

To Review or Not to Review? Limited Strategic Thinking at the Movie Box Office

Alexander L. Brown, Colin F. Camerer and Dan Lovallo

Web Appendix

A Description of Variables

To determine if a movie was cold opened ($c_j = 1$) we examined the dates on three or four major news publications (the Los Angeles Times, New York Times, San Francisco Chronicle, and New York Post). If the dates of reviews in any of these publications were later than the release date, we examined the reasoning behind the late reviews. A movie was classified a “cold open” if at least one source stated the movie was not screened for critics before release (in most cases, none of the available sources had advance reviews).

Weekend and total US box office data as well as total box office data for international markets for movies from January 2000-June 2006 were obtained from a *FilmSource* database (Nielsen EDI, www.filmsource.com). The *FilmSource* database also included the number of theaters that showed a movie during its first weekend, the number of days in the opening weekend, and if the movie was released before Friday (generally only for anticipated blockbusters). *FilmSource* also gave a description of the genre of the movie, its MPAA rating (G, PG, PG-13, R), and whether the movie was adapted from previous source material. After June 2006 these values were obtained from the pro service of imdb.com and boxofficemojo.com. All rental numbers were obtained from these two sites.

Production budget information came from imdb.com for most movies, and from [42](http://boxoffice-</p></div><div data-bbox=)

mojo.com or the-numbers.com for those missing from imdb.com. Budget data were available for 1313 of the 1414 movies, including 138 or the 163 cold openings (85%).

The pro version of the imdb.com database was used to determine the star power rating of each movie's stars. Each week imdb.com determined this value by ranking the number of searches done on the imdb.com site for every person affiliated with movies. The most searched star would have value 1. Since there are over one million stars on imdb.com, we took the natural logarithm of the star ranking to reduce the effect of unknown stars with very high numbers. We averaged the logged star ranking for the top two stars for each movie during its opening week.

Three other variables, competition (the average production budget of other movies released on the same opening weekend), the summer dummy variable (whether the movie was released in June, July and August), and the year of release dummy variables were calculated from the previous data. Interaction terms were calculated by multiplying one dummy variable by another.

Advertising expenditures were obtained from the ad\$ spender print resources for advertising before 2007, and from the ad\$ spender database for advertising after 2007.

CPI data was obtained for the US from the Bureau of Labor Statistics. Daily historical exchange rate data from finance.yahoo.com.

B List of cold-opened movies included in our dataset

Table A.1 provides a list of each of the 138 cold-opened movies in our dataset and date of release.

