified in Equation (1). As before, more opening screens are related to higher revenues, although the coefficient is substantially lower. Films oriented to audiences above 12 yield significantly higher revenues. As expected, the higher the share of opening theatres that have been allocated to movie the higher the revenues.

We now turn to examine the determinants of the movie fixed effects (Equation 2). As shown in column (3), and in contrast to OLS results, we find a large and positive effect on the box office for films that have passed the Bechdel test. Therefore, while according to row data in Table 2, films that have passed the test yield lower average revenues, once we take into account the characteristics of the films results are reversed. Given two films with similar observed characteristics that were released under similar conditions in the same number of theatres, the one that has at least two women in it, who talk to each other about something else than a man, tends to perform better in financial terms. This suggests that audiences tend to place a higher value on this type of films. Interestingly,

this effect seems to be falling over time, as indicated by the negative sign of the interaction between the test and the time trend. We interpret this as evidence of an increase during the period of the share of films fulfilling the conditions to pass the test, especially among major distributors. As films passing the test seem to receive a premium, more films fulfilling those conditions are released, leading to a reduction in such premium. In fact, Graph 1 supports this hypothesis. At the beginning of the period 63% of movies distributed by non-majors passed the test, while this proportion was only 43% in the case of major distributors. However, majors have increasingly distributed films that passed the test, and the gap has fallen steadily and vanished in 2015.

As expected, films that were distributed by majors have higher returns. With regard to genre, adventure and animation movies yield significantly higher box office while documentaries perform the worst. Having been nominated to more Academy Awards is associated with higher revenues, but having won the Award has no significant effect. Finally, films produced in USA, France, Germany or Spain give higher returns.

7. CONCLUSIONS

The aim of this paper is to analyze whether the existence of a gender bias in movies contributes to explain box office performance. To do so we take advantage of the Bechdel test that provides us with a useful measure to evaluate the gender gap in the role of men and women in movies.

In the empirical analysis we use the information on the films released in five countries during the period 2002-2015. The geographical dimension of the data allows the use of panel data techniques to control for the large heterogeneity among films and therefore capture the presence of highly differentiated products on this industry. Thus, we are able to evaluate the individual and specific effects of each film on box office revenues to examine the effect that the gender bias could have in the latest.

Our main results provide evidence that passing the Bechdel test has a positive impact on the performance of movies on screens. This empirical evidence suggests that audience preferences do not penalize movies with a female presence, but quite the opposite. On

the other hand, this effect seems to be diluted over time as we observe an increase in the number of movies produced by majors that pass the test.

Our findings for other explanatory variables are in line with the usual results in the previous literature. As expected, we found that Academy Awards nominations, opening screens, being distributed by a major or movies targeted at audiences above 12 have a positive impact on total box office revenues. However, no significant evidence is found for coproduction and IMDb users' rating. It seems that the internet penetration over time have negative effect on movie revenues when there is gap in the release day of a movie in its country of origin and a specific country.

Our paper contributes to the analysis of the determinants of box office providing new empirical evidence on the role played by gender bias, an issue that has received little if any attention by academics.

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Table 1. Descriptive statistics

	Mean	St. Dev.
Box Office (in logs)	14.456	2.621
Opening Screens (in logs)	4.805	2.006
Bechdel	0.587	0.492
<i>Distributor</i>		
WB	0.086	0.281
FOX	0.091	0.288
SONY	0.082	0.274
DISNEY	0.064	0.245
Paramount-Universal	0.108	0.310
<i>Rating</i>		
General Audiences	0.144	0.351
Age>7	0.124	0.330
Age>13	0.328	0.469
Share Openings	0.193	0.191
Release Gap	66.483	101.663
<i>Genre</i>		
Drama	0.455	0.498
Comedy	0.314	0.464
Adventure	0.293	0.455
Thriller	0.229	0.420
Animation	0.065	0.246
Documentary	0.011	0.104
IMDb score	6.727	1.669
Oscar Nominations	0.410	1.149
Oscar Won	0.128	0.641
<i>Origin</i>		
USA	0.735	0.441
UK	0.115	0.319
France	0.079	0.270
Germany	0.055	0.228
Spain	0.021	0.143
Europe	0.069	0.253
Asia	0.038	0.192
Coproduction	0.168	0.374