Movie Title	date of release (United States)	Movie Title	date of release (United States)
Armored	12/4/2009	Saw III	10/27/2006
Saw VI	10/23/2009	One Night with the King	10/13/2006
The Stepfather (2009)	10/16/2009	The Marine	10/13/2006
Pandorum	9/25/2009	The Grudge 2	10/13/2006
Surrogates	9/25/2009	The Texas Chainsaw Massacre: The Beginning	10/6/2006
Tyler Perry's I Can Do Bad All By Myself	9/11/2009	The Covenant	9/8/2006
Sorority Row	9/11/2009	Crank	9/1/2006
Halloween II (2009)	8/28/2009	The Wicker Man	9/1/2006
The Final Destination	8/28/2009	Snakes on a Plane	8/18/2006
G.I. Joe: The Rise of Cobra	8/7/2009	Pulse	8/11/2006
Aliens in the Attic	7/31/2009	Zoom	8/11/2006
Obsessed	4/24/2009	See No Evil	5/19/2006
Crank: High Voltage	4/17/2009	Silent Hill	4/21/2006
Dragonball Evolution	4/10/2009	Phat Girlz	4/7/2006
12 Rounds	3/27/2009	Benchwarmers, The	4/7/2006
Street Fighter: The Legend of Chun-Li	2/27/2009	Larry the Cable Guy: Healt..	3/24/2006
Underworld: Rise of the Lycans	1/23/2009	Stay Alive	3/24/2006
My Bloody Valentine 3-D	1/16/2009	Ultraviolet	3/3/2006
The Unborn (2009)	1/9/2009	Madea's Family Reunion	2/24/2006
The Haunting of Molly Hartley	10/31/2008	Doogal	2/24/2006
Saw V	10/24/2008	Date Movie	2/17/2006
Quarantine	10/10/2008	When a Stranger Calls	2/3/2006
An American Carol	10/3/2008	Big Momma's House 2	1/27/2006
Fireproof	9/26/2008	Underworld: Evolution	1/20/2006
My Best Friend's Girl	9/19/2008	BloodRayne	1/6/2006
Tyler Perry's The Family That Preys	9/12/2008	Hostel	1/6/2006
Bangkok Dangerous	9/5/2008	Aeon Flux	12/2/2005
College	8/29/2008	Fog, The	10/14/2005
Disaster Movie	8/29/2008	Cry Wolf	9/16/2005
Babylon A.D.	8/29/2008	King's Ransom	4/22/2005
Mirrors	8/15/2008	Man of the House	2/25/2005
Prom Night (2008)	4/11/2008	Cursed	2/25/2005
The Ruins	4/4/2008	Boogeyman	2/4/2005
Superhero Movie	3/28/2008	Darkness	12/25/2004
Tyler Perry's Meet the Browns	3/21/2008	Seed of Chucky	11/12/2004
Doomsday	3/14/2008	The Cookout	9/3/2004
Witness Protection	2/22/2008	Paparazzi	9/3/2004
Step Up 2 the Streets	2/14/2008	Exorcist: The Beginning	8/20/2004
Hannah Montana/Miley Cyrus... Concert Tour	2/1/2008	Alien vs. Predator	8/13/2004
The Eye	2/1/2008	My Baby's Daddy	1/6/2004
Meet the Spartans	1/25/2008	House of the Dead	10/10/2003
In the Name of the King: A Dungeon Siege Tale	1/11/2008	The Order	9/5/2003
One Missed Call	1/4/2008	Marci X	8/22/2003
Aliens Vs. Predator - Requiem	12/25/2007	My Boss's Daughter	8/22/2003
Awake	11/30/2007	From Justin to Kelly	6/20/2003
Saw IV	10/26/2007	Wrong Turn	6/30/2003
Tyler Perry's Why Did I Get Married?	10/12/2007	They	11/27/2002
Resident Evil: Extinction	9/21/2007	Extreme Ops	11/27/2002
Dragon Wars	9/14/2007	Trapped	9/20/2002
Halloween (2007)	8/31/2007	Adventures of Pluto Nash	8/16/2002
WAR	8/24/2007	Halloween: Resurrection	7/12/2002
The Last Legion	8/17/2007	Kung Pow: Enter the Fist	1/25/2002
Who's Your Caddy?	7/27/2007	The Wash	11/14/2001
I Know Who Killed Me	7/27/2007	Glitter	9/21/2001
Captivity	7/13/2007	Soul Survivors	9/7/2001
Hostel Part II	6/8/2007	Get Over It	3/6/2001
The Invisible	4/27/2007	Valentine	2/2/2001
Slow Burn	4/13/2007	Sugar and Spice	1/28/2001
Redline	4/13/2007	Dracula (2000)	12/22/2000
The Hills Have Eyes 2	3/23/2007	Dude, Where's My Car?	12/15/2000
Dead Silence	3/16/2007	Get Carter	10/6/2000
The Abandoned	2/23/2007	Highlander: Endgame	9/1/2000
Ghost Rider	2/16/2007	The Art of War	8/25/2000
Tyler Perry's Daddy's Little Girls	2/14/2007	Autumn in New York	8/11/2000
The Messengers	2/2/2007	The In Crowd	7/19/2000
Epic Movie	1/26/2007	Sorewed	5/12/2000
Black Christmas (2006)	12/25/2006	3 Strikes	3/1/2000
National Lampoon's Van Wilder: The Rise of Taj	12/1/2006	Down to You	1/21/2000
The Return	11/10/2006	Supernova	1/14/2000

Table A.1: List of cold openings

C Additional Regressions

Table A.2 and A.3 report alternate specifications of the regressions in Table 2 where the cold dummy is replaced by cold and year interaction dummy variables and cold and genre interaction dummy variables. Both specifications are discussed in Sections 2 and 4. Table A.4 shows the results of a regression on IMDB user ratings of the standard regression variables. Cold openings are correlated with a 0.5–0.6 point drop in the ten point user rating.

dependent variable:	log total box office revenue	log opening weekend box office revenue	log total box office revenue	log opening weekend box office revenue	log total box office revenue per theater	log opening weekend box office revenue per theater
year 2000 cold opening	0.223 0.190	0.143 0.169	0.203 0.251	0.124 0.227	0.252 0.215	0.173 0.187
year 2001 cold opening	0.293 0.254	0.195 0.225	-0.313 0.332	-0.390* 0.301	0.003 0.284	-0.074 0.248
year 2002 cold opening	-0.442** 0.252	-0.371** 0.224	-0.679** 0.332	-0.597** 0.300	-0.599** 0.284	-0.517** 0.247
year 2003 cold opening	-0.012 0.254	-0.079 0.226	-0.514* 0.336	-0.543** 0.304	-0.279 0.287	-0.308 0.250
year 2004 cold opening	0.654*** 0.235	0.563*** 0.209	0.373 0.309	0.342 0.280	0.436** 0.264	0.405** 0.230
year 2005 cold opening	0.119 0.234	0.039 0.208	0.066 0.310	0.040 0.280	0.020 0.265	-0.006 0.231
year 2006 cold opening	0.472*** 0.130	0.347*** 0.116	0.499*** 0.171	0.428*** 0.155	0.416*** 0.146	0.345*** 0.128
year 2007 cold opening	0.392*** 0.142	0.317*** 0.126	0.051 0.187	0.052 0.169	0.125 0.160	0.126 0.139
year 2008 cold opening	0.410*** 0.139	0.298*** 0.123	0.413** 0.183	0.343** 0.165	0.378*** 0.156	0.308** 0.136
year 2009 cold opening	0.201* 0.153	0.160 0.136	0.083 0.202	0.099 0.182	0.034 0.173	0.050 0.150
metacritic rating	0.011*** 0.002	0.011*** 0.001	0.013*** 0.002	0.011*** 0.002	0.014*** 0.002	0.013*** 0.002
imdb rating	0.086*** 0.023	-0.005 0.020	0.144*** 0.030	0.041 0.027	0.131*** 0.025	0.029 0.022
log theaters opened	0.990*** 0.075	1.168*** 0.067	-	-	-	-
log production budget	0.008 0.029	0.010 0.026	0.493*** 0.031	0.440*** 0.028	0.298*** 0.027	0.244*** 0.023
log advertising expenditures	0.740*** 0.049	0.506*** 0.044	-	-	-	-
average log competitor budget	-0.017 0.026	-0.050** 0.023	-	-	-	-
average log competitor advertising expenditures	-0.039 0.034	-0.036 0.030	-	-	-	-
average log star ranking of lead roles	-0.013* 0.007	-0.011* 0.006	-0.056*** 0.009	-0.053*** 0.008	-0.033*** 0.008	-0.030*** 0.007
summer release	0.082** 0.039	0.030 0.035	0.073 0.051	0.019 0.046	0.057 0.044	0.003 0.038
adaptation or sequel	0.104** 0.042	0.063* 0.037	0.183*** 0.055	0.138*** 0.049	0.146*** 0.047	0.101** 0.041
days released before Friday	0.043* 0.025	0.019 0.023	-	-	-	-
opening weekend continues after Sunday	0.134*** 0.049	0.117*** 0.043	-	-	-	-
days released earlier in foreign country	0.000* 0.000	0.000* 0.000	-	-	-	-
genre dummy variables included	yes	yes	yes	yes	yes	yes
year dummy variables included	yes	yes	yes	yes	yes	yes
MPAA rating dummy variables included	yes	yes	yes	yes	yes	yes
constant	-6.647*** 0.553	-8.168*** 0.491	1.071*** 0.265	0.446* 0.240	-6.049*** 0.227	-6.674*** 0.198
observations	1303	1303	1303	1303	1303	1303
R ²	0.7113	0.6949	0.4921	0.4436	0.4219	0.3385

* Significant at the 10% level

** Significant at the 5% level

*** Significant at the 1% level

Table A.2: Regressions on logged box office revenues (in millions) with cold and year interaction variables.