Table 2. Differences between films passing and failing the Bechdel test

		Ln(Box Office)			Ln(Opening Screens)		
		Fail	Pass	diff	Fail	Pass	diff
US	N	865	1290		865	1290	
	Mean	15.798	15.194	0.605	5.210	4.549	0.661
	Std. Err.	0.112	0.098	0.151	0.108	0.090	0.141
	t	3.996			4.702		
FR	N	488	662		488	662	
	Mean	14.382	13.894	0.488	5.019	4.664	0.3547
	Std. Err.	0.092	0.084	0.126	0.059	0.053	0.080
	t	3.863			4.428		
DE	N	777	1084		777	1084	
	Mean	14.377	14.082	0.295	5.129	4.869	0.2606
	Std. Err.	0.069	0.062	0.094	0.045	0.040	0.060
	t	3.138			4.328		
UK	N	889	1271		889	1271	
	Mean	14.495	14.043	0.452	4.832	4.548	0.284
	Std. Err.	0.0824	0.073	0.112	0.056	0.048	0.0743
	t	4.052			3.822		
ES	N	775	1085		775	1085	
	Mean	14.227	13.922	0.305	4.926	4.677	0.249
	Std. Err.	0.071	0.063	0.096	0.0455	0.040	0.061
	t	3.180			4.114		

Table 3. Determinants of box office revenues

	OLS		Fixed effects model
	Ln(Box Office)	Ln(Box Office)	Individual effects
	(1)	(2)	(3)
Opening Screens (in logs)	0.756*** (0.019)	0.497*** (0.018)	
Bechdel	0.0447 (0.10)		4.422*** (0.13)
Bechdel*Trend	-0.0088 (0.010)		-0.478*** (0.011)
WB	0.139** (0.063)		1.396*** (0.14)
FOX	0.0745 (0.063)		1.541*** (0.14)
SONY	-0.0062 (0.061)		1.461*** (0.14)
DISNEY	0.178** (0.085)		1.695*** (0.16)
Paramount-Universal	0.121** (0.054)		1.447*** (0.12)
General Audiences	0.041 (0.057)	-0.005 (0.053)	
Age>7	0.068 (0.056)	0.046 (0.052)	
Age>12	0.190*** (0.042)	0.177*** (0.037)	
Share Openings	2.475*** (0.13)	0.634*** (0.11)	
Release Gap	-0.001** (0.0005)	-0.004 (0.007)	
Release Gap*trend	-0.00014*** (0.00005)	-0.0002*** (0.0001)	
Drama	0.219*** (0.056)		0.136 (0.11)
Comedy	0.102* (0.055)		0.104 (0.11)
Adventure	-0.003 (0.054)		0.284** (0.12)
Thriller	-0.066 (0.058)		0.0174 (0.13)
Animation	0.429*** (0.090)		0.539*** (0.17)
Documentary	0.183 (0.25)		-0.796** (0.37)
IMDb score	0.083		0.123

	(0.054)		(0.079)
Oscar Nominations	0.267***		0.325***
	(0.028)		(0.056)
Oscar Won	-0.087		-0.078
	(0.067)		(0.12)
Origin_USA	0.178***		0.219*
	(0.062)		(0.12)
Origin_UK	0.210***		0.172
	(0.080)		(0.15)
Origin_France	0.417***		0.685***
	(0.088)		(0.16)
Origin_Germany	0.335***		0.513***
	(0.11)		(0.20)
Origin_Spain	0.696***		0.777***
	(0.15)		(0.29)
Origin_Europe	0.157		-0.001
	(0.10)		(0.19)
Origin_Asia	0.040		-0.088
	(0.12)		(0.23)
Coproduction	-0.148*		0.0935
	(0.085)		(0.16)
Trend	-0.058***	0.381	
	(0.008)	(2.52)	
France	0.042	0.0009	
	(0.028)	(0.025)	
Spain	0.236***	0.190***	
	(0.037)	(0.036)	
UK	0.345***	0.478***	
	(0.033)	(0.028)	
US	1.345***	1.728***	
	(0.052)	(0.044)	
Constant	9.350***	7.944	-2.388***
	(0.39)	(25.0)	(0.54)
Week dummies	YES	YES	
Observations	9175	9190	2685
R-squared	0.70	0.66	0.43

Notes: Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Graph 1. Proportion of films passing the Bechdel test by type of distributor