dependent variable:	log total box office revenue	log opening weekend box office revenue	log total box office revenue	log opening weekend box office revenue	log total box office revenue per theater	log opening weekend box office revenue per theater
action or adventure genre cold opening	0.046 0.158	-0.077 0.140	-0.479*** 0.206	-0.477*** 0.186	-0.354** 0.175	-0.352** 0.152
animated genre cold opening	-0.428 0.607	-0.449 0.537	-0.479 0.802	-0.429 0.725	-0.486 0.684	-0.436 0.594
comedy genre cold opening	0.379*** 0.110	0.313*** 0.098	0.344*** 0.146	0.297** 0.132	0.338*** 0.124	0.292*** 0.108
documentary genre cold opening	1.742*** 0.681	2.202*** 0.602	1.036 0.893	1.326* 0.807	1.921*** 0.762	2.212*** 0.662
drama genre cold opening	0.842*** 0.250	0.677*** 0.221	0.477* 0.329	0.366 0.297	0.617** 0.281	0.506** 0.244
fantasy or science fiction genre cold opening	-0.021 0.190	-0.157 0.168	-0.404* 0.248	-0.414** 0.224	-0.331* 0.211	-0.341** 0.183
suspense or horror genre cold opening	0.305*** 0.091	0.238*** 0.080	0.289*** 0.120	0.251*** 0.108	0.253*** 0.102	0.214*** 0.089
metacritic rating	0.011*** 0.002	0.010*** 0.001	0.013*** 0.002	0.011*** 0.002	0.014*** 0.002	0.012*** 0.002
imdb rating	0.087*** 0.023	0.000 0.020	0.146*** 0.030	0.046* 0.027	0.136*** 0.025	0.035 0.022
log theaters opened	1.026*** 0.075	1.209*** 0.067	-	-	-	-
log production budget	0.010 0.029	0.015 0.025	0.494*** 0.031	0.441*** 0.028	0.299*** 0.027	0.245*** 0.023
log advertising expenditures	0.716*** 0.049	0.476*** 0.044	-	-	-	-
average log competitor budget	-0.024 0.026	-0.055** 0.023	-	-	-	-
average log competitor advertising expenditures	-0.033 0.034	-0.031 0.030	-	-	-	-
average log star ranking of lead roles	-0.011 0.007	-0.009 0.006	-0.055*** 0.009	-0.051*** 0.008	-0.031*** 0.008	-0.028*** 0.007
summer release	0.080** 0.039	0.030 0.035	0.065 0.051	0.013 0.046	0.053 0.043	0.001 0.038
adaptation or sequel	0.108*** 0.041	0.068* 0.037	0.189*** 0.054	0.145*** 0.049	0.151*** 0.046	0.107*** 0.040
days released before Friday	0.036 0.025	0.013 0.022	-	-	-	-
opening weekend continues after Sunday	0.147*** 0.048	0.130*** 0.043	-	-	-	-
days released earlier in foreign country	0.000* 0.000	0.000 0.000	-	-	-	-
genre dummy variables included	yes	yes	yes	yes	yes	yes
year dummy variables included	yes	yes	yes	yes	yes	yes
MPAA rating dummy variables included	yes	yes	yes	yes	yes	yes
constant	-6.647*** 0.553	-8.168*** 0.491	1.071*** 0.265	0.446* 0.240	-6.049*** 0.227	-6.674*** 0.198
observations	1303	1303	1303	1303	1303	1303
R ²	0.7113	0.6949	0.4921	0.4436	0.4219	0.3385

* Significant at the 10% level

** Significant at the 5% level

*** Significant at the 1% level

Table A.3: Regressions on logged box office revenues (in millions) with cold and genre interaction variables

dependent variable:	imdb rating	imdb rating
cold opening	-0.515*** (0.078)	-0.595*** (0.078)
metacritic rating	0.047*** (0.001)	0.050*** (0.001)
log theaters opened	-0.124 (0.092)	-
log production budget	-0.028 (0.035)	0.048 (0.030)
log advertising expenditures	0.302*** (0.060)	-
average log competitor budget	-0.046 (0.032)	-
average log competitor advertising expenditures	0.032 (0.042)	-
average log star ranking of lead roles	-0.051*** (0.008)	-0.055*** (0.008)
summer release	-0.154*** (0.048)	-0.155*** (0.048)
adaptation or sequel	-0.156*** (0.051)	-0.158*** (0.051)
days released before Friday	-0.025 (0.031)	-
opening weekend continues after Sunday	-0.126** (0.060)	-
days released earlier in foreign country	0.001*** (0.000)	-
genre dummy variables included	yes	yes
year dummy variables included	yes	yes
MPAA rating dummy variables included	yes	yes
constant	4.106*** (0.666)	3.599*** (0.228)
observations	1303	1303
R ²	0.6722	0.6599

* Significant at the 10% level

** Significant at the 5% level

*** Significant at the 1% level

Table A.4: Regression on IMDB user ratings